



**Semi Quantitative Evaluation of Access and Coverage
(SQUEAC)**

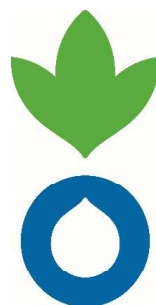
Western Area District, Sierra Leone

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ACKNOWLEDGEMENT

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Thanks also to ACF UK coverage team and Sophie Woodhead for their technical input.

LIST OF ACRONYMS

ACF	Action Contra La Faim
CHW	Community Health Worker
CV	Community Colunteer
DHMT	District Health Management Team
GAM	Global Acute Malnutrition
iCCM	intergrated Community Case Management
IMAM	Intergrated Management of Acute Malnutrition
IPF	Inpatient Facility
ITC	Inpatient Therapeutic Care
LoS	Length of Stay
LQAS	Lot Quality Assurance Sampling
MAM	Moderate Acute Malnutrition
MOHS	Ministry of Health and Sanitation
MUAC	Mid Upper Arm Circumference
OTP	Outpatient Therapeutic Programme
PHU	Primary Health Unit
RUTF	Ready to Use Therapeutic Feed
SAM	Severe Acute Malnutrition
SLNNA	Sierra Leone National Nutrition Survey
SQUEAC	Semi-Quantitative Evaluation of Access and Coverage
WASH	Water and Sanitation
WHZ	Weight for Height Z score

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EXECUTIVE SUMMARY

In February 2017, a coverage assessment of Outpatient Therapeutic Centres (OTC) to treat Severe Acute Malnutrition (SAM) was conducted in Western Area, Sierra Leone. The assessment used the SQUEAC (Semi-Quantitative Evaluation of Access and Coverage) methodology and covered services delivered by Action Against Hunger.

The assessment identified a coverage estimation of **51.2% (CI 95% 42.5-59.9%)**.

The quantitative and qualitative data collection and analysis revealed a series of boosters and barriers to access, providing detailed information on what is positively and negatively affecting coverage. **Positive** factors include the presence of a motivated and engaged network of **Community Health Workers (CHWs)** who have been provided with tools and materials to carry out their activities. **Community networks** also have a strong presence and influence, and lead mothers are effective at delivering key messages. An additional positive factor cited is the **active presence of the programme partners** who are able to provide ongoing support and training.

The **negative** factors were more numerous, including aspects related to **awareness** of both **malnutrition** and available **treatment** restricting good coverage. A contributing factor to lack of awareness is the **poor coverage of screening and sensitisation activities**, with many community members unaware of who their CHW is for example. Poor reputation and fears of being asked for fees by health staff have led to **negative opinions of health services**, hindering the uptake of services. There are also reports of **selling of RUTF** at markets and **sharing** by mothers amongst children. **Stock outs** of RUTF have also caused problems by leading to poor perception of services and poor retention in the programme. **Alternative treatments** are often sought from traditional healers or private health services, and there was preference for attending health centres outside of the catchment area of the nearest facility for better treatment – especially preferring the Ola During Children's Hospital. The **lack of clarity on catchment areas** also has resulted in difficulties tracing caregivers and conducting monitoring activities.

As well as stock outs, reasons for defaulting include **relocation of families** and the **prioritisation of livelihood activities** over healthcare visits. Perception of poor health, or **stigma**, is present, where mothers of malnourished children will hide their children who are in poor health.

Following the assessment, a number of recommendations were developed, summarised below, to address the barriers. The full list is in section 10.

- Improve community mobilisation through increased engagement with existing community structures and actors
- Improve communication and sensitisation strategy, and messaging
- Improve effectiveness of CHW network and provide support for SAM related activities
- Increase the network of people able to screen and refer children
- Increase support provided to caregivers to enable access to OTP sites
- Increase availability of OTP services in areas of high population density
- Improve experience of using PHUs and reduce requests for payment from staff
- Reduce leakage of RUF onto the market
- Reduce frequency and term of stock breaks across all facilities
- Improve the quality of monitoring systems and clarify and centralise data on catchment communities

1.0 INTRODUCTION

Action Against Hunger (ACF) has been working in Western Area (Urban and Rural) District since 2012, implementing Nutrition, Health, Food Security and Livelihood, and WASH interventions.

Since January 2012, ACF has been supporting 32 Primary Health Units (PHUs) in Western Area for the provision of Outpatient Therapeutic Programme (OTP) services and two additional hospitals for the treatment of SAM cases with complications, also known as Inpatient Therapeutic Care (ITC) or Inpatient Facilities (IPF) (Ola Doring and 34 Military Hospitals). At the community level, ACF is supporting a network of community volunteers, known as CVs (Community Health Workers and mother to mother support group) to ensure the detection and referral of malnourished cases.

Figure 1 Map of Western Area District of Sierra Leone (Source: Revenue Development Foundation, 2013)



For continued monitoring and improvement of the programme, a coverage assessment was conducted resulting in not only a coverage estimation, but also in depth analysis of programme performance and barriers to access. It was decided that a semi-quantitative evaluation of access and coverage (SQUEAC) should be the most appropriate methodology to use.

Therefore the objectives for the assessment were as follows:

1. To estimate coverage of OTP
2. Identify factors affecting the uptake of OTP services in Western Area District (Barriers and Boosters)
3. Develop in collaboration with ACF and MoHS specific recommendations to improve acceptance and coverage of the programme
4. Enhance competencies of ACF nutrition technical teams in SQUEAC methodology

2.0 METHODOLOGY

The SQUEAC methodology was chosen in order to determine the coverage rate in the district and to provide recommendations to improve coverage, with a rich body of evidence to underpin them. The SQUEAC took place in the following stages:

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

Stage 2: Development and testing of hypothesis to confirm (or deny) assumptions related to areas of high or low coverage, and to ascertain whether coverage is uniform throughout the county

Stage 3: Wide-area survey to determine county wide coverage estimate using Bayesian techniques

The core SQUEAC team consisted of five people from Action Against Hunger (ACF-Sierra Leone), and the Ministry of Health. The core team participated throughout the evaluation, including data collection, analysis and training. An additional team of 10 enumerators were recruited for support of Stage 2 and the wide-area survey. The teams consisted equal numbers of men and women.

Challenges and limitations

- A lack of clarity of administrative boundaries and areas, with no central records resulted in difficulties in analysis and limitations to the field methods.
- Broken geographic survey area. Due to the size of the Western Area District, and the time and resource limitations meaning the whole area could not be assessed, the assessment was limited to ACF supported sites and catchment areas that are not necessarily connected.
- A low prevalence of SAM in some areas made case finding challenging due to low numbers of SAM cases.
- There was a lack of availability of information relating to supply chain and stock breaks.

3.0 CONTEXT

3.1 OVERVIEW OF THE AREA

The Western Area District of Sierra Leone includes the national capital of Freetown, its surrounding towns and villages, and some peri-urban and urban districts to the east and the south. It is the major urban, economic, educational and political centre of the country.

The 32 Action Against Hunger supported PHUs are spread over the capital Freetown and some peri-urban areas of Western Area District. Much of the area is very densely populated.

There are two pronounced seasons: wet season from May to October, and the dry season from November to April. Rice, yams, sweet potatoes, cassava form the basis of the diet. However domestic agricultural production is insufficient to cater for the total population much of the food needs, therefore is imported from other costal countries and countries to the north.

23% of the households or 203,659 of the population living in the western areas are food insecure. While Slums in the same area represent 24,142 or 40.3% food insecure households¹.

3.2 NUTRITION SITUATION

The nutrition situation in Sierra Leone is past and presents many challenges for the entire population. In particular, the high rate of malnutrition in children, compounded by inappropriate infant and young child feeding practices have led to Sierra Leone having high rates of infant and under-five mortality.²

The Sierra Leone National Nutrition Survey (SLNNS, 2014) was implemented at the outset of the Ebola Epidemic in spring 2014³. It showed that 28.8% of children under five are stunted, while 4.7% are wasted and 12.9% are underweight.⁴

Table 1 Prevalence of acute malnutrition based on MUAC cut-offs in children 6 to 59 months of age by district (WHO 2006)

Province	District	N	Global Acute Malnutrition (MUAC <12.5cm and/or edema)	Moderate Acute Malnutrition (MUAC ≥11.5cm and <12.5cm, no edema)	Severe Acute Malnutrition (MUAC <11.5cm and/or edema)
Western	Urban	877	1.3% (0.6- 2.6)	1.0% (0.4- 2.3)	0.2% (0.0- 1.7)
	Slums	1318	2.4% (1.6- 3.7)	1.9% (1.2- 2.9)	0.5% (0.2- 1.2)
	Rural	979	2.3% (1.4- 3.9)	1.6% (1.0- 2.7)	0.7% (0.3- 1.6)
National Average		10989	3.8% (3.4- 4.4)	2.8% (2.4- 3.2)	1.1% (0.9- 1.3)

The numbers in brackets are 95% Confidence Intervals (CIs)

There is a significant difference between urban and rural districts, but also between slum and general urban population. The urban areas were found to have the lowest prevalence compared with rural or slum areas.

In comparison to the 2010 Nutrition Survey the SLNNS, 2014 survey demonstrated an improvement in severe wasting levels throughout all districts. No significant difference ($p=0.132$) in severe wasting was observed between Boys and girls. However the age disaggregated prevalence of wasting showed that the prevalence of wasting is high in young children at early stage in life.

3.3 NUTRITION SERVICES

There are 119 PHU (Primary Healthcare Units) in Western Area District of Sierra Leone, 64 of these are situated within the urban part of the district and the rest (55) in the rural area. ACF have been supporting MoHS in delivering OTP services to communities in Western Area District. The ACF programme of support

¹ District Profile, UNOCHA, 2016

² Sierra Leone Demographic and Health Survey, 2013, [link](#)

³ Sierra Leone National Nutrition Survey 2014, implemented from June 30 to August 12, 2014

⁴ Statistics Sierra Leone and Measure DHS, Macro International Inc. Sierra Leone Demographic and Health Survey 2008. Freetown, Sierra Leone

has a two pronged approach; technical support to 32 PHUs and community mobilisation through mother to mother support groups.

There are two inpatient facilities for SAM treatment in the Ola During Children's Hospital (Ola During) in the centre of the capital, and in the nearby 34 Military Hospital also in urban Freetown. Until recently Plan International were also supporting PHUs in the district, but ceased operations in December 2016.

The structure of the community based component was under review during the assessment by way of a full review by DHMT of CHW (Community Health Worker) positions. The future model implemented will mean that those CHWs selected by DHMT will be trained and remunerated for their work in the community. Currently, an average of 8 CHWs serve each of the catchment communities of a PHU. This will be reduced to 5 going forward. Due to the timing of this assessment, the previous structure was in place, and so the findings relate to this.

The role of the CHW with regards to SAM treatment is to screen in the community quarterly, using MUAC and refer cases with MUAC less than 11.5cm to the appropriate PHU. CHWs are also expected to deliver health messages. A SAM child can be admitted to an OTP at any time at the PHU and then will be asked to return on a specific day each week for ongoing treatment and monitoring.

According to the national IMAM Guidelines, a child with SAM should be admitted at <11.5cm and must visit every week until cured (having a MUAC of 12.5cm or above for 2 consecutive visits). Admissions can also be made through identifying a weight for height Z score of <-3 Z, the child must have a Z score of ≥ -1.5 for 2 days as an inpatient, or two weeks as an outpatient. Admission and discharge criteria are set out in the national IMAM protocol as follows:

Table 2 IMAM Admission and Discharge Criteria

	ADMISSION CRITERIA
6 TO 59 MONTHS	➤ W/H - W/L <-3 Z score (WHO₂₀₀₆ standards unisex table) or ➤ MUAC<115 mm or ➤ Presence of bilateral oedema (+ & ++ admission to OTP; +++ admission to IPF)
	DISCHARGE CRITERIA
6 TO 59 MONTHS STANDARD OTP	➤ W/H or W/L ≥ -1.5 Z score on more than one occasion if adequate arrangements for follow up have been made (Two days for inpatients, two weeks for outpatients). - Or ➤ MUAC>125mm for children - And ➤ No oedema for 14 days

4.0 STAGE 1: QUANTITATIVE ANALYSIS

Quantitative data analysis was performed for OTP sites supported by ACF using monthly reporting data in Excel databases and by analysing data collected directly from admission / treatment cards.

Monthly reporting data was analysed for the period from January 2016 up to the latest data available. At district level, data was available to end of January 2017 and included in analysis. However, data disaggregated at PHU level was available only until the end of December 2016.

Treatment card data was collected from eight out of the 32 PHUs for all cases discharged from August 2016 to the most recent, totalling 269 cases and representing approximately 64% of admissions recorded by monthly OTP admissions data from all 32 PHUs. The PHUs were selected so that all characteristics were included (urban and rural, established and recently supported, agricultural and market economic settings).

4.1 ADMISSIONS OVER TIME

The total number of admissions at these 32 sites was plotted and a 'smoothed' M3A3 calculated and plotted as shown.

Figure 2 Admissions Over Time

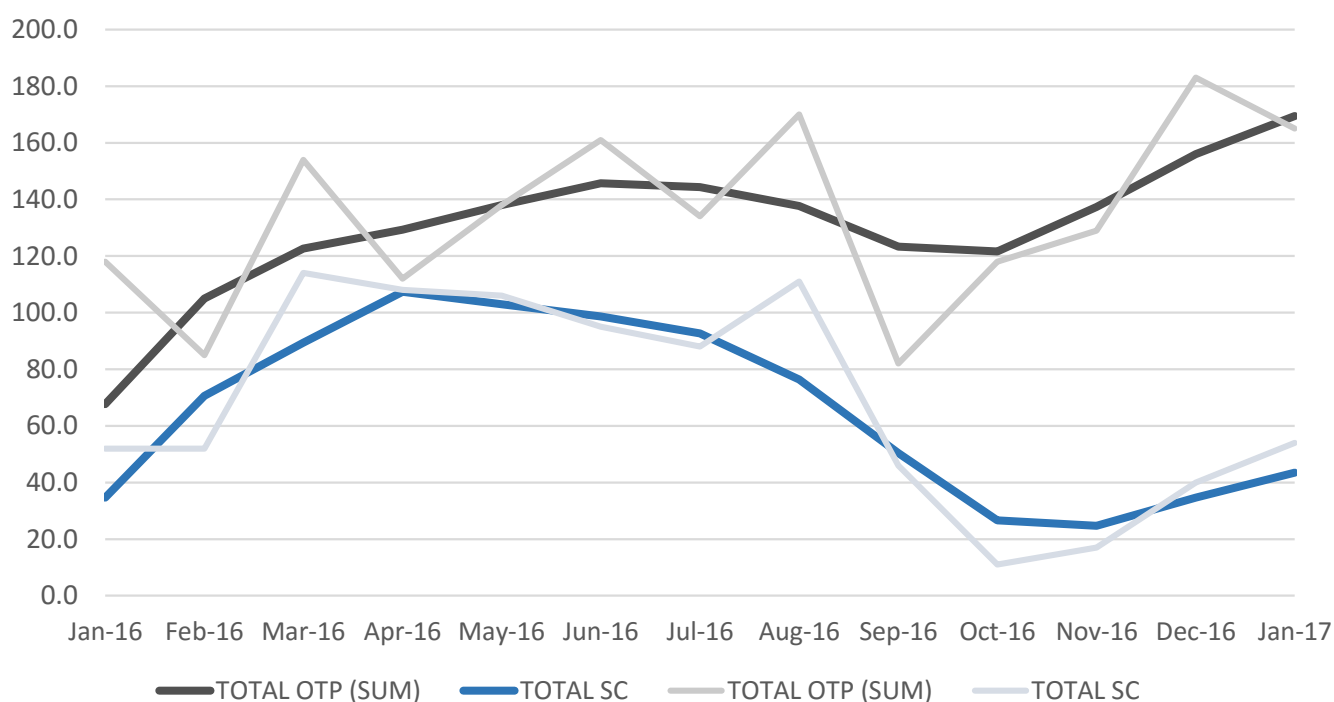


Figure 3 Seasonal calendar constructed during qualitative data collection

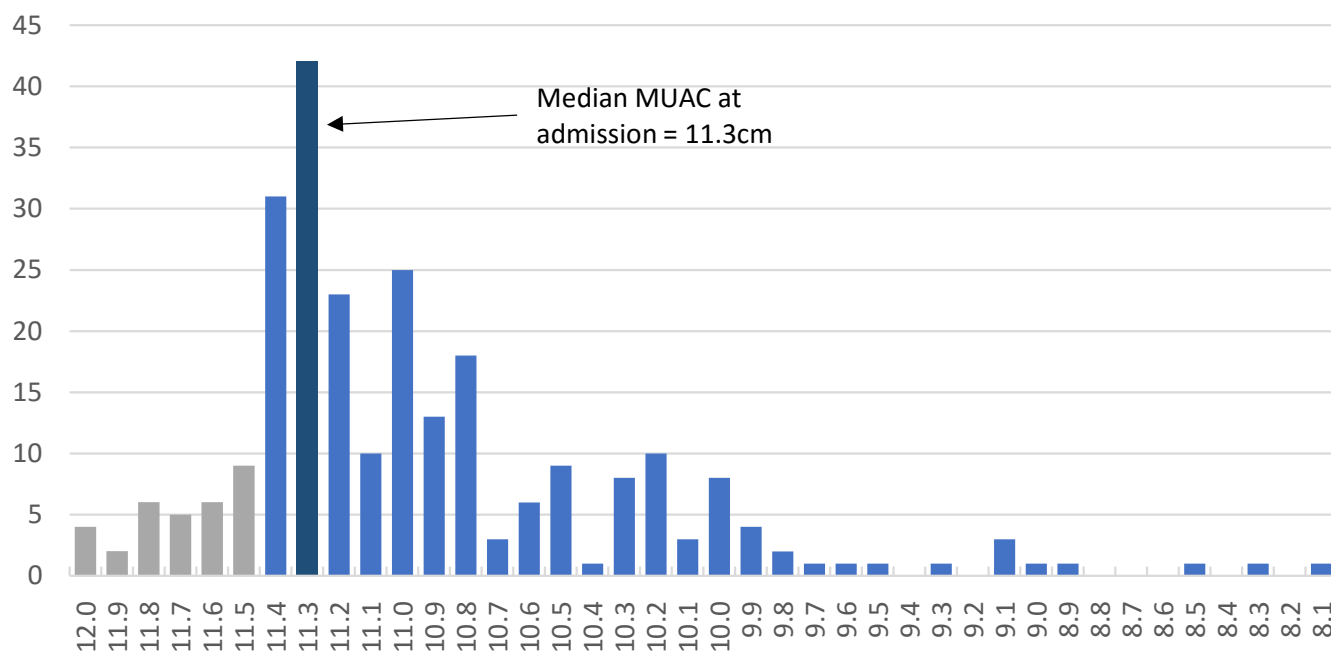
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
ARI													
Diarrhoea													
Malaria													
Hunger gap													
Seasonality	Dry				Rain						Dry		

We can observe an increasing numbers of admissions during the period January 2016 to April 2016, and for a more prolonged period in the OTP until July 2016. Another increase then occurs from September 2016 in the OTP, mirrored by a delayed increase in IPF admissions from November 2016. The peak in admissions

occurs between April and August, which correlates closely with the hunger gap and rainy season observed in the seasonal calendar.

There is also a notable divergence over time of admissions to IPF (Inpatient Facility) and OTP over the year long period. This could be explained by more SAM children being identified and referred before complications occur and therefore being treated as an outpatient rather than requiring a hospital stay. This could also be a result of increased community and screening activities undertaken over the year.

Figure 4 MUAC at admission (n=269)

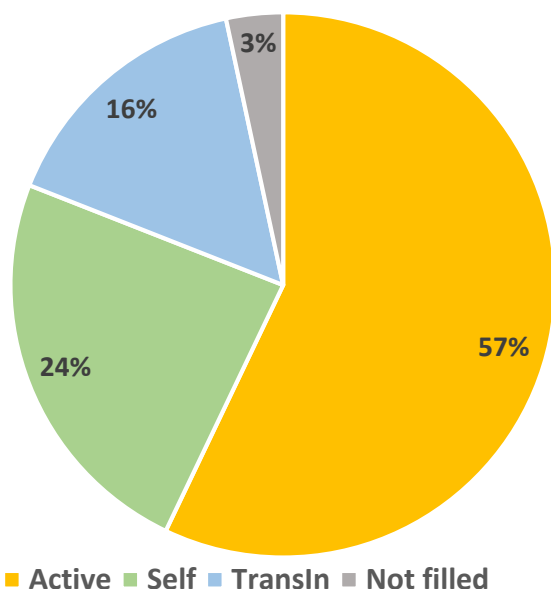


The MUAC at admission was collected from each of the treatment cards collected from eight PHUs across the district. MUAC measurements of the 32 cases (12%) admitted by weight for height Z-score (WHZ) are included in the data and are shown in grey. As WHZ is second to MUAC as admission criteria, all WHZ are 11.5cm or above. Of nine cases with MUAC below 9.5cm, six are from PHUs serving urban slum areas (Susan's Bay and Jenner Wright).

The median MUAC at admission is 11.3cm, which is close to the admission criteria indicating that a child reaches treatment soon after becoming SAM. This can indicate early treatment seeking or active case finding in the community. To explore this, we can consider sources of referral for enrolled SAM cases.

4.2 SOURCES OF REFERRAL

Figure 5 Sources of referral – from treatment cards (n=269)



More than half (57%) of admissions shown are a result of active case finding (screening and referral) by CHWs. This percentage is as high as 75-80% in three PHUs (Haja Neneh, Goderich and Lumley) and lower than 30% in Jenner Wright and Leicester.

Approximately one quarter (24%) of admissions are recorded as self-referrals which indicates that the caregivers of these cases have awareness of the child's condition and that the PHU can provide treatment. However, on discussion with the team and staff, cases recorded as 'self-referrals' are most likely to be a result of passive screening at the PHU, where caregivers bring children to the centre for other conditions and then are screened for malnutrition by health staff.

There are also a significant number of transfers into the OTP from other services. The majority of these cases were transfers from the inpatient facility. This indicates a good continuity of care from inpatient and complicated cases into community-based care at the OTP.

4.3 HOME VISITS AND FOLLOW UP

There are two locations on each treatment card relating to home visits. At each visit health staff are required to state (Yes/No) does the case require a home visit. These were comprehensively completed in the treatment cards and in most cases the request for a home visit was noted on the front of the card with a date and reason. However, the adjoining section for the outcome of home visits was filled in only a few cases suggesting that the coordination with CHWs is not working well or not documented.

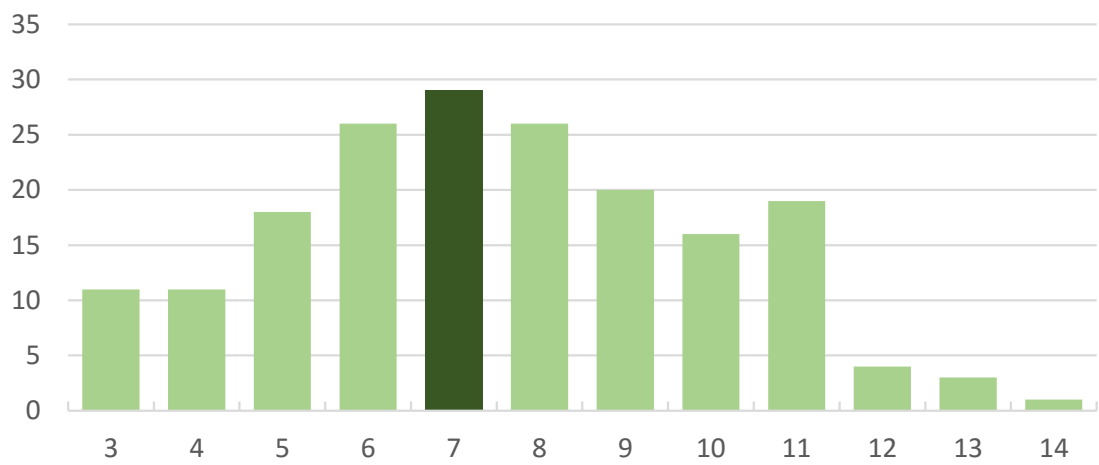
The proportion of defaulters that are unconfirmed (i.e. that have not been visited to ascertain a reason) is also less than half of all defaulters (6% are confirmed and 9% are unconfirmed of a total of 16% cases).

4.4 RUTF STOCK OUTS

There are several periods of stock out noted within the treatment cards. From the cases reviewed, nearly one quarter (24%) of cases had been affected by a stock out of RUTF at some point during the course of their treatment. Further, several notes stated that BP100 had been given as treatment. As this is standard practice as instructed by MoH, this was not investigated as a deviation from protocol.

4.5 LENGTH OF STAY FOR CURED CASES

Figure 6 Length of stay for cured cases(week)

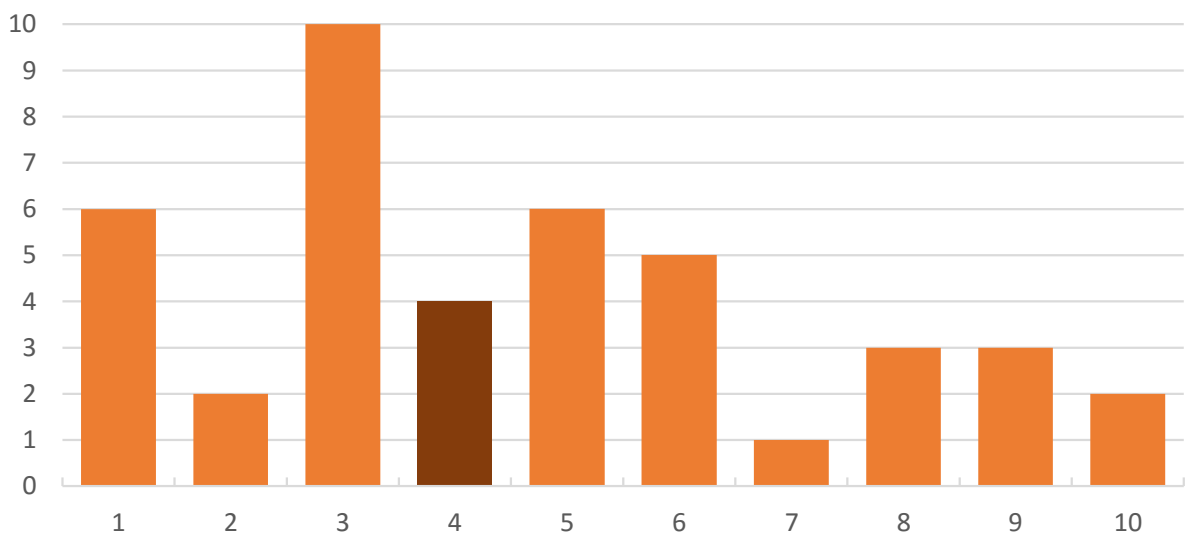


For each cured case (n=188), the length of stay was calculated with a median across all cases of 7 weeks, which complies with both national and international standards. There is a significant proportion (14%) of cases that are undergoing treatment for more than 10 weeks that would indicate poor adherence to protocol, and in this case is likely to be a result of stock outs over the course of treatment.

4.6 TIME TO DEFAULT

For each treatment card of a defaulted case, the number of weekly visits was noted and the median calculated at 4 weeks with the most common exit by default at 3 weeks. As the mean MUAC on admission is 11.3cm, it is likely that the patients will have made a considerable recovery by this point, and so will look less visibly sick.

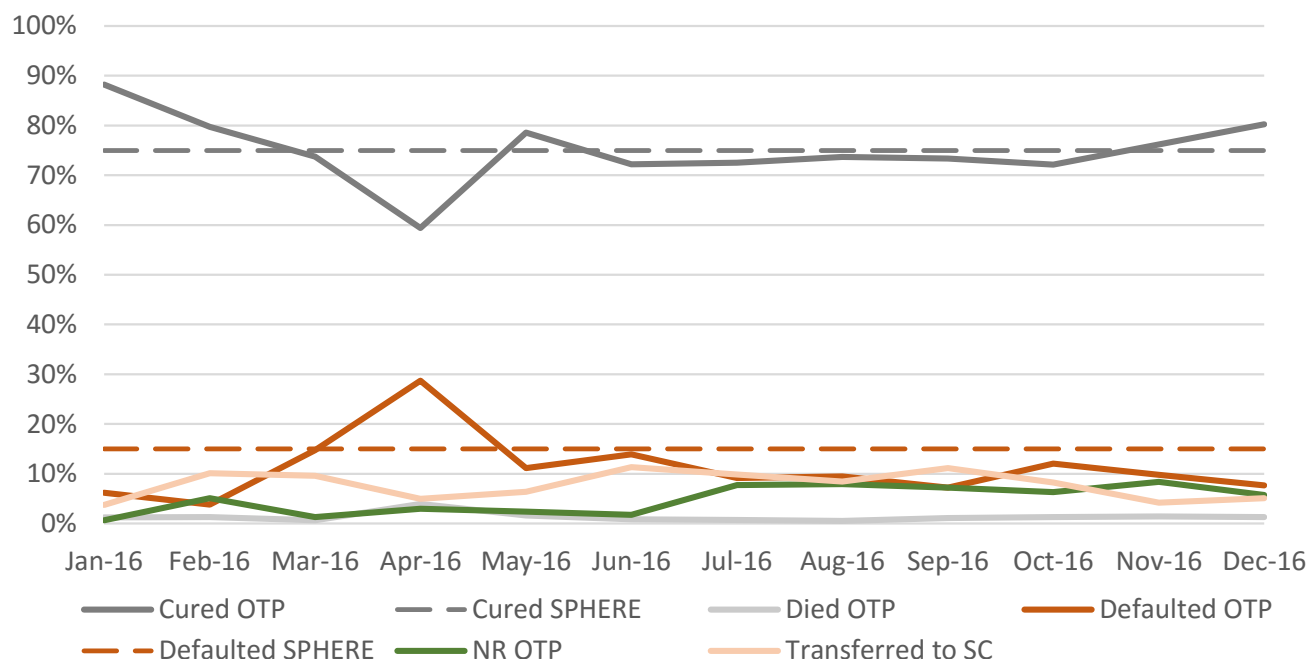
Figure 7 Time to default (weeks)



4.7 CLINICAL OUTCOMES OVER TIME

Programme monitoring data was also used to analyse clinical outcomes of the SAM treatment programme over a period of one year.

Figure 8 Clinical Outcomes Over Time



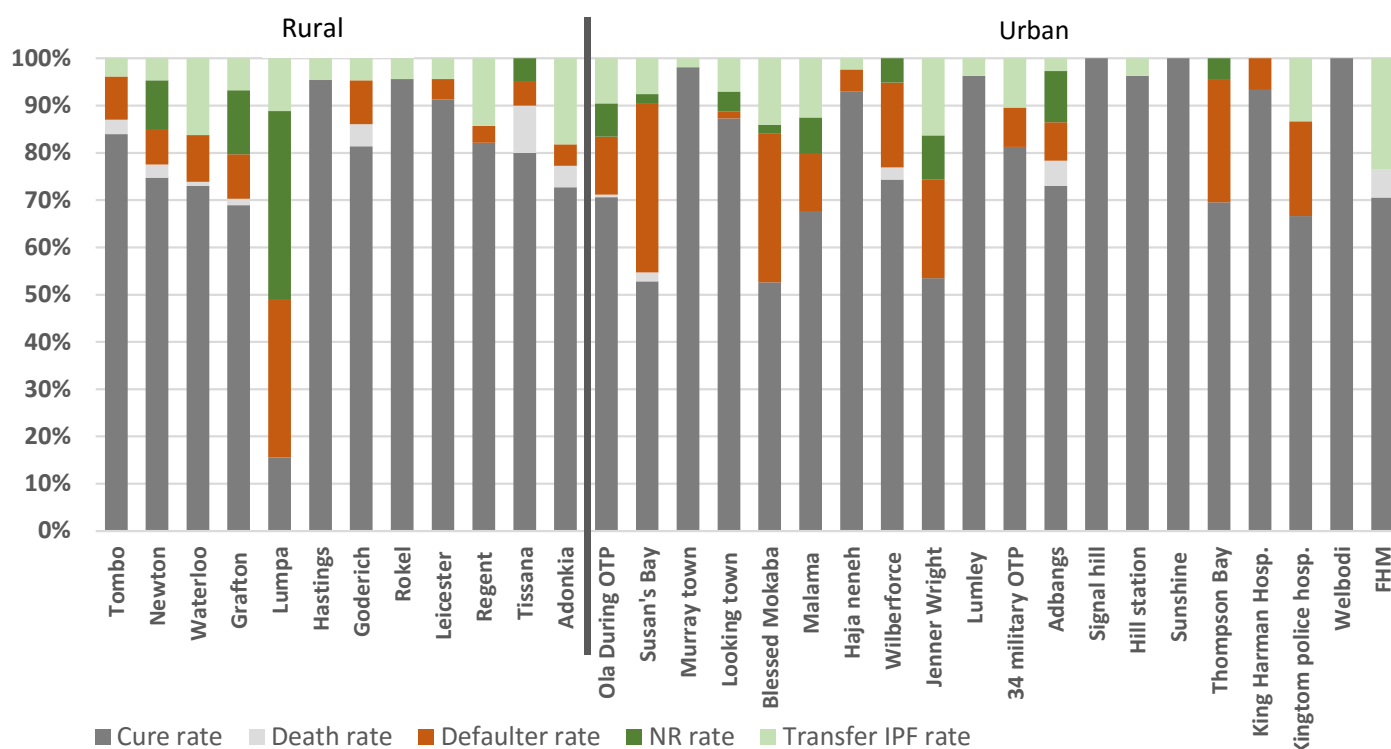
The cure rate decreases during the first part of the year, and sharply in April, also reflected in the defaulter rate. Reporting on this at the time states that there was an increased number of defaulters due to lack of stock at several PHUs at that time, as well as some seasonal migration and relocation. This was supported by reasons for defaulting noted on the treatment cards, which included stock outs and relocation.

For the rest of the year, the cure rate is observed at just below the minimum SPHERE standard of 75%. However defaulter rates fall and remain below SPHERE standard of 15%. After June, the data shows that as often as defaulting, cases admitted but not cured are non-respondents, or are referred to inpatient care.

4.8 CLINICAL OUTCOMES BY PHU

Monthly data was also available disaggregated by PHU. With many PHU enrolled a low number of cases each month, the data was not analysed over time, but aggregated instead over the year giving overall performance indicators by PHU for the year January to December 2016. The presentation below separates rural PHU (on the left) and urban PHU (on the right) and then ordered by total number of admissions at PHU over the same time period (highest number of admissions on the left and decreasing).

Figure 9 Clinical changes by PHU



The data shows generally better (higher % cured) outcome indicators in rural areas, with the notable exception of Lumpa PHU at which very low cure rates and high rates of both defaulters and non-respondents are due to repeated and sustained periods without supply of RUTF. Grafton also exhibits cure rate of below 70% over the year.

The performance indicators reported by urban PHU are more varied with many reporting cure rates of above 90%. However, there are some notable exceptions to this at Susan's Bay, Blessed Mokaba and Jenner Wright, where cure rates are below 60% and defaulter rates as high as 20-35%. The team identified that the areas served by these PHU shared characteristics.

Some PHU catchment areas were categorised as exhibiting the following specific characteristics:

- **Urban slum area** – areas with high density populations, informal administrative boundaries, poor access to public services, high presence and influence of traditional healers, high dependency on trading livelihoods:
 - Ola During, Murray Town, Blessed Mokaba, Jenner Wright, Thompson's Bay
- **Fishing market slum areas** – similar to the above, but with specific dependency on fishing and smoking related livelihoods:
 - Goderich, Tombo, Adonkia, Susan's Bay
- **Camp area** – not officially camps but described as such due to origins of settlements during historical migration:
 - Lumpa, Grafton
- **Agricultural / 'remote' areas** – areas with residences surrounded by cultivated land and with longer distances between settlements than in other parts of the district:
 - Hastings, Tissana, Leicester, Newton, Regent
- **Well-established areas** – areas where nutrition services have been instituted at PHUs long-term and are well known in the community:
 - Waterloo, Lumley, 34 Military, Wilberforce, Signal Hill, Hill Station, Looking Town, FHM

4.9 RECORD KEEPING

The quality of recording on the treatment cards was generally found to be comprehensively completed and of good quality. According to the sample checked, health staff are recording all information collected and are adhering well to IMAM protocol in terms of admission and discharge criteria wherever possible. Health staff also make sure to reflect relevant information on the treatment cards, and time to default data (see X.X) indicates that key messages regarding treatment of SAM are being shared effectively with caregivers.

The admission and discharged cases also match the numbers reported in the monthly data over the same period.

5.0 QUALITATIVE DATA COLLECTION AND ANALYSIS

5.1 STAGE 1 – QUALITATIVE DATA COLLECTION AND ANALYSIS

In order to complement the information taken from the quantitative data sources, the team set out to collect qualitative data.

Sampling: To start with programme stakeholders were identified. These included programme participants (carers of SAM children), community members (village and religious leaders, traditional healers, men and women) and programme staff (management staff, PHU staff, CHWs, lead mothers).

Both PHU sites and residential locations were chosen for the qualitative research. Residential locations were chosen based on the following factors; to ensure good spatial coverage throughout the district, locations in rural and urban areas, and from at least one location from each category defined above.

Methodology: A day was spent training the team in qualitative research techniques including focus group discussions and key informant interviews. Six different interview guides were used and the team were collectively trained to use them all. The teams conducted qualitative data collection under close supervision to provide on-the-job training and feedback, with reducing necessity over the three days.

The team worked in pairs for groups of three allowing one person to focus on managing the discussion while assisted in note taking. At some PHUs observational studies were also conducted and findings recorded. At the end of the three days, data was collected at 15 locations across 6 OTP catchment areas in: Ola During, Tombo, Leicester, Jenner Wright, Waterloo and Lumpa.

Factors identified in the community relating to the SAM treatment services are organised according to whether they are considered to be negatively or positively influencing coverage or programme activities, as follows:

Table 3 Factors Negatively Influencing Coverage

Theme	Factors negatively influencing coverage
Negative opinion of health services (PHU)	Fear and bad reputation of health facilities was commonly raised theme for discussion amongst all stakeholders. Complaints from community members and users of health

	facilities included fear of health staff and requests for an ‘appreciation fee’, or unofficial payment to staff for services. Although these were not specifically directed towards the SAM OTP services, it was identified as having an impact on general use of PHU’s for health seeking, including by some health staff. It was also raised that visiting a PHU without an Under 5 card would result in the case not being seen and the mother being reproached.
RUTF supply and demand	RUTF was found to be well-known in all communities, and often stated as being available for sale at the market, although it was suggested that this had improved in recent years since the OTP has requested returned packets. The team also observed RUTF being sold freely. It was also raised that RUTF is often shared by mothers amongst their children. In some locations, the lack of availability was highlighted, with the result of poor perception of the OTP service and poor retention in the programme once admitted.
Poor coverage of screening and sensitisation activities	In many areas, community members were unaware of who their CHW was or that the OTP service is available. In some cases, community members, and leaders heard about the OTP services from lead mothers, but generally did not feel informed or engaged in its operation. Some CHWs also expressed a lack of support and coordination, making their work more challenging. It was noted that this had improved since November, when monthly meetings and increased engagement with programme staff was implemented.
Alternative health seeking behaviour	Most alternative health seeking behaviour was from traditional healers. Often, this would be the first point of contact for health issues where some caregivers hold traditional beliefs about the causes of symptoms relating to SAM. Some community members also expressed preference for using private health services or Ola During Children’s Hospital due to better quality and reliability of facilities and supplies.
Livelihoods	Caregivers were often present as grandmothers or other family members during data collection and it was commonly raised by community leaders, CHWs and health workers that mothers are frequently absent or hard to find due to commitments to trading and preparing goods for sale. In particular, in urban slum areas, livelihoods activities were highlighted to take priority over visits for healthcare or focused childcare.
Perception of poor health	Many participants said that malnourished children were not perceived badly and recognised the need to support the family of that child. However, many also said that they would not continue to interact with that child, and lead mothers in particular said that mothers will hide children in poor health as it is seen as shameful on them.
Community practices	In some areas, extreme poverty and poor access to basic utilities and public services was very evident – particularly in urban slum areas. There was little evidence that communities in these areas were aware of good hygiene, nutrition or childcare / IYCF practices.
Defaulting	As well as stock outs, noted above, reasons for defaulting offered were relocation whereby families / households may move seasonally to rural provinces to assist with agricultural activities. Community members, including caregivers of SAM children, had experienced any follow up visits by health staff or CHWs.
Unclear catchment areas	A clear challenge to the programme, and in particular the related outreach activities, was that boundaries of catchment areas were not always clearly understood. This makes it difficult to trace caregivers, but also limits monitoring activities.

Table 4 Factors Positively Influencing Coverage

Theme	Factors positively influencing coverage
Good hospital facilities	Although in most cases, the reputation of general health services presented a negative factor, there were reports of good staff and services in Tombo and Ola During.

	In particular, in locations within the catchment area of Ola During, health staff, caregivers and CHWs promoted several positive aspects of services including the benefit of being able to get several treatments at once / in one place, high quality facilities, and flexibility and helpfulness of staff. In other areas, participants knew of and spoke about their preference for using Ola During for health services.
CHW activities	Mainly CHWs and health staff commented on the activities of the CHW network. Many said that they were motivated by wanting to help their community and feel better supported. In some locations, CHWs were actively engaged with the OTP (e.g. Tombo) and most reported that they were provided with the tools and materials to carry out activities. When asked, many participants specified that CHWs are best positioned to undertake screening, referral and sensitisation activities for the programme and that mobilisation should include enlisting the support of community / village and religious leaders so that they can promote acceptance of these activities.
Community networks	It was reported from various sources and locations that community leaders have a strong influence within the community and should be engaged and informed of IMAM activities so that messages can be shared more effectively. Lead mothers were frequently cited examples of effective deliverers of key messages but were also considered as over-burdened with other health activities.
Programme coordination	Positive feedback on the benefits of supporting partners to IMAM approach including ongoing support and training and improved coordination between OTP sites.

N.B. During qualitative data collection, it was recognised that the level of SAM children present was very variable depending on location. In some areas, the team discovered many SAM cases, such as in the urban slum areas and camps. In other areas, SAM cases and caregivers could not be found.

6.0 STAGE 2

Stage 2 is intended to determine whether the team's ideas about coverage of the OTP are correct before progressing to developing a prior estimate of coverage.

Considering the findings from Stage 1, the team proposed that coverage was impacted by various factors that are found to be commonplace in the urban market and fishing slums in urban Freetown. The characteristics as described in the categorisations above (p.16). Therefore, it was decided that the following hypothesis should be tested:

Hypothesis: In urban slums, as characterised by dense populations, low CHW presence and priority of market / livelihood activities, coverage will be below minimum SPHERE standards (70% for urban areas) and in other urban areas, coverage will meet minimum SPHERE standards.

Rationale: The setting of slum was chosen as an important factor as PHUs serving these areas are receiving high numbers of admissions but experiencing high levels of defaulting, low CHW activity and poor awareness of the programme availability and how it works, according to data analysis undertaken in Stage 1.

Sampling: Sampling was done in two stages. First, the sampling of catchment communities, and second the sampling of SAM children in each catchment community. Catchment areas were chosen based on their reflection of the characteristics described above in order that the hypothesis can be tested by Lot Quality Assurance Sampling, or LQAS (see analysis of results below).

Due to difficulties predicting the level of SAM cases that would be found, and the lack of clarity relating to administrative boundaries in some areas, the team were over-inclusive of households near the border areas

of a catchment community, than under-inclusive. This was considered when sampling of catchment communities was done during Stage 3, so that no overlap was made.

Methodology: A team of 10 people sampled the catchment communities identified over the course of two days. Due to the urban context, door-to-door case-finding was used in each catchment community to ensure that all SAM children were identified. All team members were experienced in MUAC and oedema screening.

Results: A total of 26 SAM cases were found across the sampled catchment communities in slum areas, and in other (formal) urban areas. The results are presented in table 5 below:

Table 5 Stage 2 Results

PHU catchment		Enrolled	Not enrolled	Total cases found
Susan's Bay	Slum	7	7	14
Blessed Mokaba	Slum	0	1	1
Total	Slum	7	8	15
Wilberforce	Urban	0	0	0
Waterloo	Urban	8	3	11
Total	Urban	8	3	11

Analysis: For the analysis of the results, LQAS was used and a conclusion made on the hypothesis based on the LQAS decision rule, using the formula:

$$d = \left\lceil n \times \frac{p}{100} \right\rceil$$

d = decision rule

n = number of cases found

p = coverage standard / threshold value identified

Table 6 Stage 2 Analysis

Slum Area		Conclusion	Other urban area		Conclusion
n =	15		n =	11	
d =	10		d =	7	
Covered cases	7		Covered cases	8	
Meets d?	No		Meets d?	Yes	
		7 < 10 therefore hypothesis supported			8 > 7 therefore hypothesis supported

Therefore the hypothesis that slum areas have low coverage is supported since catchment communities in urban slum areas had low coverage and other (formal) urban areas had acceptable coverage. We can then conclude that the characteristics of slum areas (intensive trading livelihoods and poor outreach activities) have an important impact of coverage as proposed and we can proceed with the building of a prior estimate and wide area survey knowing that our key findings are supported.

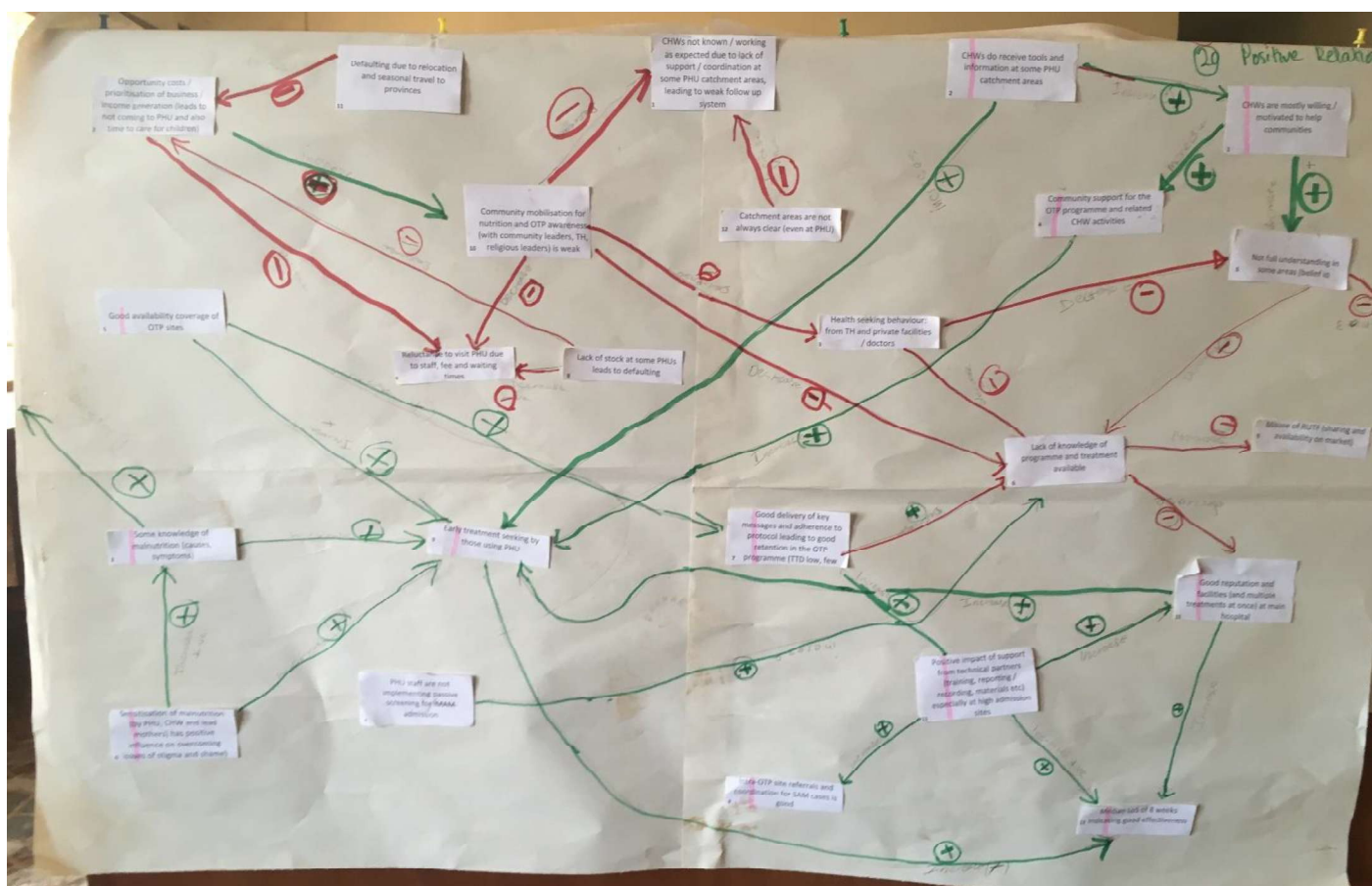
7.0 BUILDING OF THE PRIOR

A prior belief of coverage was developed using all the information collected during Stages 1 and 2. This was done using three methods, unweighted boosters and barriers, weighted boosters and barriers and scoring of a concept map.

7.1 SCORING OF CONCEPT MAP

During ongoing investigation and organisation of data in Stages 1 and 2, relationships between key findings were also considered and represented using concept mapping. Several concept maps were drafted by the team as the data analysis progressed and the last concept map (see figure 10) was used to highlight how many positive and negative relationships were influencing OTP coverage.

Figure 10 Concept Map of Coverage



A prior was calculated using the number of positive (20) and negative (16) relationships, as per the formula below. Because the team was confident about the concept map drafted, the number of relationships was doubled, to reduce the range and increase certainty.

$$\text{prior mode} = \frac{\text{sum of positive relationships} + (100 - \text{sum of negative relationships})}{2}$$

$$\text{prior mode} = \frac{40 + (100 - 32)}{2}$$

$$= 54\%$$

7.2 SIMPLE SCORING OF BOOSTERS AND BARRIERS

A prior was also calculated through simple scoring of boosters and barriers. The boosters and barriers were listed and a score of three given to each one. The sum of the scores of the boosters and barriers was then taken to calculate a prior mode. This method only accounts for the quantity of boosters and barriers to influence the prior, not the relative importance of each. Table 7 lists the boosters giving a total of 36 and the barriers also giving a total score of 36 (as there are the same number of boosters and barriers). A formula similar to the one above was used:

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

$$\text{prior mode} = \frac{36 + (100 - 36)}{2}$$

$$= 50\%$$

no.	Boosters	Sources	Methods	Simple	Weighted	no.	Barriers	Sources	Methods	Simple	Weighted
5	Good coverage of OTP sites evidenced by non reported distance barrier		5	3	4	1	Lack of coordination and support between some PHUs and their CHWs, and within CHW network, leading to weak follow up system and low motivation	M, L, C, V, W	1, 2, 4	3	5
10	Good reputation and facilities (and multiple treatments at once) at IPF, so serves as a common source of referral for many SAM cases	H, C, V	1, 3, 6	3	4	2	Catchment areas are not always clear (even at PHU)	H	1, 5, 6	3	3
8	Intra-OTP site referrals and coordination for SAM cases is good	H	1, 4, 5	3	5	3	Community mobilisation for nutrition and OTP awareness (with community leaders, TH, religious leaders) is weak	V, R, L, H	1, 2, 6	3	4
11	Positive impact of support from technical partners (training, reporting / recording, materials etc) especially at high admission sites	H	1, 4	3	4	4	Low level of understanding about malnutrition (signs and symptoms) in some areas (some references to witchcraft)	C, V, W	1	3	2
7	Good delivery of key messages and adherence to protocol leading to good retention in the OTP programme (long TTD, few absences)	H	1, 4, 6	3	4	6	Low level of awareness of IMAM programme and knowledge of how treatment works	H, C, W	1, 2, 3	3	4
12	Median LoS (cured) of 8 weeks indicating good messaging about importance of regular monitoring		4	3	3	3	Health seeking behaviour: some preference for traditional healers or private facilities / doctors	C, L, H	1, 2	3	3
6	Sensitisation of malnutrition (by PHU, CHW and lead mothers) has positive influence on overcoming issues of stigma and shame)	M, L, V, C	1, 2	3	4	9	Misuse of RUTF (sharing and availability on market)	H, W, C, L	1, 2, 6	3	3
3	Some knowledge of malnutrition (causes, symptoms)	C, L	1, 2	3	4	8	Lack of stock at some PHUs leads to defaulting and non-response	H, W, L	1, 2, 4	3	4
9	Early treatment seeking by those using PHU		4	3	4	4	Reluctance to visit PHU generally due to experiences of poor welcoming, appreciation fee and long waiting	V, H, M, L, C	1, 2	3	3
1	CHWs are mostly willing / motivated to help communities (and improved since activities in Nov e.g. monthly meetings)	V, H	1, 6	3	3	7	PHU staff are not comprehensively implementing passive screening		3, 4	3	3
2	Active CHWs do receive tools and information at some PHU catchment areas	V, H	1	3	3	2	Caregivers lack of time for childcare and health seeking at PHU due to livelihood and domestic activities	C, L, V, H, W	1, 2, 6	3	5

4	General community support for the OTP programme and related CHW activities by those who know	L, M, H	1, 2	3	2	11	Defaulting due to relocation and travel to provinces	H, C	1, 3, 4, 5	3	4
			Totals	36	44				Totals	36	43

Table 7 Weighted and Unweighted Boosters and Barriers

Methods		Sources	
1	SSI	C	Caregiver
2	FDG	L	Leaders
3	Stage Two	H	Health staff
4	Treatment card data	M	Lead mothers
5	Routine Programme data	V	CHW
6	Observation	R	Religious leaders
		W	Women

Table 8 Source and Method Coding

7.3 WEIGHTED SCORING OF BOOSTERS AND BARRIERS

The final method to calculate the prior took the same list of boosters and barriers but with a weighted score between 1 and 5 for each depending on their relative importance. Having analysed all the evidence from Stages 1 and 2, the team worked together to allocate a score that represented the relative effect that factor has on coverage. The team considered: the prevalence of the issue, whether the issue is localised or is found across the survey area, the level of effect on access and coverage, and the strength of the evidence. The team reflected on all evidence to allocate a suitable score and using the total scores, the formula above was applied again.

$$\begin{aligned} \text{prior mode} &= \frac{44 + (100 - 43)}{2} \\ &= 50.5\% \end{aligned}$$

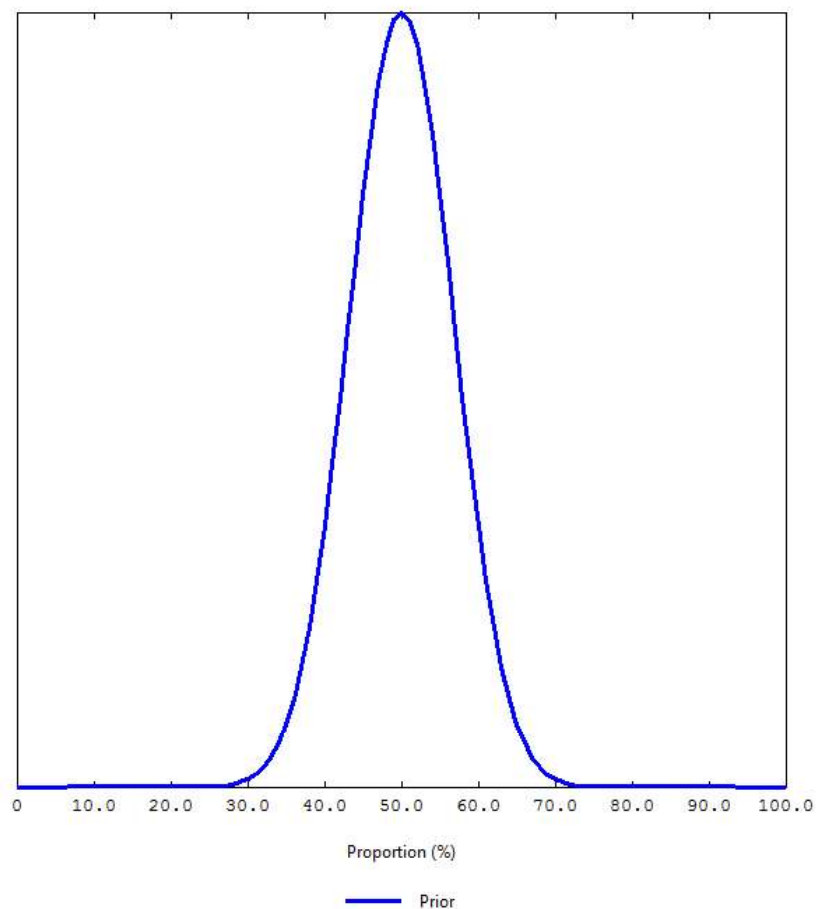
The prior mode was then calculated by taking the mean average of the three modes.

$$\begin{aligned} \text{final prior mode} &= \frac{54 + 50 + 50.5}{3} \\ &= 51.5\% \end{aligned}$$

The team decided to use a credibility interval of 20% since it was thought that ideas about coverage within the areas included in the survey (i.e. only those that are supported by Action Against Hunger) are likely to be more certain.

With a mode of 51.5% and a credibility interval of 20%, $\alpha = 27.6$ and $\beta = 27.6$ shape parameters were calculated. Using the BayesSQUEAC calculator our estimation of coverage based on prior information, is represented by the following curve:

Figure 11 Prior Curve



8.0 STAGE 3

The principal objective of Stage 3 is to provide an estimate for coverage across the assessment areas. In this case, this is not the entire district, but only those areas within catchment areas of 32 PHUs. This requires the development of a *likelihood* by way of a wide area survey and then, using a Bayesian conjugate analysis, combining of the prior and the likelihood to produce the *posterior* estimate.

A wide area survey was conducted in the survey as defined by the collective catchment areas of 32 PHU. A total of 52 catchment communities were visited.

8.1 SAMPLE SIZE CALCULATION

For the prior described above and with a precision of 11%, the BayesSQUEAC calculator specified a minimum sample size of $n=54$ SAM children.

The following calculation was used to determine how many villages the team were required to visit in order to achieve a sample size of 54:

$$n \text{ communities} = \left\lceil \frac{n}{\text{average community population} \times \left(\frac{\% \text{ population 6 to 59 months}}{100} \right) \times \left(\frac{\text{prevalence of SAM}}{100} \right)} \right\rceil$$

Where,

$n = 54$

% population 6 to 59 months = 16%⁵

Prevalence of SAM = 0.7%⁶

Average community population = 882⁷

$$n \text{ communities} = \frac{54}{882 \times 0.16 \times 0.007}$$

$$= 56 \text{ catchment communities}$$

Although this was considered a very high number of communities in practical terms, the team agreed that, from the experience of the survey so far, many catchment communities would need to be visited in order to reach a sample size of 54 cases and that this could be completed in the time available with careful planning. Also, adjusting the precision from 11% in this case would not have an effect on the sample size required.

8.2 SAMPLING FRAMEWORK

A two stage sampling method was used, the first stage ensuring the selection of a spatially representative sample within the limitation of being bound by only the catchment areas of the 32 PHUs and not the entire geographical area. The second stage employed door-to-door case finding to find all SAM children in each catchment community selected.

First stage: The 56 catchment communities were selected using the spatially stratified sampling method (or list method) since only a large scale map was available which did not provide identifiable areas that related to catchment communities of PHUs. There was also no centralised list of communities, or the lowest level of administrative unit in the district. Therefore, the list used was created by collecting local lists of catchment communities from each of the PHUs. This was noted as an important limitation to the assessment.

The full list used for sampling is included in Annex A.

Second stage: In each catchment community a sampling process identical to that used in the small area survey was employed. Door-to-door sampling was used to ensure that all children meeting the case definition were found.

A questionnaire for both covered and non-covered cases was carried out with each case found in order to ascertain the reasons for both cases. The questionnaires can be found in Annex B and C respectively.

⁵ From data shared by ACF Sierra Leone

⁶ From NNS for Western Area District

⁷ Based on total district population data from government census estimations and number of catchment communities across all 32 PHU catchment areas (collected manually from PHUs)

The wide area survey was conducted by 5 teams of 3. Each team was able to cover between one and four catchment communities each day depending on the density of the population and the distance from the training location. Four catchment communities were not found despite checking with PHU staff and local community members indicating possible errors in the list.

Results of the wide area survey

The wide area survey found a total of 66 cases as per the table below. The number of cases found per catchment community can be found in [Annex D](#).

8.3 COVERAGE ESTIMATION

The most reliable and widely used estimator of coverage currently available is the single coverage estimator⁸. The following formula is used to where C_{in} = covered SAM cases, C_{out} = non-covered SAM cases, R_{in} = recovering cases in the programme and R_{out} = recovering cases not in the programme:

$$Single\ coverage = \frac{C_{in} + C_{out}}{C_{in} + C_{out} + R_{in} + R_{out}}$$

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

$$R_{out} \approx \frac{1}{3} \times (R_{in} \frac{x(C_{in} + C_{out} + 1)}{C_{in} + 1} - R_{in})$$

Table 9 presents the cases found during the wide area survey and the calculation of R_{out} .

Table 9 Stage 3 Results

Type of case	Number found
SAM cases not in the programme (C_{out})	29
SAM cases in the programme (C_{in})	23
Recovering cases in the programme (R_{in})	14
Recovering cases not in the programme (R_{out})	5
Total cases	71

The minimum required sample size was reached and therefore we are able to estimate coverage using the single coverage estimator and the BayesSQUEAC calculator that combines the information giving the result:

$$51.2\% [CI\ 95\%: 42.5\% - 59.9\%]$$

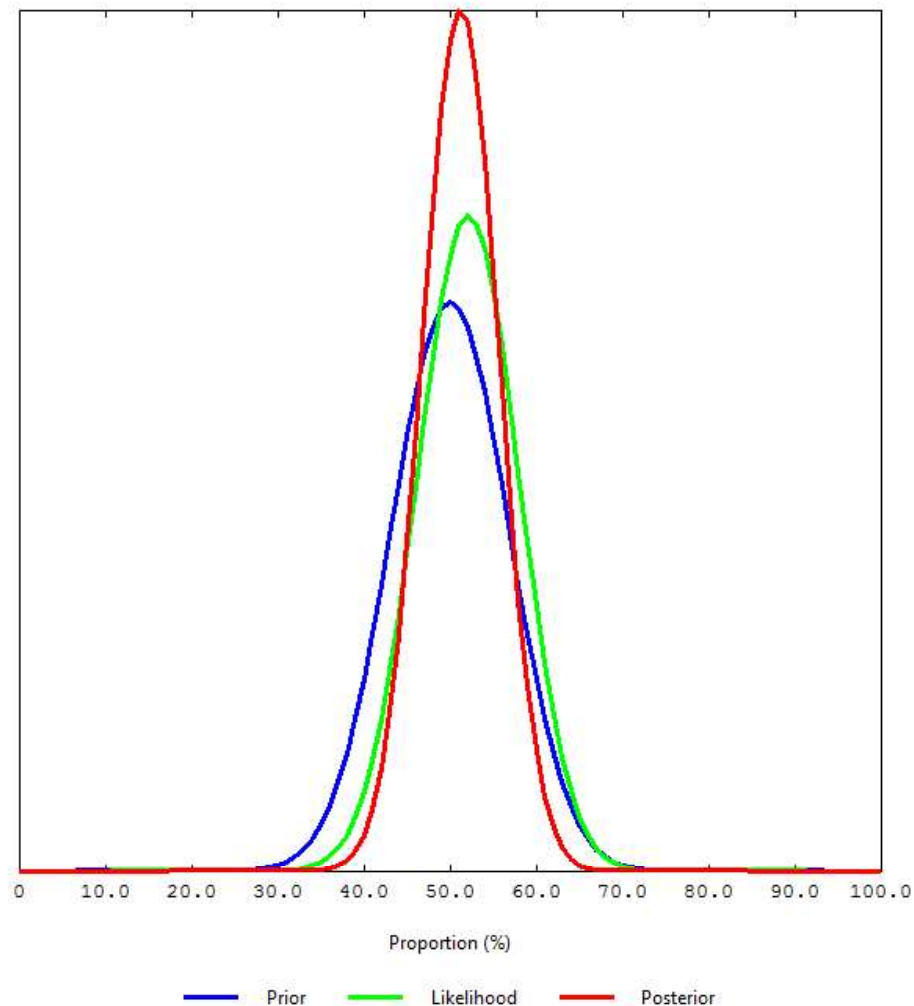
This coverage estimation is well below the SPHERE standard for urban settings of 70%.

The BayesSQUEAC calculator presents the following posterior curve (in red), based on the prior (in blue) and the likelihood (in green) through conjugate analysis. This shows good overlap between the prior and likelihood curves (p-value = 0.82) confirming that there is no

⁸ A single coverage estimator for use in SQUEAC, SLEAC, and other CMAM coverage assessments, 2015 [Link](#)

conflict between them and that the posterior estimate is accurate. That the posterior curve is narrower than the prior curve also indicates an increased level of confidence in the posterior estimate.

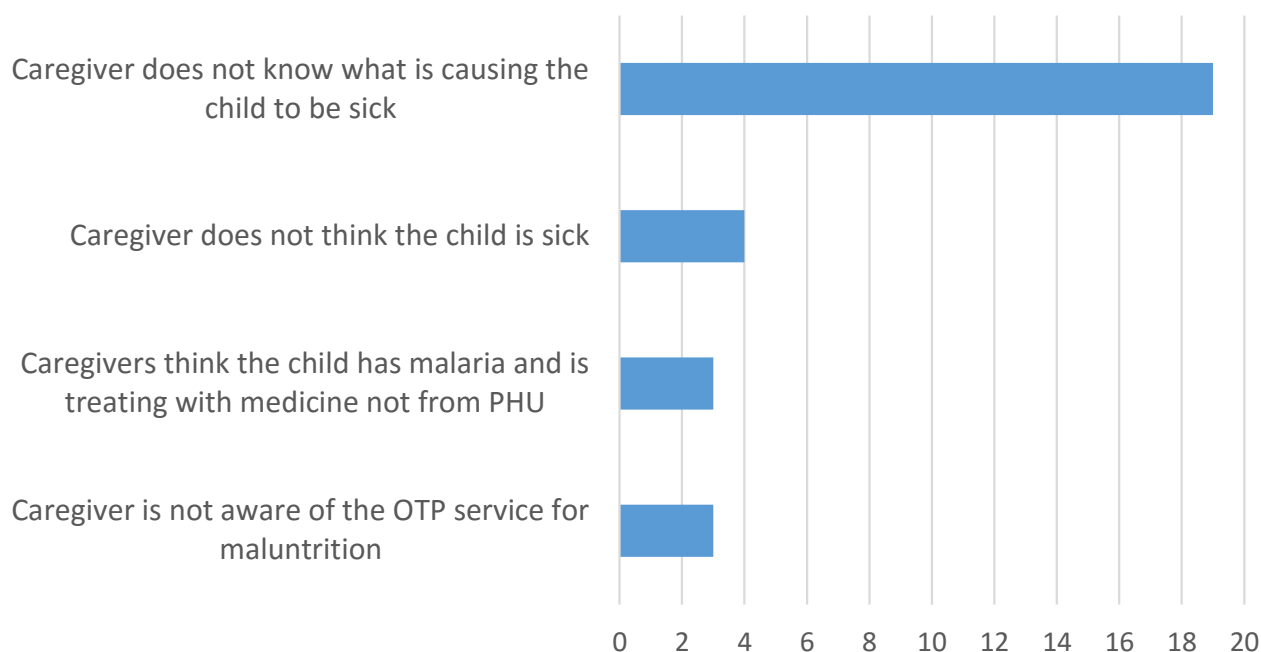
Figure 12 Posterior Curve



8.4 REASONS FOR NON-ATTENDANCE

In the wide area survey, the caregiver of each case found that was not enrolled in the programme was administered a questionnaire in order to determine the reason why they were not being treated. Figure 13 presents the main reasons.

Figure 13 Reasons for Non-Attendance for Stage 3 Non-Covered Cases (n=29)



9.0 CONCLUSIONS

The SQUEAC assessment estimates that coverage of the 32 PHUs with OTP supported by Action Against Hunger is 51.2% [CI 95%:42.5%-59.9%]. The sample size for the wide area survey was exceeded and the conjugate analysis indicates that this is a reliable estimate. This means that coverage of the programme is well below the SPHERE standard for urban settings of 70% and therefore indicates the need to invest in reform to improve coverage.

We can also estimate met need by combining the coverage and cure rates, such that *Met need = Coverage x Cure rate*. Using an average cure rate of approximately 75% (from quantitative data), this results in met need of $0.75 \times 0.512 = 0.384$, or 38.4%.

Although prevalence measurement is not an objective performed by a coverage assessment, it was clear from the implementation of this assessment that prevalence of SAM across the district is highly variable and localised, and this should also be considered in any programme reform as PHUs in high burden and low burden areas currently receive similar levels of support.

The assessment was able to not only identify the main barriers to access but also to investigate these in more depth allowing for the development of recommendations and actions to address the barriers and build on boosters. Throughout the assessment, aspects relating to awareness and sensitisation of both malnutrition and treatment available comprised a substantial portion of the key findings, and reasons for non-attendance of cases found during Stage 3 of the assessment exclusively relates to these factors. This indicates the need for an improved communication and sensitisation strategy that: responds to misunderstanding about malnutrition (causes and consequences) and to promote increased prioritisation of treatment. Many community stakeholders are willing to be engaged and help deliver key messages, but have not had the opportunity. This would require an upscaling of community mobilisation activities at community level with prioritisation on highly populated areas with high

dependency on economic activities, both to deliver key messages and information, but also to understand better opportunities for referral and follow up.

At the time of the assessment, the CHW network was undergoing a process of review. On the whole, CHWs were not generally well-known or regarded in communities and, despite being motivated to help others, CHWs themselves felt unsupported. These findings should be considered in the context of the current transformation of the administrative structures. Although CHWs retained under the new system can expect better incentive, not all previously active CHWs were selected and some of these individuals, as well as some other programme stakeholders were dissatisfied by the process. This may have impacted the way that CHWs reported on their activities, and also how they are perceived by others. Findings remain relevant for integrating into the new model, including: ongoing monitoring of CHW activities and workload will be essential to understand if CHWs can meet the needs for whole community they are allocated, that key community figures should be engaged and encouraged to support the work of CHWs in the community and, that increased coordination and improved communication practices should be developed between the CHW network and the OTP. This may require increase in capacity at the PHU to manage and coordinate community level activities.

It was generally found that technical support to OTP sites had a positive impact, exhibited by PHU staff being well-trained in IMAM programming, resulting in good recordkeeping, adherence to protocol and delivery of key messages. Many caregivers, however, are discouraged from visiting the PHU for healthcare generally due to poor welcoming, frequent request for personal fees by staff and long waiting times for services. This has a direct impact on the reputation of public health services and on health seeking behaviour, where many caregivers will continue to consult with a traditional healers, or use private facilities as a preference. Further, neither of these alternative points of contact are currently screening and referring for SAM to be treated at the OTP.

The poor reputation of the OTP in some areas, and the high levels of defaulting and non-respondents of those who do enrol, is compounded by the frequent and sometimes sustained period of lack of RUFT for treatment. Together with availability of RUTF on the market, this typically creates misunderstandings about the treatment as 'food' rather than a medicine, undermines sensitisation activities and causes disappointment and frustration to those using the service. Further investigation must be undertaken as to the cause or causes of repeated stock breaks by the relevant parties. The scale and ongoing nature of this issue, over several years, indicates that there are weaknesses in the supply chain management that should be identified and addressed urgently. This will improve the quality of service and effectiveness of the programme significantly.

Key stakeholders should work together, particularly on the development of a community mobilisation strategy in order to improve coverage of SAM treatment services in Western Area District. The following section makes a series of recommendations and accompanying activities.

11.0 RECOMMENDATIONS

Recommendation	Priority	Actions
Improve community mobilisation through increased engagement with existing community structures and actors	- High	- Increase human resource for community mobilisation activities - Identify key influencers in the community and involve them in community activities - Involve traditional healers and other community members (e.g. community leaders, counsellors, religious leaders) in IMAM programme and health generally - Introduction of question and answer sessions with the community key persons
Improve effectiveness of CHW network and provide support for SAM related activities	- High	- Map CHW coverage (by catchment community) and maintain up to date records of activity thereby reviewing 'availability coverage' of CHWs - Introduce CHW groups / peer-to-peer learning on detection and referral - Strengthen monitoring and feedback systems for CHW activity - Ensure strengthened coordination and support between OTP sites and CHW network - Intensify effective community reporting system, whereby reports on screening and referral and defaulter tracing can be available at any time.
Increase availability of OTP services to areas of high population density	- High	- Consider extension of OTP services to all PHUs - Training / employment of more staff involved in OTP where there are high admissions - Extension of services (like inpatient) at other PHUs (similar to Ola During) e.g. at Waterloo - iCCM model should be considered
Improve experience of using PHUs and reduce requests for payment from staff	- High	- Introduce mechanisms to discourage requests for appreciation fees such as a complaints / feedback system (might be too advanced/complicated, but have heard of SMS systems for anonymous feedback on these issues) - Train PHU staff on good attitude and behavior practices - Increase and ensure supportive supervision - Ensure timely requisition and distribution of stock (RUTF but also other routine medicines)
Reduce frequency and term of stock breaks across all facilities	- High	- Review supply chain management process to identify weaknesses and areas for improvement including transportation / logistics management - Add review requirement and progress reports to nutrition coordination meetings at national and district level to agree action point for implementation - Triangulate stock requirement requests with historical and forecast data and in collaboration with relevant partners

		- Engage the nutrition partners in planning the distribution plans, based on field experiences and actual beneficiary numbers
Improve communication and sensitisation strategy and messaging	- Medium	- Provide sensitisation materials to those doing health talks - Utilise influential community members to share messages - Extend outreach activities to include community and religious leaders and traditional healers for sensitisation on malnutrition / nutrition
Increase the network of people able to screen and refer children	- Medium	- Train and equip mothers with MUAC tapes to monitor theirs and others children. This can be done at the PHU level - Train staff at private clinics and provide MUAC tapes for screening - Train and equip traditional healers with MUAC tapes. CHWs to help identify. - Train and equip religious and community leaders with MUAC tapes - Improve systematic passive screening (at PHU)
Increase support provided to caregivers to enable access to OTP sites	- Medium	- Train CHWs in how to support caregivers who have difficulty getting to the PHU - Investigate opportunities for collaboration amongst mothers - Engage with fathers and husbands to ensure they provide support to mothers in accessing OTP sites and ensure childcare is a priority - Possibility of iCCM so CHWs can treat cases in the community?
Reduce leakage of RUTF onto the market	- Medium	- Investigate reasons for leakage at all stages of supply chain - Continue to sensitise mothers clearly at each visit to ensure good understanding - Reinforce the monitoring of the accountability matrix
Improve quality of monitoring systems and clarify and centralise data on catchment communities	- Medium	- Define formal catchment communities and disseminate / share with partners - Improve utilisation of reported data (treatment cards and routine programme data analysis) - Implement checking procedure on sample of OTP cards on a regular basis

ANNEX A: NAMES OF COMMUNITIES AND THEIR CATCHMENT AREAS

Yellow villages indicate villages / communities selected for sampling

NO	COMMUNITY	CATCHMENT AREA	SEQ
1	REGENT	MOSIMBO	1
		BATHURST	2
		GROUND COCO	3
		SUGAR LOAF	4
		BATH HOLE	5
		SS CAMP	6
		MOTOMEH	7
		IMATT	8
		GBANGBAYILLA	1
		AKON	2
		BACK OF US EMBASSY	3
2	LEICESTER	TREE PLANTING	4
		BOTANY	5
		DOWN THE HOLE	6
		LOWER CASSAVA FARM	7
		UPPER CASSAVA FARM	8
		WO DE LA PAY	1
		THORONKA DRIVE	2
		ISAAC LAWNER STREET	3
		CITY VIEW	4
		KARGBO DRIVE	5
		KAMARA LANE	6
		SMALL ROAD	7
		SMITH DRIVE	8
		PLUM STICK	1
		BROKE STONE	2
		AFGHANISTAN	3
		COPORALS QUARTER	4
		SERGEANT QUARTER	5
		BAND ROOM	6
3	34 MILITARY	QUARTERS	7
		LOOKINGTOWN	8
		AUROEL	1
		LOWER TENGBEH TOWN	2
		UPPER TENGBEH TOWN	3
		YAZBECK	4
		J/C QUARTERS	5
		34 QUARTERS	6
		TANK	7
		SPUR LOOP-LEFT	8
		PRE-FAB	1
		OFFICERS QUARTERS	2
		TOTAL	3
		BACK OF PRESIDENTIAL LODGE	4
		TENGBEH TOWN	5
		RED PUMP	6
4	KINGHARMAN ROAD	HILL CUT	7
		BROOKFIELDS	8
		MORGAN LANE	1
		BASS STREET	2
		KINGHARMAN ROAD	3
		MAMAH STREET	4
		ABACHA STREET	5
		MEHEUX	6
		LUMLEY ST	7
5	SUSANSBAY	TRIPOLY	8
		JETTY	1
		LAST BANKING	2
		NICOLE CREEK	3
		TASSO WHARF	4
		PEPPEL COMPOUND	5
		CUSTOMS	6
		ZIMBABWE DRAINAGE	7
		FISHER STREET	8
		LIMBA CORNER	1
		ECOWAS ST	2
		SIKA STEVENS STREET	3
		SURPIT	4
		FALCOM BRIDGE	5
		GARRISON STREET	6
		COLGBOJA	7
		CUSTOM WHARF	8
6	HASTINGS	FULATOWN	1
		EGBA TOWN	2
		OKU TOWN	3
		HASTINGS	4
		CENTRAL HASTINGS	5
		BP ROAD	6
		ITC	7
		AMPUTEE	8
		DAFOR	1

NO	COMMUNITY	CATCHMENT AREA	SEQ
7	HAJA NENNEH	TEMNE TOWN	2
		FISHERIES	3
		SAN SAN GROUND	4
		DOCK YARD	5
		RAILWAY LINE	6
		MINA WEAR	7
		BOAT YARD	8
		KISSY DOCKYARD	1
		IAMTECH	2
		BINKOLO	3
		BAIBUREH ROAD	4
		TAYLOR STREET	5
		OLD RAILWAY LINE	6
		GING GARAGE	7
8	BLESSED MOKABA	RAYMOND STREET	8
		BANGURA STREET	1
		TEJAN STREET	2
		MANSARAY DRIVE	3
		OSMAN LANE	4
		CEMETARY AREA	5
		POYO BAR	6
		LONG BENCH	7
		ALPHA TERRACE	8
		SAYINOH	1
9	ADBANGS	MATOKOR AREA	2
		MAIN BAIBUREH ROAD	3
		JALLOH DRIVE	4
		OROGU BRIDGE	5
		MAYELLA COMMUNITY	6
		SWAMP	7
		WHARF AREA	8
		KIOSK	1
		FULLAH TOWN	2
		CARITAS	3
10	ROKEL	BARRACKS	4
		AMPUTEE ROAD	5
		FREETOWN/WATERLOO HIGHWAY	6
		OLD ROAD,ROKEL	7
		OLD RAILWAY LINE	8
		WHITE TANK/COMPANERO	1
		CHECKPOINT	2
		FIRE FORCE	3
		COKE SIGN BOARD	4
		CONTAINER	5
11	LUMPA	SEMA TOWN	6
		ROKEL SCHOOL	7
		CEMETARY ROAD	8
		JAPO FARM	1
		BET FARM	2
		MAIN MOTOR ROAD	3
		COLE STREET	4
		COLE TOWN	5
		OLD RAILWAY LINE	6
		PA LOKO ROAD	7
12	JENNER WRIGHT	BANGA FARM	8
		KANKALAY AREA	1
		KABBA STREET	2
		KAMARA STREET	3
		FULLAH STREET	4
		BOLIMA	5
		CEMETARY	6
		MAIN RACE COURSE ROAD	7
		CULVERT TABUNDU	8
		GOVERNMENT QUARTERS	1
		KANIKAY	2
		BOMMEH	3
		COLUMBIA DAVIES	4
		JENNER WRIGHT ROAD	5
		COFFEE STORE	6
		RACE COURSE CEMETARY	7
		WELDING SHOP	8
		CRUTEX COMPANY	1
		KISSY BROOK	2
		CULVERT ,DOCK YARD	3
		CULVERT RACE COURSE	4
		RACE COURSE COMMUNITY	
		UP GUN	6

NO	COMMUNITY	CATCHMENT AREA	SEQ
13	TOMBO	MAMUDU TOWN	7
		GBANKOH AREA	8
		KRIOTOWN (UPPER AND LOWER)	1
		GBOLOR COMMUNITY	2
		RUSSEL	3
		MADINA	4
		UPPER KASSIE COMMUNITY	5
		WHARF AREA	6
		DARM ROAD	7
		GRASS FIELD,NEW YORK	8
		UPPER YANKA	1
		LIMBA CORNER	2
		JAPAN GARAGE	3
		HEAD MAN COURT BARRAY	4
		OLD MARKET AREA	5
		RUBBI COMPOUND	6
		DAVIES COMPOUND QUARRY	7
		WELLINGTON STREET	8
		HYCE LANE LOWER AND UPPER	1
		CENTRAL MOSQUE AREA	2
		PEPER WHARF AREA	3
		ST.PETERS SCHOOL AREA	4
		RADIO STATION AREA	5
		MAMY LANGLEY AREA	6
		VICTOR JAMES	7
		LASPALMAS	8
		KULAFAI SCHOOL AREA	1
		CASSABLANCA	2
		LOWER YANKA	3
		BRIMA JAMES COMPOUND	4
		FISHING COMPOUND	5
		NAVY COMPOUND	6
		JOHN LANE	7
		FINDLEY STREET	8
		JETTY NEW TOWN	1
		ATAYA 18	2
		EARNEST TOWN	3
		WHARF ROAD	4
		PASTOR DARAMY AREA	5
		KOMEH KOROMA AREA	6
		G.PA ALHAJI KARGBO AREA	7
		BOAT YARD AREA	8
		LORRY PARK MARKET AREA	1
14	TISSANA	TISSANA TOWN	2
		SUSU TOWN	3
		MELLAH TOWN	4
		SATIYA TOWN	5
		BANKOH TOWN	6
		MACONBAY VILLAGE	7
		MOSSEH VILLAGE	8
		BANGA GROUND	1
		BOCKARIE TOWN	2
		SILLAH TOWN	3
		RUSSEL	4
		TORTIKELLEH	5
		DURING TOWN	6
		BAOMA/LEVUMA	7
		SESAY TOWN	8
15	NEWTON	MABAKAY	1
		MAPARIA	2
		MAKARAVIOR	3
		MAGBAMAMATY	4
		SIX MILE	5
		CURVE AREA	6
		KPORBU VILLAGE	7
		KATTU TOWN	8
		SUMAILA TOWN	1
		MARKET AREA	2
		OLD MOTOR ROAD	3
		FOO FOO WATER	4
		SHERBRO TOWN	5
		NEW SETTLEMENT	6
		PEPPEL CORNER	7
		AMPUTEES CAMP	8
		KONO TOWN	1
		FELLOW FARM	2
		THREE MILE	3
16	OLA DURING	KOSSOH TOWN	4
		MOA WHARF	5
		PART OF FOURAHBAY	6
		SAVAGE SQUARE	7

NO	COMMUNITY	CATCHMENT AREA	SEQ
17	WELBODI	KENNEDY STREET	8
		FLY STREET	1
		OXLEY STREET	2
		CANTON STREET	3
		DAVIES STREET	4
		FOSTER STREET	5
		ORANGE STREET	6
		ARGYLE STREET	7
		DAN STREET	8
		ANSLEY STREET	1
		ABBORT STREET	2
		ADOLPHUS STREET	3
		JOHN BRIGHT LANE	4
		BRASS STREET	5
		MANFRED LANE	6
		ABBORT LANE	7
		SAVAGE SQUARE	8
		FOURAHBAY ROAD	1
		KISSY ROAD	2
		YOUNG STREET	3
		BUNDU STREET	4
18	GRAFTON	SCOUTCAMP	5
		GIBOTOWN	6
		CRS	7
		TEN HOUSE	8
		SORIE BUBU	1
		J.MATA	2
		POLICE BARRACKS	3
		OLD CAMP	4
		WAR WOUNDED	5
		NEW CAMP	6
		UPPER LOOKING TOWN	7
		CHESCIM	8
19	HILL STATION	IMATT ROAD	1
		HILL CUT ROAD	2
		WASH CAR	3
		HILL CUT BRIDGE	4
		HILL CUT ROUND ABOUT	5
		GERMAN EMBASSY	6
		OAU VILLAGE	7
		SEA VIEW	8
		NATCOM	1
		CHILD FUND	2
		CHOITRAM HOSPITAL AREA	3
		GBANGBAYILLA PHASE II	4
		ST.AUGUSTINE CHURCH	5
		ST.MARY'S SUPERMARKET	6
		TENNIS COURT	7
		HILL STATION	8
		COUNTRY LODGE	1
		OLD SCHOOL	2
		HILL STATION CHP	3
		MATTLIE SCHOOL	4
20	SUNSHINE	SUNSHINE VALLEY	5
		EACON	6
		COMIUM POLE	7
		COLD WATER	8
		BOUNDARY WAN	1
		SOUTH RICH	2
		PART OF OAU VILLA	3
		NAVO DRIVE	4
		HILL CUT ROAD BY G-GATE	5
		GBANGBAYILLA FACE I	6
21	LOOKING TOWN	LOWER LOOKING TOWN	7
		BUNDO WATER	8
		SORIE TOWN	1
		WOGO TOWN	2
		UPPER VILLAGE	3
		NEW ERA AXIS	4
		CENTRAL LOOKING TOWN	5
	Adonkia	Adonkia	6
		New Jersey	7
		Quarry	8
		Blade tank	1
		Bonga Farm	2
		dodo	3
		Angola town	4
		over Water	5

NO	COMMUNITY	CATCHMENT AREA	SEQ
	Murray Town	Mafengbeh	6
		Crab town	7
		Ordinance area	8
		banana water	1
		Oloshoro	2
		Main Murraytown	3
		Military barracks	4
		Cockle bay	5
	Kingtom	Henessey street	6
		Kallay town	7
		Kroobay	8
		Boling street	1
		Janet Lane	2
		Police Barracks	3
		Kingtom bridge	4
		Burmeh	5
	Malama	upper kondie farm	6
		Lower Kondie farm	7
		Safecon	8
		Lower hamburger hill	1
		Upper gbangbayilla	2
		Lower Gbangbayilla	3
		Marinbo	4
		Upper hamburger hill	5
		Middle Malama	6
		upper malama	7
		Upper and lower Kamayama	8
		Regent road	1
		Sheriff Drive	2
		Lower Malama	3
		Pentagon	4
		Gboudo water	5
		Youth farm	6
	Goderich	New England	7
		Cole street	8
		College road	1
		Lower England ville	2
		Fire stone	3
		Balcony	4
		York Road	5
		Odo koko	6
		lower bango farm	7
		Upper bango farm	8
		Lower Sugar hard	1
		Oba Funkia	2
		Upper Sugar hard	3
		Bush Water	4
		Sherbro town	5
	Thompson Bay	Old Adonkia road	6
		Sow lane	7
		cockle bay	8
		cockrill	1
		Upper Madina	2
		Lower Madina	3
		byne lane	4
		Lower borton	5
		Upper Borton	6
		byne lane	7
		bongo town	8
		Cockeril	1
		Sherbro town	2
		Mafembeh	3
		Tafuna	4
		UN drive	5
		upper quarry	6
		lower quarry	7
		madina	8
	Signal Hill	docoty	1
		Main Thomson bay	2
		carlton carew Rd	3
		Pumpline	4
		congo cron	5
		Old railway line	6
		Upper signalhill	7
		Lower signalhill	8
		Smart farm	1
		red pump	2
		Down pole	3
		Gbogbogia	4
		Old Signal hill road	5
		King street	6

NO	COMMUNITY	CATCHMENT AREA	SEQ
	Wilberforce	Lumley Road	7
		Barrack	8
		Scan Drive	1
		Fudia Tema	2
		no.9	3
		Cemetary road	4
		Tank yard	5
		Upper and lower Tengbeh town	6
		Main Wilberforce	7
		Spurloop	8
		Glangow street	1
		Red pump	2
		Aberdeen road	3
	22	Guantite	4
		Hadenton street	5
		Regent Rd	6
		Kaka ground	7
		Crab Town	8
		Gudden drive	1
		Bansa	2
	LUMLEY (FROM PREVIOUS LIST)	Stafford compound	3
		Beach road	4
		Stafford Compound	5
		Grassfield	6
		Action Aid	7
		New Site,	8
	23	Bantry 1	1
		Bantry 2	2
		Mango farm	3
		Mayenkinah	4
		Pole 1	5
		Dam Road	6
		Near Jam	7
		Kamara street	8
		Father compound	1
		Mp Hill	2
		Middle Gassama st (down to up)	3
		Gassama junction	4
		Water side rd	5
	24	Findley street	6
		pipeline	7
		555 area	8
		Bassa town	1
		Cole town	2
		Tombo park	3
		Behind hospital	4
		Soldiertown	5
		Market road	6
		Benguema road	7
		Campbell town	8
		Deepeye wata	1
		Lumpa road	2
		Samuel town	3
		Newsite	4
		Jawboi	5
		Hartshion Street	6
	WATERLOO (FROM PREVIOUS LIST)	Ibo town	7
		Robin Street	8
		York Road	1
		Calmount road	2

ANNEX B: QUESTIONNAIRE FOR CARERS OF CHILDREN ENROLLED IN CMAM PROGRAM

Health district:

Health facility:

Village:

Ethnic group:

Team:

Date:

2015

1. Is this the first time that your child has been enrolled in CMAM programme?

☐ Yes → Q5

☐ No → Q2

2. How many times has your child been enrolled in CMAM programme?

☐ 1

☐ 2

☐ 3

☐ >3

3. Why has your child returned to the programme?

☐ a. Child has discontinued the programme and returned.

a¹. Why? _____

☐ b. Child was cured and relapsed.

b¹. Why? _____

4. Do you have other children enrolled in CMAM programme?

☐ Yes

a¹. How many?

☐ 1

☐ 2

☐ 3

☐ No

5. Why did you decide to enrol your child in CMAM programme?

☐ a. Recognition of the disease

☐ c. Failed traditional treatment

☐ e. Short distance; estimation in km _____
How many minutes on foot? _____

☐ g. Accessibility (no seasonal barriers)

☐ i. Availability of financial resources for transport

☐ k. Support and encouragement of the husband

☐ m. Support and encouragement of parents with SAM children

☐ o. Support and encouragement of neighbours

☐ q. Programme appreciated by the community

☐ s. Availability of RUTF

☐ u. Free service

☐ w. Known child cured

☐ y Other, please specify _____

☐ b. Disease diagnosed by health personnel

☐ d. Referral by traditional healer

☐ f. Minimal or non-existing security risks

☐ h. Availability of transport

☐ j. Availability of company during the journey to the health centre

☐ l. Support and encouragement of another family member

☐ n. Support and encouragement of a community health worker

☐ p. Support and encouragement of community leaders

☐ r. Programme staff is friendly and patient

☐ t. Availability of systematic treatment

☐ v. Efficiency of treatment (quick and visible results)

☐ x. Access to PlumpyNut®

Thank you!

Comments:

ANNEX C: QUESTIONNAIRE FOR CARERS OF CHILDREN NOT ENROLLED IN IMAM PROGRAMME

Health district:

Health facility:

Community:

Team:

Date:

1. Do you think your child is ill?

☐ Yes

☐ No → Q4

1a. What symptoms is your child suffering from?

☐ a. Vomiting

☐ b. Fever

☐ c. Diarrhoea

☐ d. Weight loss

☐ e. Loss of appetite

☐ f. Apathy

☐ g. Swelling

☐ h. Loss of hair

☐ i. Skin lesion

☐ j. Other, please specify: _____

1b. What illness has caused these symptoms?

☐ a. I don't know

☐ b. Malnutrition

☐ c. Spiritual disease/witchcraft

☐ d. Weight loss

☐ e. Malaria

☐ f. Diarrhoea

☐ g. Other, please specify (in local language): _____

1c. How have you tried to treat this illness or how are you going to treat it?

☐ a. Medicinal herbs/roots

☐ b. Enriched meals

☐ c. Fast

☐ d. Medicinal products (bought at the market)

☐ e. Medicinal products (bought at the pharmacy)

☐ f. Prayer

☐ g. Consultation of a traditional healer

☐ h. Consultation at the health centre

☐ i. No treatment

☐ j. Consultation with private doctor: _____

☐ k. Other, please specify: _____

1d. Who made a decision about the choice of treatment?

2. Do you know that there is a service at the health facility dedicated to the treatment of malnutrition? What do you know about this service?

☐ Yes, _____

☐ No → STOP

3. Why didn't you bring your child to the health facility for the treatment?

☐ a. Too far; distance in km _____

how many hours on foot? _____

☐ c. Inaccessibility (seasonal flooding, etc.)

☐ e. Non-availability of the company for the journey

☐ g. Husband/family refusal

☐ i. Carer ill

☐ k. Too busy; reason: _____

☐ m. Ashamed to enrol in the programme

☐ o. Fear of hospital stay (away from HH, fees)

☐ q. Previous rejection of a child; when? _____

☐ s. Quantity of PlumpyNut® is too little to justify the journey

☐ b. Insecurity

☐ d. No availability of transportation

☐ f. Cannot afford the journey

☐ h. Cannot afford cost of the treatment

☐ j. Family member ill

☐ l. No-one to look after other children

☐ n. Lack of conviction that the programme can help the child

☐ p. Preference of traditional treatment

☐ r. Rejection of a known child

4. Has your child been already enrolled in IMAM programme?

☐ Yes

☐ No → STOP

4a. Why isn't your child still in the programme?

☐ a. Defaulted

☐ a¹. When? _____

☐ a². Why? _____

☐ b. Discharged as cured

☐ b¹. When? _____

☐ c. Discharged but not cured

☐ c¹. When? _____

☐ c². Why? _____

☐ d. Other reason, please specify: _____

STOP

Thank you!

Comments:

ANNEX D: RESULTS PER CATCHMENT COMMUNITY SAMPLED

Cin = Cases in program; Rin = Recovering cases in program; Cout = Cases not in programme

COMMUNITY	CATCHMENT AREA	Cin	Rin	Cout	Total
34 MILITARY	J/C QUARTERS	0	0	0	0
34 MILITARY	SERGEANT QUARTER	1	0	0	1
ADBANGS	OROGU BRIDGE	0	1	2	3
Adonkia	Over Water	0	0	0	0
BLESSED MOKABA	CEMETARY AREA	0	0	0	0
FHM (old list NW)	Pole 1	na	na	na	0
FHM (old list NW)	Water side rd	0	0	0	0
Goderich	Sherbro town	1	2	0	3
Goderich	York Road	0	0	0	0
GRAFTON	SCOUTCAMP	0	0	4	4
GRAFTON	WAR WOUNDED	0	0	0	0
HAJA NENNEH	DOCK YARD	1	0	1	2
HAJA NENNEH	TAYLOR STREET	3	0	0	3
HASTINGS	CENTRAL HASTINGS	0	0	0	0
HILL STATION	HILL CUT ROUND ABOUT	0	0	0	0
HILL STATION	ST.AUGUSTINE CHURCH	0	0	0	0
JENNER WRIGHT	JENNER WRIGHT ROAD	0	0	0	0
KINGHARMAN ROAD	TENGBEH TOWN	1	0	0	1
Kingtom	Burmeh	1	1	1	3
LEICESTER	BOTANY	0	0	0	0
LEICESTER	KARGBO DRIVE	0	0	0	0
LOOKING TOWN	CENTRAL LOOKING TOWN	3	2	0	5
LUMLEY (old list NW)	Stafford Compound	0	0	0	0
LUMPA	BOLIMA	1	3	2	6
LUMPA	COLE TOWN	0	0	4	4
Malama	Gboudo water	0	0	0	0
Malama	Upper harmburger hill	0	0	0	0
Murray Town	Cockle bay	0	0	0	0
NEWTON	SHERBRO TOWN	0	0	0	0
NEWTON	SIX MILE	3	0	1	4
OLA DURING	MOA WHARF	1	1	7	9
REGENT	BATH HOLE	0	0	0	0
ROKEL	CONTAINER	5	0	0	5
Signal Hill	Congo cron	0	0	0	0
Signal Hill	Old Signal hill road	0	0	0	0
SUNSHINE	HILL CUT ROAD BY G-GATE	0	0	0	0
SUNSHINE	SUNSHINE VALLEY	0	0	1	1
SUSANSBAY	ABACHA STREET	0	0	0	0
SUSANSBAY	FALCOM BRIDGE	0	0	0	0
SUSANSBAY	PEPPEL COMPOUND	na	na	na	0
Thompson Bay	Lower borton	na	na	na	0
Thompson Bay	UN drive	0	0	0	0
TISSANA	SATIYA TOWN	2	0	0	2
TISSANA	TORTIKELLEH	0	0	0	0
TOMBO	FISHING COMPOUND	0	0	0	0
TOMBO	OLD MARKET AREA	0	0	0	0
TOMBO	PASTOR DARAMY AREA	na	na	na	0
TOMBO	RADIO STATION AREA	0	0	0	0
TOMBO	UPPER KASSIE COMMUNITY	0	0	2	2
WATERLOO (old list NW)	Jawboi	0	3	1	4
WATERLOO (old list NW)	Soldiertown	0	1	1	2
WELBODI	BRASS STREET	0	0	2	2
WELBODI	FOSTER STREET	0	0	0	0
Wilberforce	Hadenton street	0	0	0	0
Wilberforce	Tank yard	0	0	0	0
TOTAL	55	23	14	29	66