



COVERAGE MONITORING NETWORK



Save the Children.

Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)
Goronyo LGA CMAM Program
Sokoto State, Northern Nigeria
January/February, 2015



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ACF International

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ABBREVIATIONS

ACF	Actin Contre La Faim/Action Against Hunger International
CCPN	Center for Communication Program in Nigeria
CIFF	Children Investment Fund Foundation
CMAM	Community Management of Acute Malnutrition
CV	Community Volunteer
ECHO	European Commission Humanitarian Aid
FMOH	Federal Ministry of Health
IEC	Information Education and Communication
LGA	Local Government Area
NFP	Nutrition Focal Person
INGO	International Non-governmental Organization
MSF-H	Medicine sans Frontiers -Holland
OTP	Outpatient Therapeutic Program
PHC	Primary Health Care
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SLEAC	Simplified Lot quality assurance sampling Evaluation of Access and Coverage
SNO	State Nutrition Officer
SMART	Standardized Monitoring Assessment of relief and Transitions
SMOH	State Ministry of Health
SQUEAC	Semi Quantitative Evaluation of Access and Coverage
SSPHCDA	Sokoto State Primary Health Care Development Agency
TBA	Traditional Birth Attendant
WDC	Ward Development Committee

1. Executive Summary

Goronyo is one of the LGAs in Sokoto State that is integrating community-based management of acute malnutrition (CMAM) in the HFs. MSF-H started a nutrition intervention project managing malnutrition in Goronyo LGA in 2009. However, by March 2013 MSF-H transferred the program to SSPHCDA and the Goronyo LGA Primary Health Care Department. Presently the CMAM program is being implemented in five HFs¹, with the support from UNICEF in terms of supply of RUTF and training of HWs.

A previous SQUEAC assessment in April 2014² reported a low coverage estimate of 14.8% (9.5-22.4%; CI; 95%). This finding was consistent with a SLEAC assessment conducted earlier by Valid International VI in Goronyo in 2013³. Most of the barriers identified during the stage 3 of the April 2014 SQUEAC, and the 2013 SLEAC were hinged on lack of awareness about the program. Incidentally, implementing NGOs opted for designing and conducting a pilot program on social communication and community mobilization around CMAM in Goronyo LGA to increase awareness about the program. Therefore, this present SQUEAC investigation is aimed at determining the present barriers and boosters to access, with a view to understand how the pilot social communication of CMAM had impacted on the barriers. Other objectives were to investigate the spatial pattern of coverage in Goronyo, determine the headline coverage estimate, build the capacity of FMOH, SMOH, and LGA staff, as well as suggest way forward to improve program access and coverage.

Quantitative data were sourced from the routine program data from January to December 2014, and beneficiary OTP card records from July 2014 to December 2014; these were extracted and analyzed. Four out of the existing five CMAM sites⁴ and 14 villages⁵ in Goronyo LGA were visited to collect additional qualitative information about the CMAM program from different sources⁶ and using different methods⁷. All the findings were triangulated by these various sources and methods and analyzed into negative factors (barriers) and positive factors (boosters) which affect program coverage.

The key barriers to program access and coverage identified include; intermittent stock-out of RUTF, stock-out of routine drugs, insufficient number of CVs and ineffective case finding by the CVS, non-adherence to CMAM guideline by HWs, closure of CMAM HFs due to stock-out of RUTF,

¹ Goronyo, Rimawa, Boyekai, Takakume and Fadarawa.

² Safari J. Balegamire, Chrissy Banda, Bernadette Feeney: Semi-quantitative Evaluation of Access and Coverage of Goronyo LGA CMAM Program, State of Sokoto, Nigieria. March – April 2014. Pg. 12.

³ Chrissy B., Bina S., Safari B., Ernest G., Lio F. & Moussa S.; Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) Survey of Community-based Management of Acute Malnutrition program; Northern States of Nigeria-(Sokoto, Kebbi, Zamfara, Kano, Katsina, Gombe, Jigawa, Bauchi, Adamawa, Yobe, Borno). Valid International. February 2014

⁴ Goronyo, Rimawa, Boyekai, and Fadarawa were visited.

⁵ Awwakala, Biyarda, Keta, Sabon Garin, Acido, Tuluski, Bungi, Gidan toro, Yar Kof, Balakozo, Tuluttu, Balla, Goronyo town and Dan Jero,

⁶ Care-givers, Health Workers (HWs), Community Volunteers (CVs), community leaders, religious leaders, *majalisa*, teachers, traditional healer, traditional birth-attendants (TBAs), youth leader, and, program staff, etc.

⁷ Semi-structured interview, in-depth interview, observations and informal group discussions

consumption and sale of RUTF by community members, lack of support by LGA for transportation of RUTF, provision of drugs and for supportive supervision.

The key boosters include; large turnout of beneficiaries, good awareness about the program, social community mobilization and sensitization through radio jingles and IEC materials, good opinion about the program in communities, peer-to-peer referrals, self-referrals and referrals by husband, good working relationship between Health workers (HWs) and CVs.

Though coverage was suspected to be below 50%, the two-categories, three-class classifier was used to hypothesize the spatial pattern of coverage in the LGA. It was envisaged that coverage would be moderate in some communities (between 20% – 50%), while other part of the LGA would be low (less than 20%). This would indicate that coverage is unacceptable (below 50%), but heterogeneous across the LGA. Thus, the spatial pattern of the program coverage across Goronyo LGA was tested using small area survey, and was confirmed (see results in Phase 2).

The program coverage estimate yielded by the conjugation analysis of the prior and likelihood survey was **14.7% [10.1% - 20.8%; CI 95%]**. This was noted to be more or less the same with the result of the previous SQUEAC. Although the pilot on social communication of CMAM had significantly increased awareness and access, closure of the CMAM HFs and rejection of SAM children due to stock-out of RUTF, non-adherence to CMAM guideline (wrongful discharge of SAM children), and ineffective case finding, amongst other barriers are impacting negatively on the coverage.

Recommendations: after the research, the conducting team strongly recommends to increase advocacy to the LGA Chairman by the SNO, NFP and PHC Director to raise a standing order for release of monthly funds to buy routine drugs, transport RUTF from State to the LGA and CMAM HFs, and for supportive supervision of the CMAM HFs. Also, increased and improved advocacy for the SNO and NFP to develop supportive supervision plan and use this avenue to ensure adherence to CMAM guideline. Moreover, the SNO and NFP, with the support of UNICEF, could conduct a refresher training for HWs in CMAM HFs. The SNO and NFP with support from LGA and UNICEF could recruit and train at least 15 CVs from distant and near communities accessing each CMAM HF; provision and distribution of MUACs for active case-finding to the CVs by the NFP and SNO; community dialogue and sensitization by HWs to discourage consumption and sale of RUTF by adults and healthy siblings in communities.

2. Introduction

Sokoto State and six other States form the North West geopolitical zone of Nigeria. It was created in 1976. Sokoto State is bordered to the north by the Republic of Niger, Zamfara State to the East, and Kebbi State to the South and West. The city of Sokoto —capital of Sokoto State— traces its origin to the Sokoto Caliphate founded in 1809.

Goronyo is one of the twenty three LGAs in the State, with Goronyo town as its administrative headquarters. It has an area of 1,704 km² and a population of 182,296 according to the 2006 census. Goronyo has 11 administrative units called political wards, which are Birjingo, Boyekai, Giyawa, Goronyo, Kagara, Kojiyo, Kwakwazo, Rimawa, Sabon Gari Dole, Shinaka, Takakume. The LGA shares boundaries with Wurno LGA on the South–west, Gwadabawa LGA to the West, Gada to the North-west, Sabon Birni LGA to the East, Isa LGA to the South- East and Rabah LGA to the South.



Figure 1: Map of Sokoto state showing the bordering countries⁸.

⁸ <http://zodml.org/Nigeria/Geography/Sokoto%20State/>



Figure 2: Map of Goronyo LGA showing the location of the five CMAM HFs (red dots).

Majority of the inhabitants of the LGA are farmers, cattle breeders, fishermen, traders, and civil servants. Most of the farmers rely on the prestigious Goronyo Dam for irrigation of their farmlands and watering of the livestock. Major crops produced by the inhabitants are Millet, Guinea Corn, Onion, Maize, Garlic, Carrots, Beans, and Rice.

MSF-H commenced treatment of malnutrition in Goronyo LGA in 2009 with seven HFs⁹. However, MSF-H handed over the program to SSPHCDA and Goronyo LGA authorities in March 2013. The program is currently implemented in five HFs, with only five out of the eleven political wards hosting a CMAM HF (see figure 2).

A previous SQUEAC assessment in April 2014 reported a low coverage estimate of 14.8% (9.5-22.4%; CI; 95%). The major barriers unveiled by that investigation include; interruption in OTP services due to RUTF stock out, absence of CMAM community volunteers and no active case finding, non-compliance with CMAM national guidelines, lack of supply chain structure for RUTF transport from the state to OTP sites, lack of knowledge about malnutrition among the

⁹ Fadarawa, Goronyo, Giyawa, Sabongari Dole, Takakume, Garbadiya, Rimawa

population, shortage of trained health workers in CMAM, lack of awareness of CMAM programme. The finding was also consistent with a SLEAC assessment conducted earlier by Valid International VI in Goronyo in 2013. Most of the barriers identified during the stage 3 of the April 2014 SQUEAC, and the 2013 SLEAC were hinged on lack of awareness about the program. Thus, necessitating a pilot program on social communication of CMAM in Goronyo from August 2014 to January 2015 by CCPN. Consequently a follow-up SQUEAC investigation in January-February 2015 to investigate the impact of the social communication pilot project.

3. Objectives

The Goronyo LGA SQUEAC investigation was conducted to achieve the following specific objectives;

1. To determine the barriers and boosters to program access and coverage in Goronyo LGA.
2. To investigate the spatial pattern of program coverage in Goronyo LGA.
3. To estimate overall program coverage in Goronyo LGA.
4. To proffer recommendations geared towards improvement of program access and coverage
5. To build the capacity of SMOH and LGA staff to conduct a SQUEAC assessment.

4. Methodology

The SQUEAC methodology was used to investigate program access and coverage in Goronyo LGA. Detailed explanation of the methodology used are provided as follows;

Stage 1

Quantitative data:

The routine program data obtained from the SNO (January to December 2014), and data extracted from beneficiary records (OTP cards) from July to December 2014 were extracted and analyzed into plots. These plots include admission trends; exit trends; MUACs at admission; length of stay from admission to recovery; distribution of exit MUACs at recovery; number of visits before default; distribution of exit MUAC at default, and time-to-travel from home to CMAM HF.

The resulting plots were interpreted to identify possible factors affecting access and coverage.

Qualitative data

Qualitative information were also collected to add-up to the quantitative results. These information were obtained from varying sources using various methods.

Barriers, boosters and questions:

The results yielded by the quantitative and qualitative data analyzes were further used to develop barriers, boosters and questions (BBQ) table. These barriers and boosters were triangulated by

the source(s) and method(s) from which they were obtained. In situations where the evidence is unclear, a question arises; further information is collected to clarify the evidence. Information about the program was continually collected to obtain new evidence or add to the existing one.

Concept map

The various factors identified to be affecting the program were used to draw a concept map showing the relationship existing between these factors. The concept map is contained in the annex of this report.

Stage 2 data

Results unveiled in the stage 1 (qualitative and quantitative data analyses) were used to formulate hypothesis to study the spatial pattern of coverage.

Small Area Survey

The small area survey data was analyzed using simplified lot quality assurance technique to test a hypothesis. This was done by examining the number of Severe Acute Malnutrition (SAM) cases found (n) and the SAM cases covered in the program. The threshold value (d) was used to determine if the coverage was classified as satisfactory or not. Value (p) was used to denote a standard used as a measure of coverage¹⁰.

As the recent SQUEAC assessment indicated a coverage of 14.7% in Goronyo LGA, the small area survey was tested by adopting coverage standard (p) as 20%¹¹ (see Section 5.3)

The value of (p) used that was used was 20%. The formula for deriving (d) is shown below:

$$d_1 = [n \times p_1] = \left[n \times \frac{20}{100} \right] = \frac{n}{5}$$

If the number of covered cases exceeded value (d), then the coverage was classified as being satisfactory. However, if the number of covered cases found did not exceed value (d) then the coverage was classified as being unsatisfactory. The combination of the (n) and (d) was used as the sampling plan.

Stage 3 data

The prior:

The prior mode was estimated by combining the following tools;

- Belief histogram
- Weighted barriers and boosters
- Un-weighted barriers and boosters

¹⁰ SPHERE standards has recommended minimum coverage for Therapeutic programs in rural, urban, and camp settlements. These thresholds are 50%, 70% and 90% coverage for TFP program run in the contexts of rural, urban and camp areas respectively.

¹¹ This is based on the 2 standard 3 classification of coverage as less than 20% as low, 20% - 50% as moderate, and greater than 50% as high for rural areas.

- Calculation of the total positive and total negative factors illustrated in the concept map.
- Previous SQUEAC headline coverage

The prior was established in a beta prior distribution with prior shaping parameters plotted on Bayes calculator. The Bayes calculator also suggested a sample size at 10% precision.

The likelihood survey yielded data that was analyzed to give program coverage. The data was organized into the parameters tabulated in the table 1 below. The binomial distribution of the likelihood results are shown in results section of this report.

Table 1: Parameters analyzing likelihood survey

Parameters	Values
Current cases in the program (x)	17
Current SAM cases not in the program (y)	120
Total current SAM cases (n)	137
Point coverage ¹² . CI 95%	$point\ coverage = \frac{(x)}{(x + y)}$

The program coverage (posterior).

The process of combining the prior and the likelihood to arrive at the posterior (also referred as conjugate analysis¹³) was used in arriving at the program coverage in this SQUEAC investigation. This meant that the prior information about coverage (i.e. the findings from the analysis of routine programs data; the intelligent collection of qualitative data; and the findings of small-area surveys, and small studies). Bayesian technique¹⁴ was helpful to provide information about overall coverage of the program. As such, all the relevant information that was collected in stage 1 and 2 were used.

Met need is calculated as:

$$Met\ need = Coverage\ (effectiveness) \times Median\ recovery\ rate$$

¹² Point coverage gives overall accurate measure of this program

¹³ A conjugate analysis requires that the prior and the likelihood are expressed in similar ways.

¹⁴ Bayesian methods allowed findings from work done **prior** to a survey to be combined with data from the survey. In this case survey data are treated as just another source of information and are used to update the prior information. The main advantage in using the Bayesian approach in this as well as in all SQUEAC investigation are: 1) Smaller survey sample sizes are required compared to larger population based dummy surveys 2) It provides a framework for thinking about SQUEAC data that has been collated and analyzed in stage 1 and stage 2

5. Results and findings

This section summarizes the results of stage 1 and 2 the various data were organized as follows:

5.1. Stage 1: Quantitative data-identifying potential areas of low and high coverage.

In stage one the routine data, anecdotal program information and performance data were analyzed to study the effectiveness of the CMAM program, the outreach activities and potential areas of low and high coverage. This analysis formed the basis of mapping locations that would be suitable to collect the qualitative data that would provide more information regarding factors affecting the CMAM program. The summary of the data extracted from OTP client records, and the routine program data for Goronyo LGA are summarized in Table 1 and 2 below.

Outcome indicator	Number	Proportion
Recovered	947	56%
Death	10	1%
Defaulter	199	12%
Transferred	13	1%
Non-recovered	77	5%
Missing information	454	27%

Table 2 Summary of outcome of extracted client information (July to December 2014)

Outcome	Number	Proportion
Recovered	2810	98.3%
Defaulter	28	1.0%
Death	8	0.3%
Non-recovered	12	0.4%
Transferred	0	0

Table 3 Summary of routine program data (January to December 2014)

The findings of the quantitative and qualitative data analysis is described in the following sections

5.1.1. Routine monitoring (OTP cards) and performance data

5.1.1.1. Program exits (discharge outcomes)

The trend of exit of the routine performance data was plotted and smoothened with spans of median and average of three months (M3A3). The plots are presented in figure 2 below.

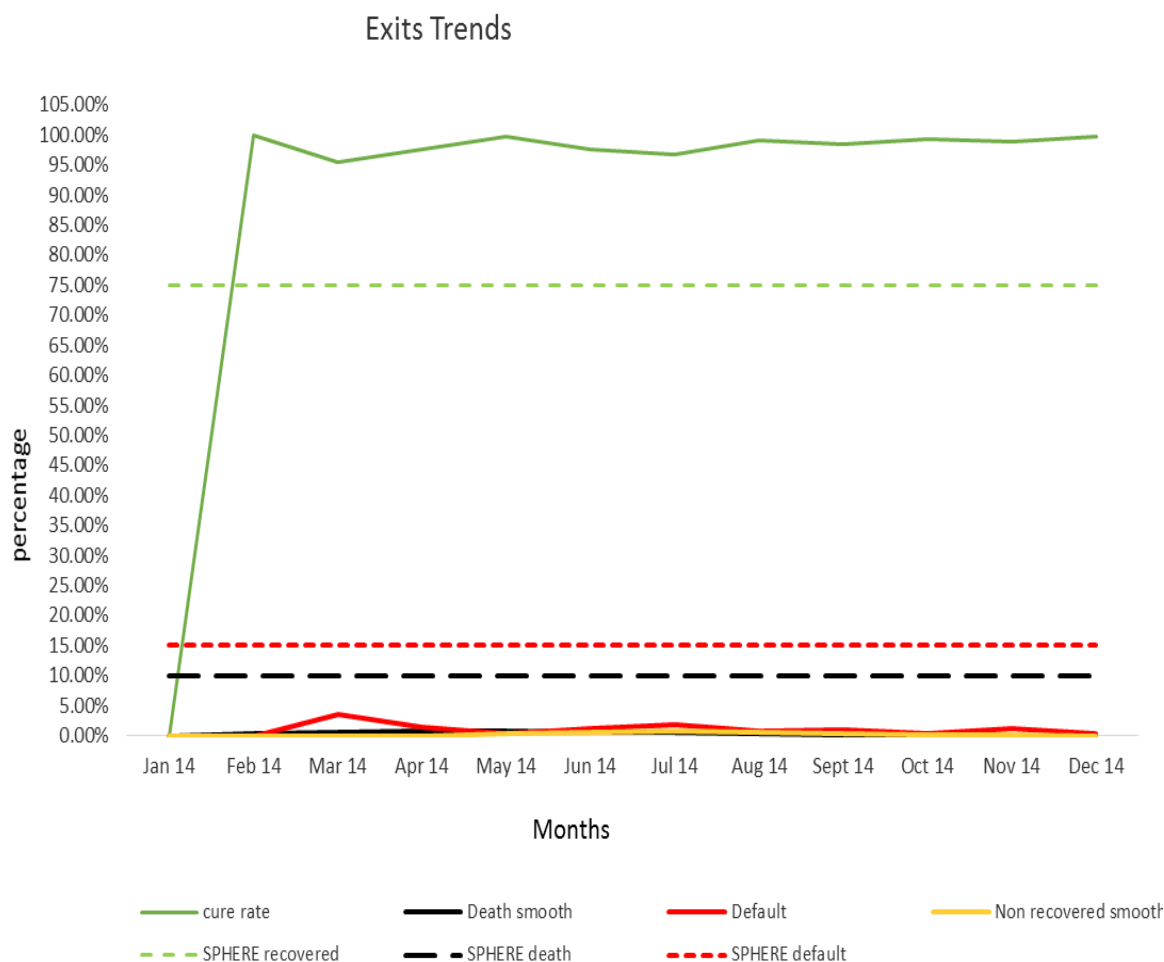


Figure 3: Exit trends for Goronyo LGA CMAM program-July 2014 to December 2014

Aside the month of January 2014, exit trend showed an impressive recovery rate above 75% sphere standard and defaulter rate below 15% standard over the review period. However, this data was doubtful when compared to the extracted client information. For instance, no beneficiary was discharged as non-recovered according to routine data (January to December 2014), however, data mined from beneficiary records showed that 77 beneficiaries were discharged between July to December 2014. Additionally, the data extracted from beneficiary OTP cards showed that 27% of exits between July and December 2014 had missing outcome information. These 454 beneficiaries could not be said to be recovered. On the other hand, the recovery rate reported in the routine program data was similar compared to that reported in the previous SQUEAC assessment.

5.1.1.2. Admission trends

The figure above showed that admission was steady for January and February 2014 due to

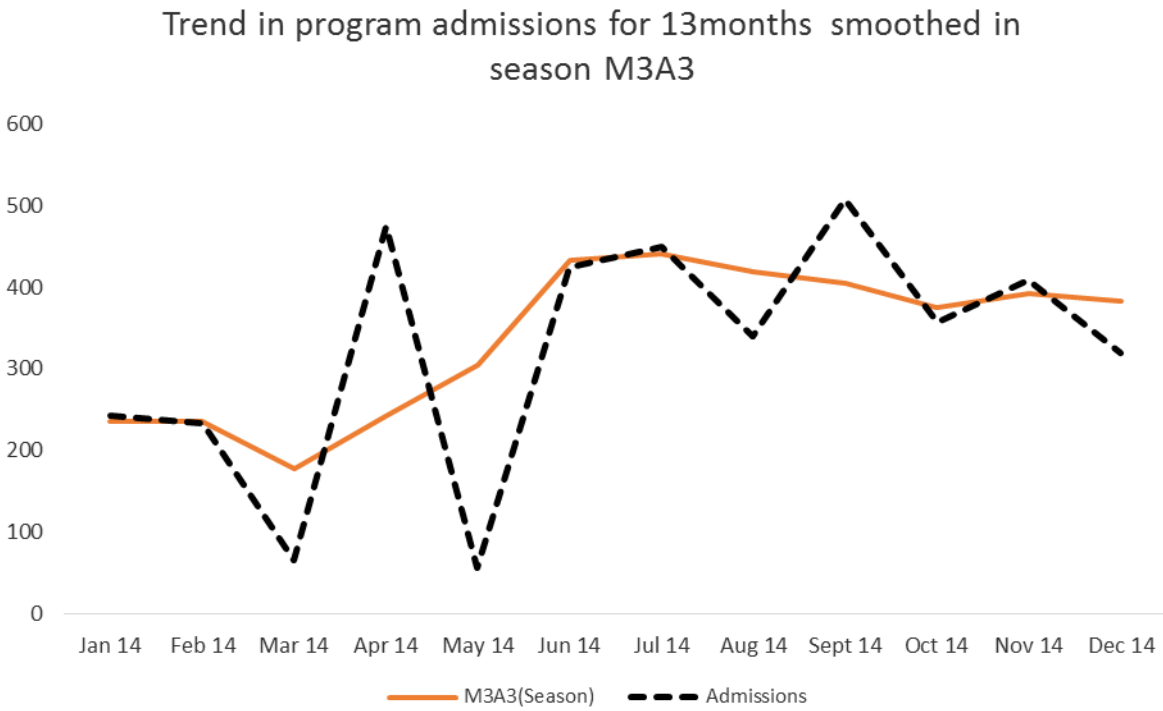


Figure 4: Admission trend of Goronyo LGA CMAM program

availability of food in the household after the harvest. The decline witnessed in March 2014 was due to stock-out of RUTF at all CMAM HF's which made the HWs unable to admit new beneficiaries. Active and adaptive case finding, subsequent referrals and awareness created by the small and wide area survey of the previous SQUEAC investigation combined with restored supply of RUTF in CMAM HF's were the major reasons for the significant increase in admissions in April 2014. Nevertheless, another stock-out of RUTF in May 2014 resulted in sharp decline in admission again. On the other hand, admission was seen to rise in June due to RUTF availability and onset of hunger season as household food-stock had been depleted by consumption, sales and planting. As female labor demand in weeding of farm land and rainy season peaks in August, admission was noticed to have declined.

Community mobilization activities of the pilot social mobilization project by CCPN which commenced in late August could be attributed to the increase in admission (the highest peak in the year) witnessed September 2014. As the pilot social mobilization project continued, admission gradually declined from September to December 2014. The decline could be attributed to conflicting priority most caregivers due to high female labor demand in harvesting and dry processing of crops from October to December, and occasional stock-out of RUTF at the CMAM HF's.

5.1.1.3. MUACs at Admission

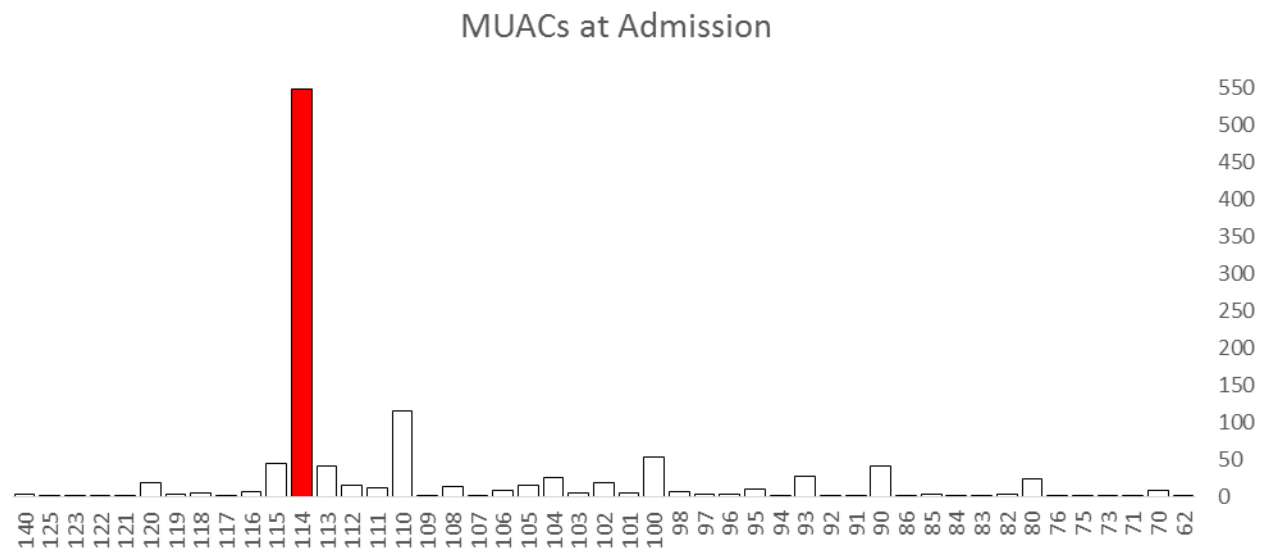


Figure 5: Admission MUACs for Goronyo LGA CMAM program

The plot of admission MUACs indicated yielded a high median MUAC at admission of 114 mm. However, this result was suspected likely to be misleading due to the following reasons; the HWs might have been erroneously heaping the measurements at 114 mm; 37% of MUACs at admission of beneficiaries were not recorded in the client cards which weakens the validity of interpretation of the Figure 5 above. Most importantly, the ability of the HWs to take correct MUAC measurements at the point of admission was in doubt.

Otherwise, the plot showed a remarkable improvement compared to the MUAC at admission (104 mm) reported in the previous SQUEAC in 2014¹⁵. The plot also indicated possible active case-finding in communities. As the CMAM program in Goronyo commenced in 2009, the program is expected to be admitting mostly incident SAM cases; thus the MUAC at admission is expected to be relatively high.

¹⁵ Safari J. Bagemire, Chrissy Banda, Bernadette Feeney: Semi-quantitative Evaluation of Access and Coverage of Goronyo LGA CMAM Program, State of Sokoto, Nigeria. March – April 2014. Pg. 12.

5.1.1.4. Length of stay from admission to cure

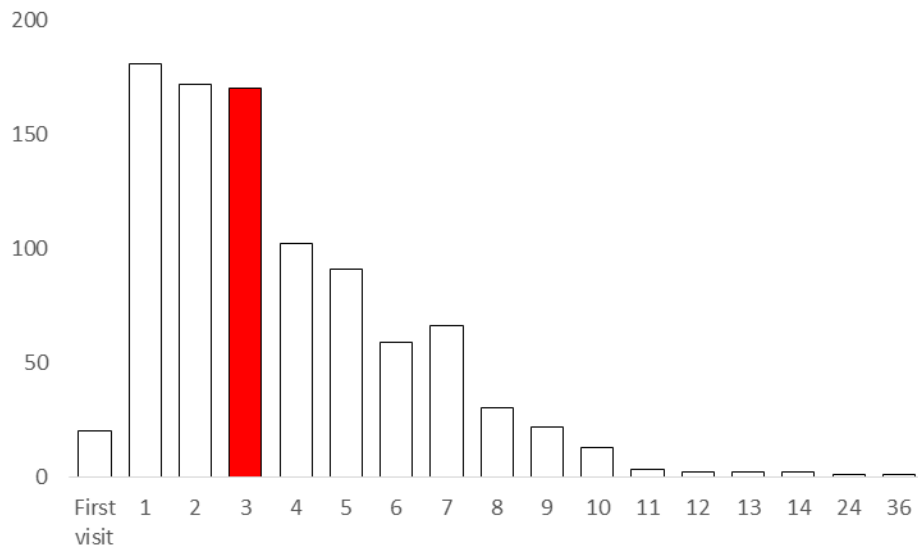


Figure 6: Length of Stay in program from admission to recovery

From the figure 6 above, it was noted that some clients were classified as recovered, even on the first visit. The analyzed data showed a median length of stay (LOS) of 3 weeks; significant number of beneficiaries were discharged on the second and third visits as well. Wrongful discharge of beneficiaries was suspected as the possible explanation for the surprising results obtained on LOS. The beneficiaries who stayed in the program beyond 12 weeks were noted to be hidden defaulters who were continually treated whenever they return to the program. Therefore, the HWs were suspected not to be adhering to the National CMAM Guideline in terms of the discharge criteria.

Analysis of MUAC at exit for the 'recovered' beneficiaries was conducted to investigate adherence to discharge criteria by HWs.

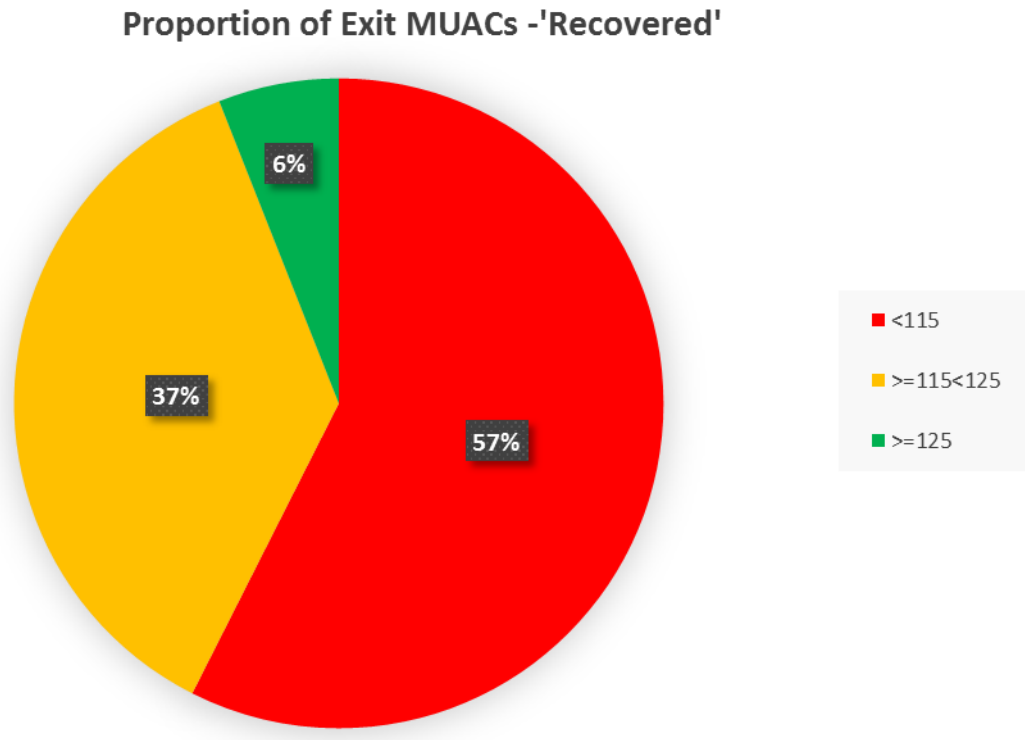


Figure 7: Distribution of the exit MUACs of beneficiaries discharged as 'recovered'

The chart showed that only 6% of the beneficiaries classified as 'recovered' after they had accessed treatment were correctly discharged as recovered. The remaining 94% were wrongfully discharged, and are likely to be SAM cases presently in the communities. This confirms the doubt raised earlier on the validity of routine monitoring data (see Section 5.1.1.1). More than half of the beneficiaries (57%) discharged as 'recovered' exited the program while they were still SAM cases (MUAC less than 115 mm).

5.1.1.5. Number of default

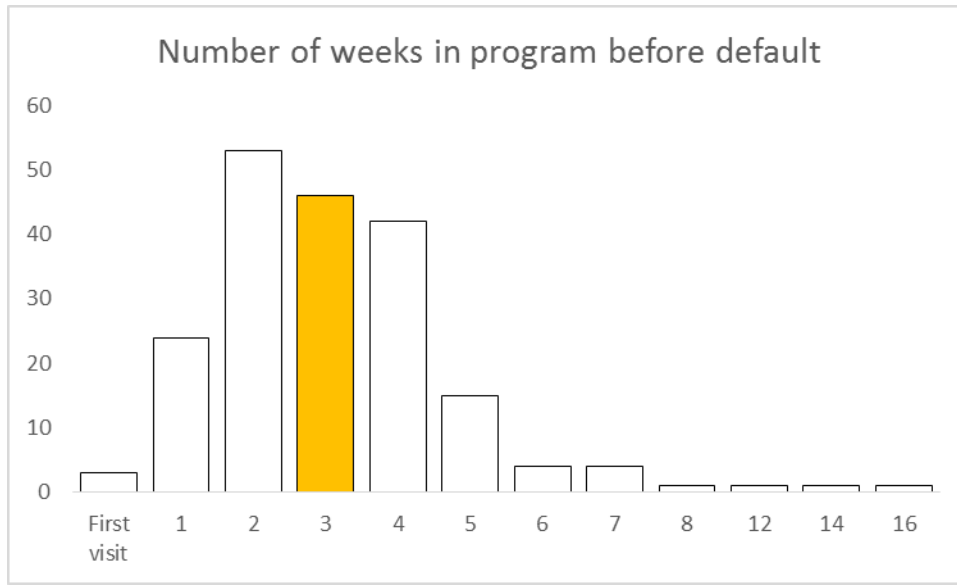


Figure 8: Plot of number of visits before default

Beneficiaries were observed to have mostly defaulted after staying less than four weeks in-program. The median number of weeks in program before default was 3 weeks. Pockets of beneficiaries were also noted to default after their first visits. Defaulters that stayed less than four weeks in program are likely be SAM cases¹⁶. This finding raises further suspicion on quality of service delivery at the CMAM HF, and beneficiaries' understanding of how the program works.

5.1.1.6. Time to travel to CMAM (OTP) site plot/distance from treatment center

Time to travel from home to CMAM HF could not be plotted because 93% of client information on time-to-travel was missing from the beneficiary OTP cards.

5.1.1.7. Conclusion of the routine monitoring (OTP cards) analysis

The analyses of quantitative data indicated that the following information need further investigation.

- Quality of service delivery to the beneficiaries from the point of admission to until exit.

¹⁶ Defaulters that have had below 4 visits are likely to be current cases of SAM. Refer to SQUEAC/SLEAC technical manual.

- Admission MUAC measurements taken by CVs and HWs
- Adherence to National CMAM guideline by HWs, especially, with regards to admission and discharge criteria by HWs
- Case finding activities of community volunteers, and
- RUTF availability at the CMAM HFs.

5.2.Stage 1: Qualitative data-Investigation of factors affecting program and coverage.

5.2.1. Qualitative sampling Framework

In order to complement the information already obtained from the quantitative data analyses, qualitative information about the program in Goronyo LGA was collected and analyzed. The information was sourced from stakeholders using variety of methods. Three CMAM sites were visited, where, at least four caregivers (randomly chosen), health workers, and community volunteers were interviewed. Fourteen communities were purposively selected and visited to collect additional information about the program from community members. The communities were selected based on the distance from CMAM site. This was done with the aim of obtaining information from stakeholders in both far and near communities to the CMAM HFs.

In each of the communities visited, a religious leader, teacher, community leader, provision shop seller, *majalisa*¹⁷, patent medicine vendor, TBA, traditional healer, were interviewed in each of the communities visited. Relevant information about the program obtained were analyzed bearing in mind its possible effect on the program, thereby identified either as a barrier or a booster. When information on a theme collected is not clear or deemed insufficient, a question is posed such that when answered it would bring about clarity. In this manner the BBQ was used to summarize the information obtained. This process of collecting information was continued until no new evidence emanates, and as such sampling to redundancy was achieved.

5.2.2. Qualitative information

The summary of the qualitative information gathered during the SQUEAC investigation is presented as follows:

5.2.2.1 Awareness and opinion about the program in communities

Awareness about the program was found to have improved compared to the period when the previous SQUEAC was conducted in April 2014. All respondents interviewed during the qualitative data gathering testified that they are aware of the program. Some of the respondents went further to say that members of their communities are aware of the program. Few pointed out that they were aware about the program back in the days when MSF-H was running TFP in

¹⁷ community age-group gathering in tea places and shades

Goronyo. However, most of the interviewees confirmed that they only heard about the CMAM program through the radio¹⁸, recently.

People were also noted to have good opinion about the CMAM program. Respondents interviewed at CMAM HFs (HWs, CVs, and caregivers) in Goronyo, Rimawa, Boyekai and Fadarawa confirmed that there is a very good opinion about the CMAM program. Community stakeholders interviewed¹⁹ all confirmed that community members are appreciative of the program. They are of the opinion that the program has a good impact on their children – community members regard the CMAM program as a ‘life safer’, and strongly desire the program to continue. However, most community members pointed out that RUTF is not usually available for beneficiaries at the CMAM HFs. This usual occurrence, discourages some caregivers from accessing CMAM services as they think they would not receive the weekly RUTF ration.

5.2.2.2 Community volunteers’ activities and training

One of the findings of the April 2014 SQUEAC investigation was that CVs were not available for active case finding. Therefore, a recommendation for recruitment and training of CVs was proffered. This recommendation that was agreed upon by the LGA, Traditional leaders, SSPHCDA in April 2014 but was not implemented. Nevertheless, the pilot project on social communication of CMAM by CCPN recruited twenty CVs in the Goronyo LGA to conduct active case finding all parts of the LGA. Each of the CMAM HFs²⁰ was allocated four CVs –three female and one. The number of CVs allocated to each CMAM HF was inadequate considering the large number of communities and land area served by each of the CMAM HF. CVs said that they can only cover some communities that are close to where they are living.

The recruitment and training of CVs was done in August and September 2014, conducted by NFP with pictorial materials and use of color code since most of the CVs are illiterate. However, MUAC tapes were not given to the CVs. Three community volunteers interviewed at Fadarawa HF all reported that they were trained on how to use MUAC tape but were not given MUAC tapes. The CVs said they conduct active case finding without MUAC tape, but rely on use of clinical signs to identify malnourished children who they refer to the CMAM HF. Active case finding was seen to be concentrated in communities surrounding the CMAM HFs. Even in these surrounding communities, case finding was thought to be majorly ineffective as MUAC tapes were not used by the CVs for referral.

5.2.2.3 Referral mechanism

Three sources of referral for SAM children to program were identified based on the response obtained from the interviews. Peer-to-peer, referral by husband and self-referrals were evident. Majority of the caregivers accessing the program said they were referred by their peers, husband,

¹⁸ TBA at Gidan Toro community, traditional leader and majalisa in goronyo town, a teacher in Tuluttu, a religious in Acido community, community leader and majalisa in Tuluske community.

¹⁹ Interviewees in Keta, Zamace, Sabon Gari Dole, Bala, Bala kwoso, Goronyo, Fadarawa, Rimawa

²⁰ Fadarawa, Boyekai, Goronyo, Rimawa and Takakume

or they came on their own, due to their desire for their SAM children to recover. Passive referrals by HWs in non-CMAM HF were also identified in Rimawa and Fadarawa CMAM HF. Few caregivers interviewed said they were referred by community volunteers, thus confirming low active case finding and referral by CVs. (see Section 5.2.2.2)

However, the conducting team observed that caregivers who visit the CMAM HF were given a prefilled referral slip by the CVs at the entrance of the HF. This prefilled referral slip have admission MUAC (114mm) already written. HWs were noticed not to confirm the MUACs, but transfer the figure written on the referral slip to the admission card of the beneficiary. This confirmed the suspected error and unreliability of MUAC measurements taking at admission and heaping at 114 mm (refer to Figure 5 and Section 5.1.1.3). This further confirms poor case-finding activities by community volunteers.

5.2.2.4 Health workers and activities and training

From the responses of the HWs, it was found that the HWs had received training once –in March 2013 when MSF-H was handing over the program to the LGA and SSPHCDA. The HWs interviewed at Fadarawa and Boyekai CMAM HF mentioned that they rarely take MUAC measurements, they make use of MUAC measurements written on the referral slip by the community volunteers. The HWs could not tell the correct admission and discharge criteria. This also confirms the ‘shocking’ length of stay in program from admission to recovery, and proportion of children classified as ‘recovered’ whose exit MUACs were up to exit criteria i.e. 125 mm (see Section 5.1.1.4, Figure 6, and Figure 7). However, HWs that were seen at the CMAM HF were observed to be very motivated in discharging their duties. The HWs were also cordial to the CVs and caregivers.

On the other hand, a traditional healer in Fadarawa community, a teacher and a religious leader in Zamache community reported that HWs usually come late or are absent from the CMAM HF. Consequently, caregivers usually queue up for a long time before they could access treatment. Sometimes the caregivers go home without receiving RUTF ration. This was also collaborated by the caregivers interviewed at Goronyo CMAM HF.

5.2.2.5 Compliance to National CMAM guideline

Observation and interviews conducted at four CMAM HF showed that HWs do not comply with the National CMAM guideline. MUAC measurements were not usually taken, HWs copy out a prefilled MUAC measurement on a referral slip of caregivers. The measurements were usually written at ‘whims and caprices’ of the CVs who do not have MUAC tapes (refer to Section 5.2.2.2 and 5.2.2.3). Caregivers were not given the right weekly RUTF ration for the SAM children. It was also noted that some caregivers were given RUTF less than the quantity written on the beneficiary’s OTP card. The weekly RUTF ration given to beneficiaries were not written on the cards, only the RUTF given on the day of admission was usually recorded. Some caregivers complained that they were given seven sachets of RUTF and asked not to come back because there was no RUTF. Neither appetite test was conducted nor health talk given by the HWs in

Boyekai, Rimawa, and Fadarawa CMAM HFs. Caregivers who defaulted were not re-admitted into the program by the HWs.

5.2.2.6 Perception and use of RUTF in communities

Despite the radio jingles and messages on the use of RUTF being disseminated through the radio stations and community dialogues, majority of community stakeholders²¹ interviewed in all the communities²² reported that adults consume the RUTF meant for the malnourished children. Some of the respondents said that they eat RUTF and that 'it is very tasty'. Healthy siblings of the malnourished children are said to be the major culprits. However, some of the respondents said adults eat RUTF to gain weight. A traditional healer mentioned that he uses RUTF for treatment ulcer, and for pregnant women. Generally, it was noted that RUTF meant for malnourished children usually end up in the hands of adults and healthy siblings. This could imply that malnourished children would stay long in the program before recovery as their RUTF ration are likely to be depleted by healthy siblings and adults.

5.2.2.7 Stock-out of RUTF

Intermittent stock-out of RUTF was reported in all the CMAM HFs throughout the review period. This was also observed firsthand by the conducting team. The NFP and DDPHC reported the stock-out in Goronyo LGA occur each time the previous RUTF supply collected from the state was exhausted. Inability of the LGA to provide the transportation for re-supply from the State store always lead to stock-out. The stock-out results in closure of the CMAM HFs for some weeks (see Section 5.1.1.2). Most of the interviewees mentioned that caregivers were usually sent back home because there was no RUTF available at the CMAM HFs. The stock-out of RUTF in the program was one of the challenges facing the program according to most of the interviewees.

Despite the Goronyo LGA agreeing that it would make provision for constant supply of RUTF (during the dissemination of the previous SQUEAC findings and participatory recommendation in April 2014), stock-out of RUTF continued to hinder the program performance. In line with the 'usual routine', CMAM services were halted for three weeks in January 2015 due to unavailability of RUTF supply. HWs, NFP and DDPHC said they usually contribute money to transport RUTF but are not always refunded by the LGA.

5.2.2.8 Stock-out of routine drugs

Routine drugs were also noted to be unavailable. According to the NFP, DDPHC and SNO, routine drugs were supplied in April 2014 (five cartons or 300 bottles of amoxicillin). In September 2014 an unknown quantity of Albendazol was provided. From the observation made during health facility visit by the conducting team, it was found that only Abendazole and Vitamin A were available in Fadarawa, Rimawa and Boyekai HFs. A HW in Fadarawa further reported that they

²¹Community leader, religious leader, teacher, provision shop seller, *Majalisa*, TBA, Traditional healer, teacher etc.

²² Acido, Balakazo, Tuluske, Gidan Toro, Goronyo, Awwakala, Sabon Gari Dole, Zamace, Bungi, Danjiro,

got the supply during the Maternal, Newborn, and Child Health Week program. Health workers said they purchase amoxicillin with their money and resell to caregivers at the price NGN 150. Caregivers that could not afford the price was given only RUTF ration.

5.2.3. Data triangulation

The information collected using quantitative and qualitative methods were analyzed into barriers and boosters. The barriers and boosters identified were triangulated by source(s) and method(s) and presented in table 3 and 4 below.

Table 4: Sources and methods used to get information in the BBQ tool for Goronyo LGA.

S/N	SOURCE	METHOD	CODE
1	Health Worker	Semi-structured interview/In-depth Interview	A/B
2	Community Volunteer	Semi-structured interview/In-depth Interview	A/B
3	Caregiver	Semi-structured interview/In-depth Interview	A/B
4	Health Facility Visit	Observation	E
5	Majalisa	Informal Group Discussion (IGD)	C
6	Religious Leader	Semi-structured interview/In-depth Interview	A/B
7	Community Leader	Semi-structured interview/In-depth Interview	A/B
8	Traditional Healer	Semi-structured interview/In-depth Interview	A/B
9	Patient Medicine Vendor PMV	Semi-structured interview/In-depth Interview	A/B
10	Provision shop owner	Semi-structured interview/In-depth Interview	A/B
11	Deputy Director PHDC	In-depth Interview	B
12	State Nutrition Officer (SNO)	In-depth Interview	B
13	Traditional Birth Attendance (TBA)	Semi-structured interview/In-depth Interview	A/B
14	Teacher	Semi-structured interview/In-depth Interview	A/B
15	Routine Data	Extraction	D
16	Nutrition Focal Person (NFP)	In-depth Interview	B
17	Care givers not in program	Semi-structured interview/In-depth Interview	A/B
18	CCPN Staff	INDEPTH INTERVIEW	B
19	SMALL AREA SURVEY	Semi-structured interview/In-depth Interview	A/B

Table 5 barriers, boosters & questions findings and sources of information

S/ N	BOOSTERS	SOURCES	BARRIERS	SOURCES
1	Peer-to-peer referral, referral by husband, and self-referrals	1A,3A,7B	Acute stock-out of routine drugs.	1A,11B,6A,1B,2B,
2	Good opinion about the CMAM program in communities	1A,2A,13A,8A,6A,5C,7A,2B,7B,1B	Intermittent stock-out of RUTF at the LGA leading to closure or interruption of CMAM services	1A,12A,2A,,13A,1B,3A,2B,13B,5C,7B,6B,16B
3	Passive referrals from non-CMAM HFs	1A,3A	Denial of defaulters back into the program at the health facility	2A
4	Fair case finding by CVs	2A,1A,3A,13B,	Insufficient number of CVs (20 CVs) covering 11 wards, with over 200 communities in Goronyo LGA; CVs who majorly rely on clinical signs of malnutrition to refer SAM bringing about ineffective case finding;	2A, 11B,18B,1A, 2B
5	Good health seeking behavior	2A,5C,6A,8A,14B,7B,8B,3A,10A,14A,13A,9A	Consumption of RUTF by adults and healthy siblings, and sale of RUTF.	5C,6A,7A,8A,13A,2B,1B,4B,8B,2A,14A,10A,9A,
6	Good collaboration between CVs and Health worker which makes CVs participate actively at the CMAM Health facility to assist available Health worker	2A,1A,2B,4E	Poor health seeking behavior in some communities.	8A,8B,13A,14A,1A,2A,3A,10B
7	Good awareness about the CMAM program	5C,6A,7A,13A,8A,2A,13B,8B,6B	Distance and poor accessibility of some CMAM HFs (Fadarawa, Zamace,	8A,5C,13A,14A,3A,8B,6B,14B,19B,
8	Good Community mobilization and sensitization /Social mobilization and community sensitization	5C,6A,7A,13A,8A,1A,2A,13B,6B,10B	Many HWs not trained on CMAM program leading to; Non-adherence to national CMAM guideline	1A,11B,1B,16B, 15D,4E,16B

	through (radio jingles posters)		• Poor service delivery in terms of wrong/absence of MUAC measurements; health talk were not given to beneficiaries; appetite test were not conducted. • Irregular RUTF distribution. • Health workers absent from duty post. • Poor interface between OTP and SC	
9		Sale of routine drugs to beneficiaries by HWs.	1A,4E,2B,13B,11B,16D,3A	
10		Shortage of health workers leading to long waiting time at the health facility.	6B,10B,3A,1A,4E,	
11		Husband refused the wife to attend	2A, 3A	
12		Lack of support from LGA for transportation of RUTF from State to LGA and for supportive supervision of the CMAM HFs.	11B,16B,1B	

5.2.4. Concept map

The conducting team were split into two; each of the teams drew a concept map to show the relationships existing between the barriers and boosters obtained from the field. The team used Epigram software-version 1.10²³ to draw the concept maps presented in the annex.

5.3. Stage 2: Small Area Survey and Small Study.

At the completion of stage 1, the conducting team envisaged that the program coverage would be less than 50% in Goronyo LGA. This was because of the following reasons:

²³ Epigram software was developed by Mark Myatt and is available on www.brixtonhealth.com

1. Surrounding communities within 5 km radius to the CMAM HF are likely to have higher coverage than distant communities due to possible case finding activities by CVs, and nearness of the CMAM HF to those communities.
2. Quality of service delivery in terms of wrongful discharge are likely to be affecting the program coverage in both surrounding and distant communities, as many of the beneficiaries who had exited the program are likely to be SAM cases in the communities.

In view of the reasons above, the villages within 5km radius to the CMAM HF were envisaged to have moderate coverage (between 20% and 50%), while distant communities were predicted to have coverage classification of less than 20%.

Therefore, a hypothesis was formulated:

Coverage is moderate (between 20% to 50%) in communities ≤ 5 km from CMAM HF, but in communities ≥ 5 km coverage is low (less than 20%)²⁴.

5.4. Study Type

Small area survey was the study type used to test the hypothesis.

5.5. Sampling Methodology

One village each within 5 km radius of four (out of the five existing) CMAM HF were purposively selected. On the other, a community beyond 5 km distance from each of the four CMAM HF were also selected. Active and adaptive case-finding was conducted in the eight selected communities during the small area survey.

5.6. Case Definition

Severe Acute Malnutrition (SAM case) was defined as Children (6-59) months, with MUAC <115mm and or bilateral pitting oedema.

SAM case covered: Refers to a SAM case identified as defined above and is currently enrolled in a CMAM site or Stabilization Centre (SC). The status is verified when beneficiary shows the investigator the RUTF packets and/or ration Card.

SAM case not covered: Refers to a SAM case who is not currently enrolled in a CMAM program or the SC.

Recovering case: A child (6-59) months old, with MUAC above 115mm and is enrolled in a CMAM program at the time of the investigation. This case is verified when beneficiary shows the investigator the RUTF packets and/or ration Card.

²⁴ This is based on the 2 standard 3 classification of coverage as less than 20% as low, 20% - 50% as moderate, and greater than 50% as high for rural areas.

5.7. Result of Small Area Survey

The results of small area survey are presented in below.

Table 6 Simplified Lot Quality Assurance classification of small area survey results

Coverage	Wards	Villages	Total SAM (<i>x</i>)	Decision rule $d = \frac{x \times 20}{100}$	Covered(C)	Not covered (NC)	Recovering case (RC)
Hypothesis							
≤ 5 kilometers from the CMAM HFs	Rimawa	Rimawa (1 km)	14	d = 4	5	9	5
	Goronyo	Sabon Gari (1 km)	1		1	0	0
	Boyekai	Yar Nage (4 km)	6		1	5	0
	Kwakwaso	Tudun Dutse (2 km)	0		0	0	0
≥ 5 kilometers from the CMAM HFs	Kwakwaso	Zammace (9 km)	8	d = 4	0	8	0
	Boyekai	G/marafa (8 km)	6		0	6	0
	Rimawa	R/Tsamiya (7.5 km)	4		0	4	0
	Goronyo	G/Haliru (8 km)	3		0	3	0

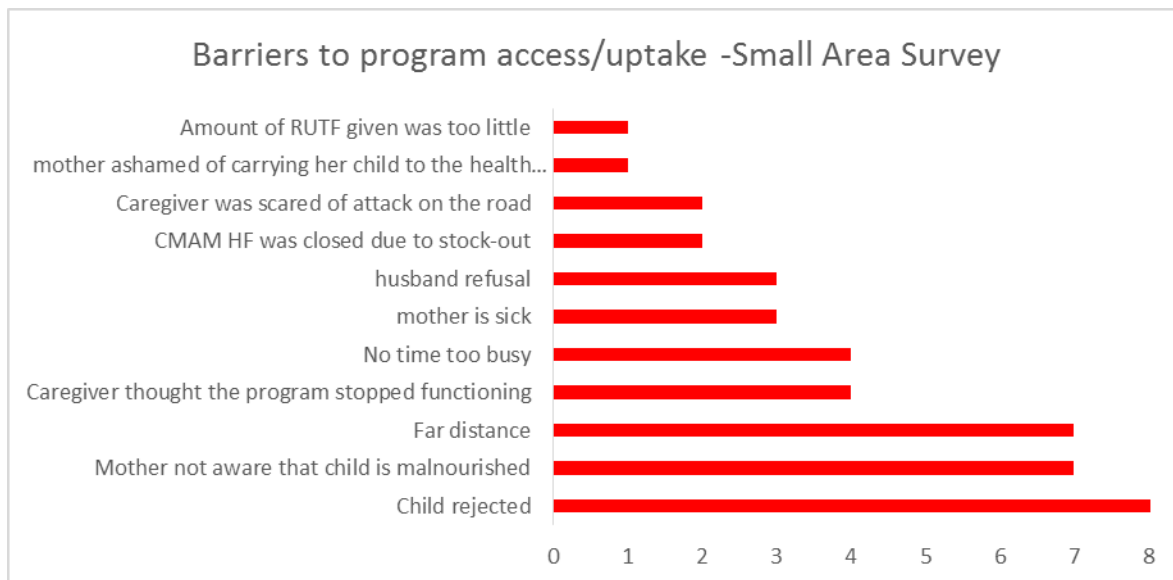


Figure 9: Reasons for not attending the CMAM program-Small area survey

Interpretation of the results

In communities no further than 5 km from the OTP, the decision rule calculated equaled 4 given that 21 SAM cases were identified. The number of SAM children found that are covered by the program equals 7. Since 7 is greater than 4 but smaller than 11; this implies a moderate classification of coverage (20% to 50%).

On the other hand, in communities further away than 5 km from the OTP, the number of SAM cases found that are covered by the program was equal to zero. And given that the decision rule calculated was 4, coverage was classified as low (less than 20%).

5.8. Conclusion of Small Area Survey and Small Study

Coverage classification in Goronyo LGA was generally less than 50%. The LQAS classification of the small area survey result showed heterogeneous spatial coverage across the LGA without reaching the acceptable threshold of 50% for coverage in rural areas.

5.9. Developing the prior.

5.9.1 Histogram of Belief.

To build a prior, each member of the conducting team was asked to write on a piece of paper his/her belief the program coverage in Goronyo LGA will be. The values were used to construct a

histogram of belief, with the x-axis representing the percentage coverage, while y-axis indicated the frequency. The mode of the beliefs was found to be 25%, a minimum value of 10% and maximum 50% were identified.

Prior 1: Histogram of belief = 25%

5.9.2 Concept Map

The conducting team was split into two, with each drawing a concept map.

Team A

Total barriers = 18

Total boosters = 10

Prior calculated from concept map Team A

contribution of barriers = $18 * 5 = 90$

contribution of boosters = $10 \times 5 = 50$

prior estimation = $\frac{(50 + (100 - 90))}{2} = 30\%$

Prior estimation concept map team A = **30%**

Prior calculated from concept map Team B

Total barriers = 20

Total boosters = 10

Contribution of barriers = $20 * 5 = 100$

Contribution of boosters = $10 * 5 = 50$

prior estimated from concept map Team B = $\frac{(50 + (100 - 100))}{2} = 25\%$

Prior estimated from concept maps = $\frac{30 + 25}{2} = 27.5\%$

Prior 2: estimated from concept map = 27.5%

5.9.3 Un-weighted barriers and boosters

The contribution of barriers and boosters to coverage was calculated as follows:

contribution of barriers = $12 \times 7 = 84$

contribution of boosters = $8 \times 7 = 56$

prior estimation = $56 + (100 - 84) / 2 = 36\%$

Prior 3: Prior estimated from un-weighted barriers and boosters = 36%

6.4.1 Weighted barriers and boosters.

The barriers and boosters were also weighted. A score is reached after the conducting had discussed and reached a consensus. The highest possible score assigned to a barrier or booster was 7 while 1 was the lowest score.

The weighting of the barriers and boosters are presented in the table below.

Table 7 Weighted barriers and boosters of Goronyo LGA CMAM Program

S/N	BOOSTERS	SCORES	BARRIERS	SCORES
1	Peer-to-peer referral, referral by husband, and self-referrals	5	Acute stock-out of routine drugs.	6
2	Good opinion about the CMAM program in communities	6	Intermittent stock-out of RUTF at the LGA leading to closure or interruption of CMAM services	7
3	Passive referrals from non-CMAM HFs	1	Denial of defaulters back into the program at the health facility	5
4	Fair case finding by CVs	2	Insufficient number of CVs (20 CVs) covering 11 wards, with over 200 communities in Goronyo LGA; CVs who majorly rely on clinical signs of malnutrition to refer SAM bringing about ineffective case finding;	5
5	Good health seeking behavior	6	Consumption of RUTF by adults and healthy siblings, and sale of RUTF.	4

6	Good collaboration between CVs and Health worker which makes CVs participate actively at the CMAM Health facility to assist available Health worker	3	Poor health seeking behavior in some communities.	3
7	Good awareness about the CMAM program	6	Distance and poor accessibility of some CMAM HFs (Fadarawa, Zamace,	7
8	Good Community mobilization and sensitization /Social mobilization and community sensitization through (radio jingles posters)	6	Many HWs not trained on CMAM program leading to; • Non-adherence to national CMAM guideline • Poor service delivery in terms of wrong/absence of MUAC measurements; health talk were not given to beneficiaries; appetite test were not conducted. • Irregular RUTF distribution. • Health workers absent from duty post. • Poor interface between OTP and SC	6
9			Sale of routine drugs to beneficiaries by HWs.	5
10			Shortage of health workers leading to long waiting time at the health facility.	6
11			Husband refusal	3
12			Lack of support from LGA for transportation of RUTF from State to LGA and for supportive supervision of the CMAM HFs.	5

Therefore:

$$\text{prior estimation} = \frac{(35 + (100 - 62))}{2} = 36.5\%$$

Prior 4: Prior estimate from weighted barriers and boosters = 36%

Prior 5 Coverage estimate of the previous SQUEAC assessment²⁵ = 14.4%

A SQUEAC assessment was conducted in March/April 2014 in Goronyo LGA 85 SAM cases were found in which only 12 cases were enrolled in the CMAM program giving a coverage of 14.4%

5.9.4 Triangulation of Prior

Prior estimate²⁶ was then calculated by triangulation of all the prior estimates obtained from various methods. It is illustrated by figure 10 below.

$$\text{prior mode} = (25 + 27.5 + 36 + 36.5 + 14.4) / 5 = 27.86\%$$

Prior mode = 27.86%

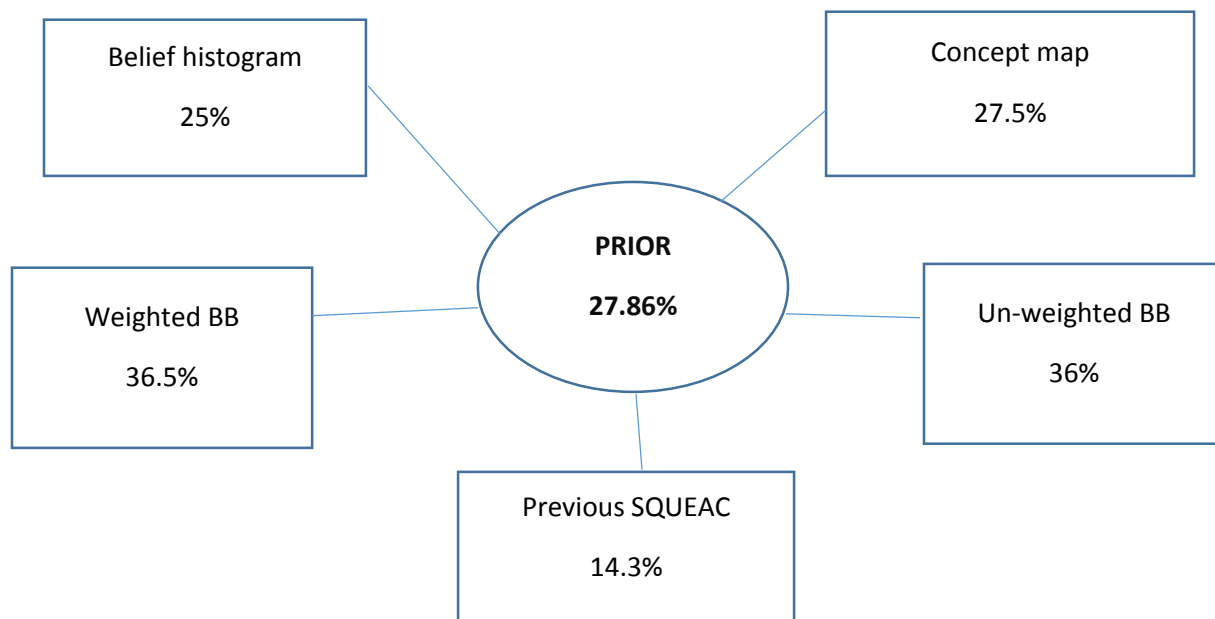


Figure 10: Illustration of triangulation of prior

²⁵ This was considered as the program did not significantly change.

²⁶ The average of the “coverages” is a credible value of the mode of the prior. It is also referred as the mode of the probability density of the coverage.

5.9.5 Bayes Prior Plot and Shape Parameters

The prior mode was set at 27.86%, minimum and maximum probable value was also set at 10% and 50%, respectively; the alpha (α) and beta (β) shaping parameters were calculated as 8.16 and 21.81, respectively. The resultant binomial distribution plot using the Bayes SQUEAC calculator software, version 3.01 as shown in the figure 17 below. The Bayes plot of the prior also suggested a sample size that was adopted in the likelihood survey described below.

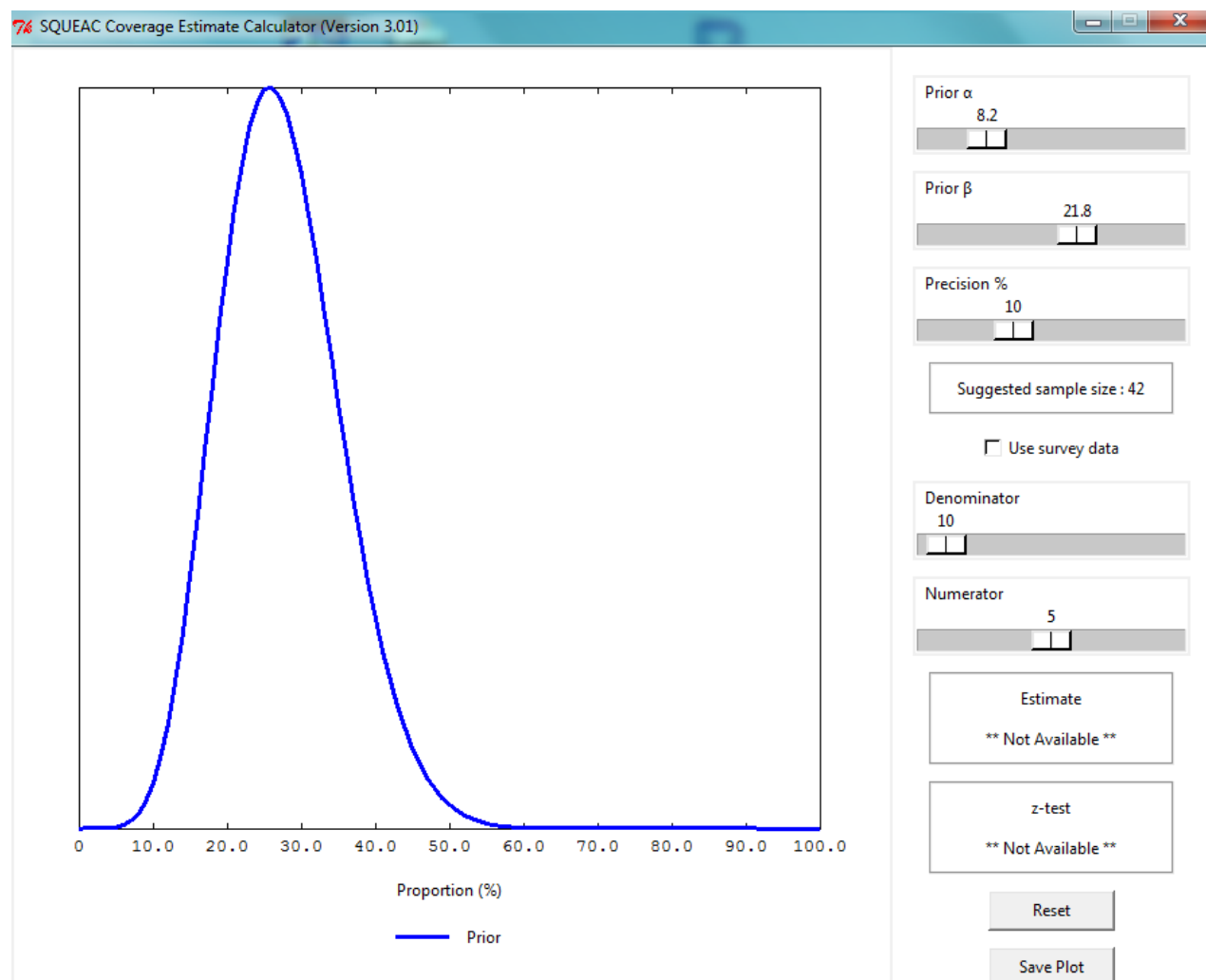


Figure 11: Bayes SQUEAC binomial distribution plot for prior showing the shape parameters and the suggested sample size.

6.0. Stage 3: Wide area survey

The likelihood survey (wide area survey) was built into the Goronyo SQUEAC investigation to add to the existing information (analyzed in stage 1 & 2). This was done so as to provide a headline coverage of the program.

6.1. Calculation of Sample Size and Number of Villages to be visited for likelihood survey

The Bayes calculator calculated the minimum sample size (SAM cases) at 10% precision as 42 clearly shown in the Bayes plot above.

The number of villages that was needed to be visited to obtain a minimum of 42 SAM children aged 6-59 months was calculated using the formula below

$$\text{Nvillages} = \frac{(\text{NSAM cases})}{(\text{N}(\text{median population size all ages}) \times \text{percentage of under – fives in the population} \times \frac{\text{prevalence}}{100})}$$

Table 8 Parameters for sample size calculation for likelihood survey

	Parameters	Value
1	SAM cases	42
2	N(Median population size of all ages)	267
3	Percentage of under-fives in the population ²⁷	18%
4	SAM prevalence ²⁸	0.0155

Therefore the sample calculation is given as:

$$\text{Nvillages} = \frac{42}{(267 \times 0.18 \times 0.0155)} = [56.38] = 57$$

57 villages were to be visited so as to get a minimum of 42 SAM cases.

²⁷ Source: National Bureau of Statistics

²⁸ Severe Acute Malnutrition results of Mid Upper Arm Circumference (MUAC) for Sokoto State in the May 2014 National Nutrition and Health Survey was used.

6.2. Quantitative sampling framework

The sampling frame –complete list of villages in Goronyo LGA was obtained. Systematic random sampling was used to select the villages to be visited. Sampling interval was calculated by dividing the total number of villages in Goronyo with number of villages to be visited. The first village to be visited was randomly selected by using the excel RAND function to select a village numbered between 1 and the sampling interval. The subsequent villages to be visited were selected by adding the sampling interval to the selected village.

6.3. Case Finding Method

Active and adaptive case-finding method was used during the wide area survey.

The case definition was a child:

- Aged (6-59) months
- With a MUAC of less than 11.5 cm, and or
- With bilateral pitting oedema

6.4. Qualitative data Framework

Each SAM case that was identified during the wide area survey, but was not receiving treatment in the CMAM program²⁹ was regarded as non-covered case. A questionnaire was administered to the caregivers of the non-covered cases so as to collect information on possible reasons for the SAM child not accessing the program. The reasons were analyzed and presented below.

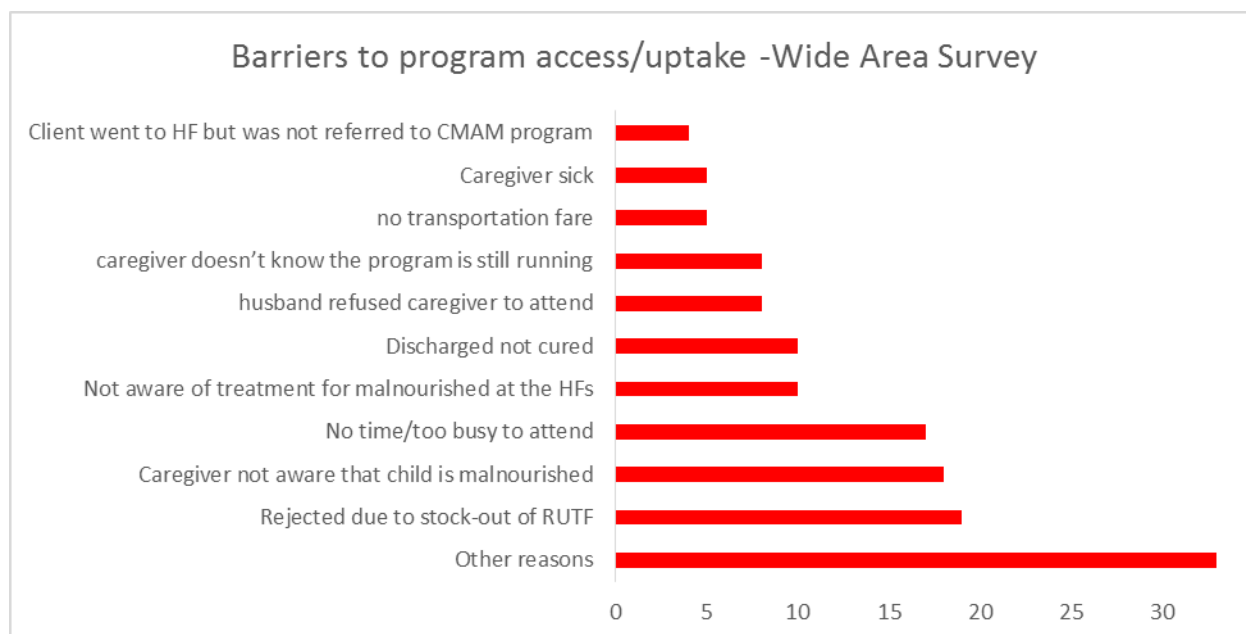


Figure 12: barriers to program access and uptake-wide area survey

²⁹ As verified by show of RUTF or ration card by beneficiary

6.5. Results of the wide are survey

The quantitative result of the case finding of the wide are survey (stage 3) is shown in the table below.

Table 7: Results of the Likelihood (wide area) survey

	Parameter	Value
1	Total SAM cases	137
2	SAM cases in the program	17
3	SAM cases not in the program	120
4	Recovering cases in the program	10

The likelihood was calculated using the following standard formula for *point coverage*:

$$\text{Point coverage} = \frac{\text{SAM cases in the program}}{\text{Total SAM cases}}$$

Therefore:

$$\text{Likelihood} = \frac{17 \times 100}{137} = 12.41\%$$

$$\text{Likelihood} = 12.41\%$$

6.6. Posterior/Coverage Estimate

The posterior or headline coverage arrived at after combining the prior and likelihood using the BayesSQUEAC calculator version 3.01 was **14.7% [10.1% - 20.8%; CI 95%]**. The result unveiled by the conjugate analysis was credible and useful in this study because of the following reasons;

- 1) The considerable overlap prior & likelihood curves showed that are coherent, therefore, no prior-likelihood conflict ($p > 0.05$).
- 2) The likelihood survey had reduced uncertainty as the posterior unveiled was narrower than the prior.

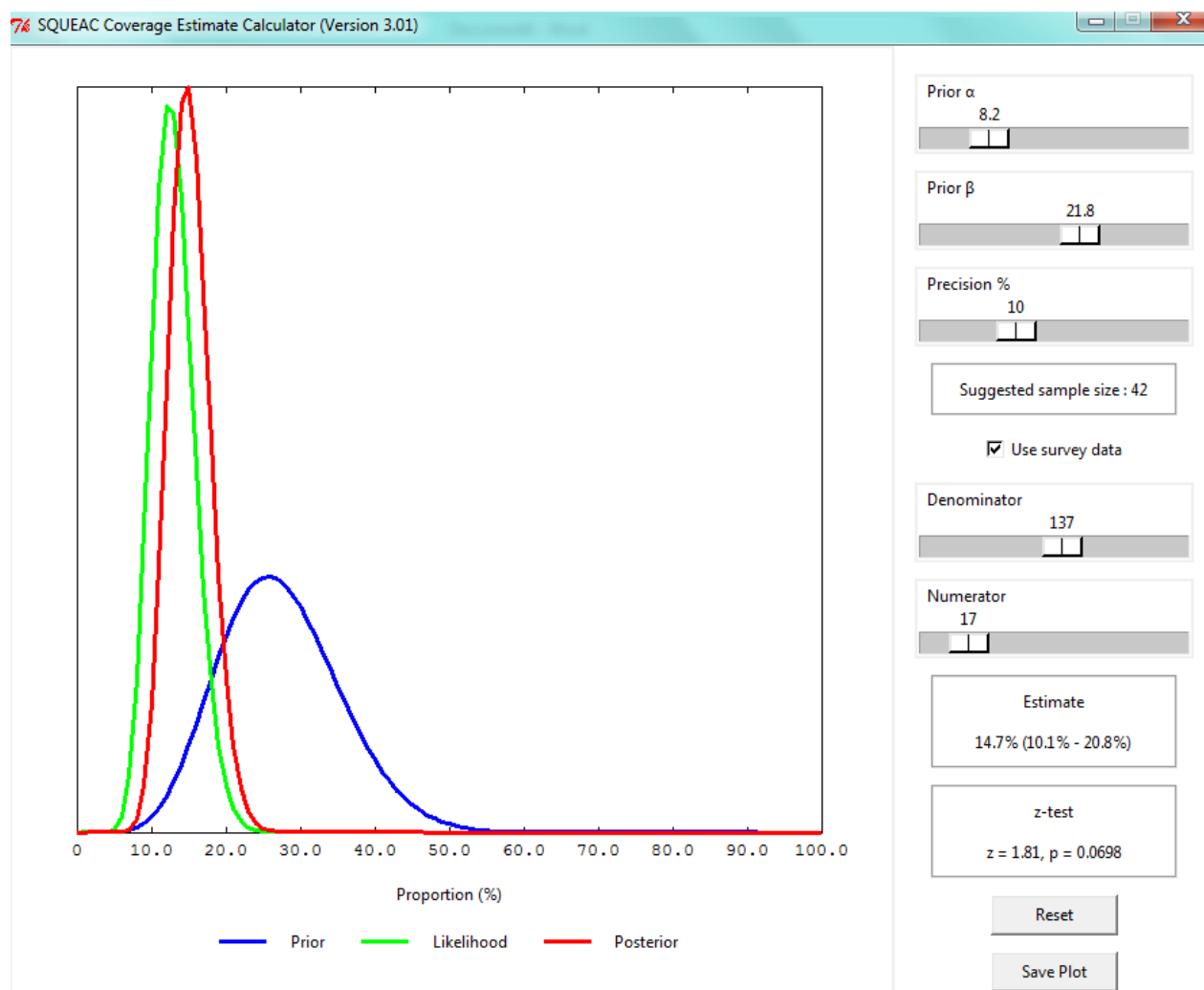


Figure 13: Bayes plot showing prior, likelihood and posterior

The point coverage of the program is therefore:

Point coverage= 14.7% [10.1% - 20.8%]³⁰

Point coverage was used to calculate the headline coverage estimated due to the following reasons:

- ✓ Most of the children (93%) classified as 'recovered' had exit MUACs less than 125 mm; 54% of the 'recovered' exited the program with MUAC less than 115 mm (refer to Section 5.1.1.4 and Figure 7).
- ✓ As case-finding by CVs was limited mostly to the areas surrounding the CMAM HFs, other parts of the LGA that do not have CVs have non-existent case finding. Even in the areas where there are CVs, case finding is largely ineffective as CVs depend mostly on clinical signs (instead of MUAC tapes) to refer SAM (usually deteriorated cases).

³⁰ Results are expressed with a credible interval of 95%.

- ✓ Intermittent stock-out of RUTF, and frequent closure of the CMAM HF's due to unavailability of RUTF which brought about high default rate.

Met need was not calculated due to unreliability of the routine program data on recovery rates.

7 Discussions

During the likelihood survey, many of the SAM children who are not in the program were discovered to have been in the program previously but were discharged wrongly, or stopped attending after closure of the CMAM services due to stock out of RUTF. The number of caregivers who cited lack of knowledge about malnutrition as the reason for their child not being covered by the program had decreased significantly from the result of the previous SQUEAC.

The increase in awareness about the program could be attributed to the pilot social communication of CMAM in Goronyo LGA. However, the increased awareness and access was not matched with quality service delivery at the HF's. RUTF stock-out, intermittent closure of CMAM HF's, and rejection of SAM children due to unavailability of RUTF, as well as non-adherence to the National CMAM guideline by HW's were noted to be impacting negatively on the program coverage.

8 Way Forward

The conducting team suggested the following as way forward to improve the Goronyo LGA CMAM program.

- ✓ Advocacy to the LGA Chairman by the SNO, NFP and PHC Director to raise a standing order for release of funds monthly to transport RUTF from State to the LGA and CMAM HF's, and for supportive supervision of the CMAM HF's.
- ✓ SNO and NFP to develop supportive supervision plan and use the avenue to ensure adherence to CMAM guideline.
- ✓ SNO and NFP with the support of UNICEF to conduct a refresher training for HW's in CMAM HF's.
- ✓ The SNO and NFP with support from LGA and UNICEF to recruit and train at least 15 CV's from distant and near communities accessing each CMAM HF.
- ✓ Provision and distribution of MUACs for active case-finding to the CV's by the NFP and SNO.
- ✓ Community dialogue and sensitization by HW's to discourage consumption and sale of RUTF by adults and healthy siblings in communities.

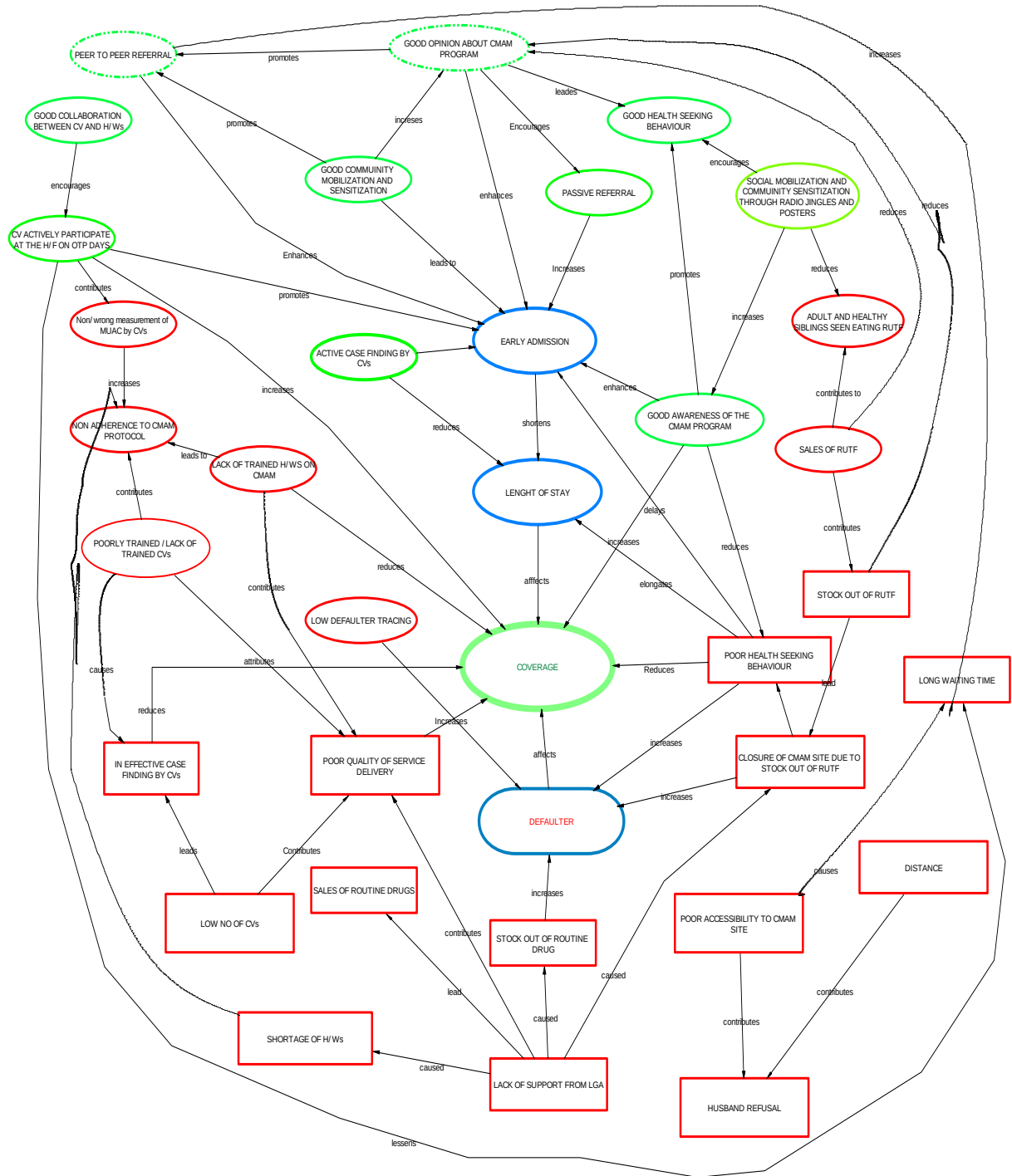
Annex 1: List of participants for Goronyo SQUEAC Assessment

S/N	Name	Position
1	Maduanusi Ifeanyi Chidozie	DPM ACF International
2	Chika Obinwa	Coverage Officer ACF
3	Zulai Abdulmalik	Coverage Officer ACF
4	Janet Adegbola	Coverage Officer ACF
5	Francis Ogum	Coverage Officer ACF
6	Domini Elue	Asst Director FMOH
7	Mogekwu Grace	FMOH
8	Anna Garba	Enumerator
9	Sadiya Abbas	Enumerator
10	Dada Ahmad Manga	Enumerator
11	Esther Anthony	Enumerator
12	Theresa Danjuma	Enumerator
13	Na'imatu Muhammad	Enumerator
14	Mustapha D. Yakubu	Enumerator
15	Aishatu Sulaiman Musa	Enumerator
16	Salamat Asabe	Enumerator
17	Ayodeji Ayobami	Enumerator
18	Hadiza Muhammad	Enumerator
19	Nahura Obida	Enumerator
20	Nura Muazu	SSPHCDA (rep SNO)
21	Ibrahim Ada G	DDPHC Goronyo LGA
22	Awaisu Ahmed	NFP Goronyo LGA

Annex 2: Concept Map by Team A



Annex 3: Concept Map by Team B



Annex 4: Active and Adaptive Case finding procedure

Visit the community gathering place first and seek permission to visit the village.

Request the village leader to provide a key informant of choice.

Ask the key informant the case finding question 'can you show us child who is under-five years and is '*Tamowa, rina* (swollen body), *rana* (wasting, skinny or drying-up), *ciwon kumburi* (swollen body), & *Ciwon yunwa* (Hausa word for hunger). *Bajul* (Fulani word for oedema), and *tuhundi*- Fulani words for different types of malnutrition. *Kadawu* (Kanuri word for wasting), *Kumberi* (oedema), *Kinna* (hunger),

Check the child is aged between 6 and 59 months

Explain the purpose of the survey to the parents and what you will do

Measure the MUAC of the child

Does the child have bilateral Oedema or is the MUAC < 115mm?

Current SAM case

Is the child in HF?

Ask to see sachet of RUTF and health card

Current SAM case **not** in the program

1. Fill out the tally sheet
2. Apply questionnaire
3. Refer the child to CMAM program site
4. Thank the caregiver
5. Ask case finding question

Recovering SAM case

1. Fill out the tally sheet
2. Thank the caregiver
3. Ask case finding question

Current SAM case **in** the program

1. Fill out the tally sheet
2. Thank the caregiver
3. Ask case finding question

Normal child, No history of SAM

1. Not included in the study.
2. Thank the caregiver
3. Ask case finding question

Use additional sources or other key informants to inform and improve the search

Always ask parents of the SAM children identified whether they know of other cases