TURKANA COUNTY NUTRITION COVERAGE

SURVEY REPORT

March 20th – May 4th 2013

Coordinated and implemented by Ministry of Health, UNICEF, Merlin International, International Rescue Committee (IRC) and World Vision Kenya (WVK).

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ACRONYMS

APHIA	AIDS, Population and Health Integrated Assistance
ASAL	Arid and Semi Arid Lands
BSFP	Blanket Supplementary feeding program
CMAM	Community Management of Acute Malnutrition
CHeW	Community Health Extension Worker
CHW	Community Health worker
CM	Concept Map
CPN	Cooperating Partner Nutritionist
CSAS	Centric Systematic Area Sample
CU	Community Unit
DHRIO	District Health and Records Information Officer
DNO	District Nutrition Officer
FFA	Food for Asset
HINI	High Impact Nutrition Interventions
IDP	Internally Displaced Persons
IMAM	Integrated Management of Acute Malnutrition
IRC	International Rescue Committee
MCH	Maternal Child Health
M&E	Monitoring and Evaluation
MTMSGs	Mother –to – Mother Support Groups
MUAC	Mid upper arm circumference
M0H	Ministry of Health
NSO	Nutrition Support Officer
OTP	Outpatient therapeutic feeding program
OJT	On job Training
PRRO	Protracted Relief and Recovery Operations
SAM	Severe acute malnutrition
SFP	Supplementary feeding program
SQUEAC	Semi quantitative evaluation of access and coverage
TBA	Traditional birth attendant
TRP	Turkana Relief Program
RUTF	Ready to use therapeutic food
UNICEF	United Nations Children's' Fund
URTI	Upper Respiratory tract infections
WFP	World Food Program
WVK	World Vision Kenya

EXECUTIVE SUMMARY

Turkana County lies in the Northern part of Kenya with an estimated population of 855,399[1]. The County is the largest in the country and is administratively divided into 6 districts namely; Central, Loima, North, West, South and East. A coverage survey using the SQUEAC methodology was undertaken between March and April 2013 with the following objectives:

- To identify possible boosters and barriers to OTP coverage in Turkana County
- To determine headline coverage for OTP in Turkana County
- To develop recommendations to improve the coverage and outcome of OTP
- To develop capacity of nutrition stakeholders on undertaking program coverage assessments using SQUEAC methodology

FINDINGS OF THE COVERAGE INVESTIGATION(S)

Findings of the coverage survey indicated posterior coverage estimates for the different districts as follows:

	Turkana Central & Loima	Turkana West	Turkana North	Turkana South	Turkana East
Point coverage (BayesSQUEAC - posterior)	**51.9%** **(39.4% - 64.4%)**	**55.1%** **(40.8% - 68.4%)**	**50.7%** **(37.6% - 63.4%)**	**50.2%** **(37.0% - 63.6%)**	**43.5%** **(28.4% - 59.9%)**

BOOSTERS AND BARRIERS

The boosters and barriers presented are a summary from the investigations from all the districts.

Booster	Specific aspects
Community knowledge of malnutrition	Overall consideration of malnutrition as disease. Knowledge by many of basic aspects of malnutrition.

[1] Turkana District; Kenya National Bureau of Statistics, May 2009

Treatment seeking behaviour	Treatment seeking for SAM by many caretakers at the onset of malnutrition and from hospital/health facilities and OTP.
Community appreciation of IMAM programming	Community appreciation of nutrition program by partners and MoH citing benefits such as child recovery and management of other diseases.
Integration of management of malnutrition into routine health activities & ownership of program by nurses	Enhanced screening and referrals of malnourished children due to integration.
Program effectiveness	On average, achievement of program indicators of cure, defaulter and mortality within the recommended SPHERE standards.
Program efficiency	Attendance to program beneficiaries in a timely manner for many of the caretakers.

Barrier	Specific aspect	Recommendation
Migration, distance & seasonal rivers (lack of access)/program structure	Distance to sites during on-going migration. Lack of access to sites during flooding of seasonal rivers.	Enhance program sensitivity to migrating communities through e.g. flexible outreach sites. Flexibility in programming for communities cut-out by seasonal rivers to avoid missing rations.
Insecurity	Displacements and interruption of service provision due to insecurity/conflicts/bandit attacks particularly in areas bordering to Uganda and Pokot county.	Continued planning for and liaising with local authorities to provide security so as to facilitate access to communities living in insecure areas.
Community mobilization	Inadequate community mobilization to include sensitization, active case finding and inclusion of key sources of referral e.g. traditional healers.	Conduct mass screening and referrals for the IDP community **(Immediate).** Conduct a social investigation to understand the challenges facing the IDP community. Include all sources of referral namely traditional healers, chemists and TBAs.
Staffing issues	Lack of staff and training for some of the nurses on IMAM. Staff demands for increased allowances during outreach sessions. Mode of payment/remuneration of CHWs in some areas. Delays in provision of incentives for CHWs	Prioritize new nurses on OJT and monitor uptake of the IMAM trainings. Health management team to continue emphasis that IMAM both at the health facility and outreach sites is part of the health activities. Timely payment/provision of incentives of the CHWs, particularly those who have not received anything over the last few months **(Immediate).**
Community sociological aspects	Child neglect and alcoholism. Presence of stigma Forgetting of return dates Cultural beliefs.	Enhanced mobilisation and particularly sensitization due to the low literacy levels. Engagement of local authorities in referral of children of negligent of alcoholic caretakers.
Stock outs	Plumpy nut and CSB stock –outs at health facilities.	Distribution of plumpy nut and CSB to facilities experiencing

		stock outs **(Immediate).** Seek to establish a reporting/requisition system that does not hamper treatment of beneficiaries.
Competing interests/conflicting activities	Activities that coincide with distributions are a challenge to program attendance e.g. FFA, fishing and farming.	Enhanced mobilisation/sensitization to ensure that despite the need to implement activities beneficiaries need to seek treatment. Assess further the reports on lack of permission from FFA work to attend program and advice the implementation agency.
Children in SFP	The presence of SAM children in the SFP	Enhance monitoring in the SFP. Additionally the MoH and partners should assess SFP workload distribution in all health facilities and explore ways of ensuring a balance with staffing.
Monitoring and Evaluation	Lack of comprehensive data entry in some areas particularly during outreach sessions. Unexplained aspects of some of the data and deviations from the fit to context	Strengthen data collection and recording at the health facility level, data analysis at district level, maintain an updated database and strengthen M&E of mobilization activities.

TRAINING ON SQUEAC

To develop the capacity of the staff, Central and Loima districts were used as training examples and investigations for the other districts conducted thereafter by staff who had participated in the training exercise. The training on SQUEAC was conducted over 16 days and staff from MoH and partner agencies (UNICEF, WVK, Merlin, APHIA, IRC and Red Cross) participating.

1. INTRODUCTION

Turkana County lies in the Northern part of the former Rift Valley Province and is one of the current 47 counties in Kenya. The County shares international borders with Uganda to the West, Sudan to the North West and Ethiopia to the North East. Within Kenya, the County borders West Pokot to the Southwest, Samburu to the South East and Lake Turkana to the East.

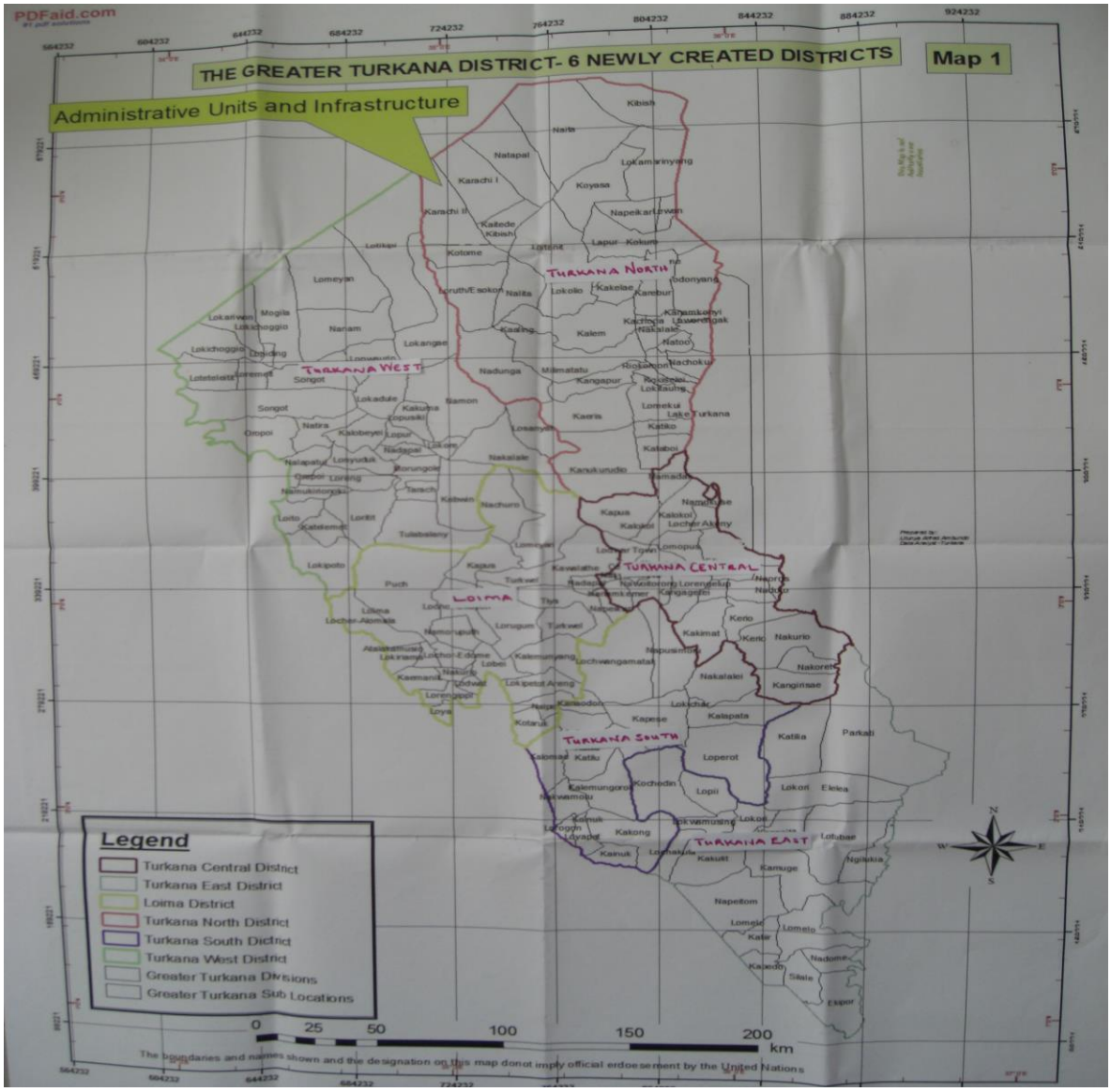


Figure 1: Map of Turkana County with administrative divisions

The County is vast; the largest in the country and covers 77,000 sq km. At present, Turkana comprises 6 districts namely; Central, Loima, West, North, South and East. The County has an estimated total population of 855,399[2]. The inhabitants of the district are predominantly pastoralists, agro-pastoralists and marginal agriculturalists. The greater Turkana district is

[2] Turkana District; Kenya National Bureau of Statistics, May 2009

classified under the Arid and Semi Arid lands (ASAL) regions with the rainfall pattern being unreliable and erratic. There are two rainfall seasons, the long rains occurring between April and July and the short rains between October and November.

There has been overall slow development in the County largely due to the harsh environment, unfavourable government policies and insecurity. There County is challenged by poor infrastructure, high illiteracy levels and low access to essential services. High insecurity levels continue to be experienced in parts of the County especially along both the international and national borders. In particular conflicts amongst the Turkana, Pokot and Samburu communities in Turkana East have been on-going and which have seen the Southern part of the district difficult to access and provide services. Though there are several health facilities present in the County, access due to distance in the vast County, inadequate staffing and insecurity continue to be a challenge. Malaria, diarrhoea and acute respiratory infections are prevalent diseases particularly amongst the under fives in the district. Roll-out of the Ministry Health (MoH) Community Health strategy is on-going, with partners supporting formation of Community Units (CUs) in parts of the County.

Over the years the ASALs have continued to experience chronic food insecurity due to poor rainfall and severe cyclic droughts whose interval has reduced from 10 years to between three to five years. Consequently there has been continuous degradation of the pastoral and agro-pastoral livelihoods and traditional coping strategies rendering the population more vulnerable. Turkana was one of the Counties affected by the severe drought in 2011 that resulted in the Horn of Africa Crisis. The Inadequate food security at the household and community level; coupled with diseases, erosion of livelihoods and traditional coping strategies have continued to contribute to the chronically high levels of acute malnutrition in the County. Findings of the 2012 annual nutrition survey revealed rates of: 11.6 % (9.4 - 14.3 9) in Turkana Central and Loima, 17.1 % (13.7 - 21.1) in Turkana South and East, 15.3 % (11.7 - 19.6) in Turkana North and 14.3 % (11.4 -17.9) in Turkana West[3].

Various interventions have been on-going to address food security and livelihoods in the County. At present Turkana is one of the counties currently under protracted relief and recovery operation (PRRO) that commenced in May 2012 and runs through to March 2015 targeting a total of 180,200 beneficiaries for both food for assets program (FFA) and General Food Distribution. The program is implemented by WFP and OXFAM-GB. Other livelihood activities include livestock off take/cash transfer.

1.1 Nutrition Interventions

MoH through the Division of Nutrition in collaboration with UNICEF and implementing partners has been implementing High Impact Nutrition Interventions (HINI) in Turkana

[3] Turkana SMART surveys July 2012

County. The interventions include management of severe and moderate acute malnutrition, exclusive breastfeeding, vitamin A supplementation, optimal complementary feeding, de-worming, iron supplementation and hand washing. Management of moderate malnutrition is further implemented in collaboration with WFP under the PRRO. The HINI strategy has encouraged formation of mother-to- mother support groups (MTMSG) for promotion of exclusive breast feeding and optimal complementary feeding. Nutrition implementing partners in the County are namely; International Rescue Committee(IRC) in Turkana West, Merlin in Turkana North, Central, Loima and South districts and World Vision Kenya (WVK) in Turkana Central, South and East. In addition, APHIA+IMARISHA offer support to health facilities through mentorships and OJTs on systems strengthening and on a range of livelihood projects amongst various groups to include schools and community groups.

Overall management of malnutrition follows the integrated management of malnutrition (IMAM) model where treatment is integrated into the County health system. Due to the vastness of the County and the existence of few health facilities however, the MoH and implementing partners have identified outreach sites and implement services weekly or bi-weekly. The outreach sites form part of the catchment site for respective proximal health facilities. At present there are a total of 92 health facilities, 148 outreach sites and 5 stabilization centres distributed in the County as outlined in Table 1.

Table 1: Distribution of health facilities, outreaches and stabilization centres

District	No of Health facility	No of Outreaches	Stabilization Centres
Turkana Central	22	27	1
Loima	17	17	0
Turkana South	20	35	1
Turkana East	8	9	0
Turkana North	13	25	2
Turkana West	12	35	1

Community mobilisation is conducted through the CHWs or the community units where these are present. The CHWs are compensated through different incentives by the partners. At present an extensive network of nutrition staffing to include the MoH County nutrition officer and district nutrition officers, UNICEF Nutrition support Officer (NSO), WFP Cooperating partner Nutritionists(CPN) and Implementing partners Nutrition Managers and Officers has continued to contribute to the concerted efforts to improve nutrition in Turkana County. Following the on-going interventions targeted at management of

malnutrition, the Turkana Nutrition Consortium sought to evaluate access and coverage of the program.

1.2 OBJECTIVES OF THE COVERAGE SURVEY/INVESTIGATION

- To identify possible boosters and barriers to OTP coverage in Turkana County using the SQUEAC methodology
- To determine headline coverage for OTP in Turkana County
- To develop recommendations to improve the coverage and outcome of OTP
- To develop capacity of nutrition stakeholders on undertaking program coverage assessments using SQUEAC methodology

1.3 METHODOLOGY

The Coverage assessment(s)/investigation(s) and on job training were undertaken between 20th March and 4th May 2013. The assessment covered the period March 2012 to February 2013. The SQUEAC Methodology was utilized and applied the three principles of the methodology namely iteration, triangulation and sampling to redundancy. The methodology applied the 3 stages:

Stage 1: Identification of areas of high and low coverage using routine program data; in this stage, triangulation of data was done by various sources and methods as highlighted below:

Sources of data: Quantitative routine program data was obtained from the Central database at the Lodwar district hospital, organizational databases and from different health facilities in the districts. Qualitative information was obtained from various sources to include district health and nutrition officials, UN and WFP officers, caregivers, health facility nurses, traditional birth attendants (TBAs), Traditional healers, CHWs/CHeWs, program staff, community members and local chemist attendants.

Methods: informal group discussions, in depth interviews, key informant interviews, simple structured interviews, observation and the semi-structured interviews.

(See annex 1 for an illustration of the sources and methods)

Stage 2: Hypotheses generated and tested using small area surveys.

The decision rule (50% for rural setups) was applied in classifying coverage using the following formula:

$d = n \; x \; p / 100$

where: ***d*** = decision rule (threshold value)

n = number of cases found

p = standard against which coverage is being evaluated

Stage 3: Wide area survey conducted with the overall coverage (posterior) estimated.

To compute the prior mode from the identified barriers and boosters two methods were utilised in all the districts for standardization purposes namely:

Weighted boosters and barriers – Use of scores or weights that reflect the relative importance or likely effect on coverage of each finding scored between 1 and 5. The sum of the positive scores is added to the minimum coverage and the sum of the negative scores is subtracted from 100%. The median value of the two figures is then obtained.

Un-weighted Boosters and Barriers- Mere counting of the boosters and barriers then getting the total of booster values added to minimum coverage and total of barrier values subtracted from the maximum coverage. The median value of the two figures is then obtained.

The average of the two estimates above was thus used as the prior estimate.

To compute sample size the formula below was used:

$$n = \frac{\text{mode} \times (1 - \text{mode})}{(precision/1.96)^2} - (\alpha + \beta - 2)$$

A precision of 12% - 14% was used in the districts due to decreased rates of malnutrition during the survey period, the presence of scattered populations in some of the divisions and the continuous migration of a few communities.

To compute the number of villages to be sampled the formula below was used:

$$n = \frac{\text{n}}{(averagevillagepopulation \times \% \text{ofpopulation}(6-59months) \times prevalenceofSAM(\%)}$$

The survey utilised quadrant area sampling (CSAS method) of sampling for villages due to lack of information (list of villages and population). As per the 2009 census population data is available only up to sub location level. A map up to scale of 1:50 000 was obtained through the UNICEF NSO and specific districts sketched out separately from the map and quadrants covering the map area for specific districts drawn over the sketches, with the aim

in SQUEAC mainly being to spread the sample over the area. Quadrants covering more than 50% of the map area were selected for sampling and villages proximal to the centre of the quadrant selected as per the required number of villages. (See annexes; 2.1d, 2.2d, 2.3d and 2.4d for the sketched out district maps with quadrants).

To develop the capacity of the staff, Central and Loima districts were used as training examples and investigations for the other districts conducted thereafter by staff who had participated in the training exercise. (See training report presented separately)

1.3.1 TEAM COMPOSITION

The data collection teams comprised staff from MoH and implementing partner agencies (APHIA +, IRC, Merlin and WVK). Six MoH staff were selected to participate in the entire survey process as team leaders (during the training and in the data collection process in the other districts). Whilst within the districts staff from respective partner agencies who had participated in the training in Central and Loima teamed up with the selected MoH team leaders.

1.3.2 LIMITATIONS OF THE INVESTIGATION

- Lack of comprehensive data recording by some of the facilities.
- Lack of accurate information on approximate village size
- Inability to assess SFP beneficiaries during distribution days in several sites due to time limitations and the lack of coincidence of the distributions and stage 1 and 2 implementation.
- Insecurity hampered access to some sites in Turkana East.
- Rains delayed work due to challenges in crossing seasonal rivers and impassable roads in some areas.
- Lack of/weak internet connectivity in some of the field locations to allow for timely communication.
- Operational challenges in some cases to include lack of timely provision of money for field guides, inadequate staff to conduct investigation in Turkana West and lack of hardy/good condition vehicles appropriate for the difficult terrain in Turkana North.

2. INVESTIGATION PROCESS

The SQUEAC investigation covered the period March 2012 to February 2013. The investigation process took into consideration previous surveillance in the County that has seen; Turkana West and North districts assessed separately whereas Central and Loima districts and South and East districts have been combined into two respective areas. Following investigations in stage two which showed similar coverage in Central and Loima districts, the investigation proceeded to assess the two districts as one area in stage three. In South and East districts however, findings from stage two revealed differences in coverage in the two districts which were therefore assessed separately in stage 3.

2.1 TURKANA CENTRAL AND LOIMA DISTRICTS

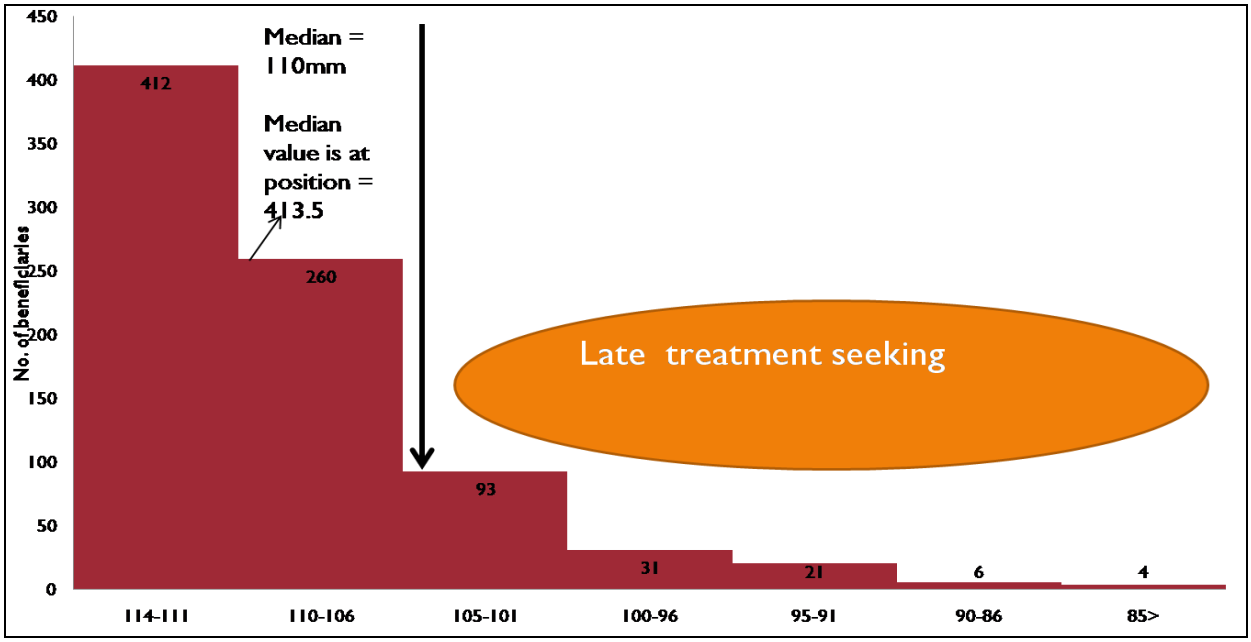
2.1.1 STAGE 1

2.1.1.1 QUANTITATIVE DATA

MUAC AT ADMISSION

MUAC at admission was assessed to investigate timelines of seeking treatment. The median value was 110mm, an indicator of early treatment seeking at the onset of SAM for majority of the beneficiaries. However a proportion of the community was found to be seeking treatment late at MUAC below 105, figure 2. The late treatment seeking was found to be as a result of initial health seeking through other sources e.g. traditional healers, use of local solutions at home and in some cases lack of awareness that child is malnourished and parental neglect.

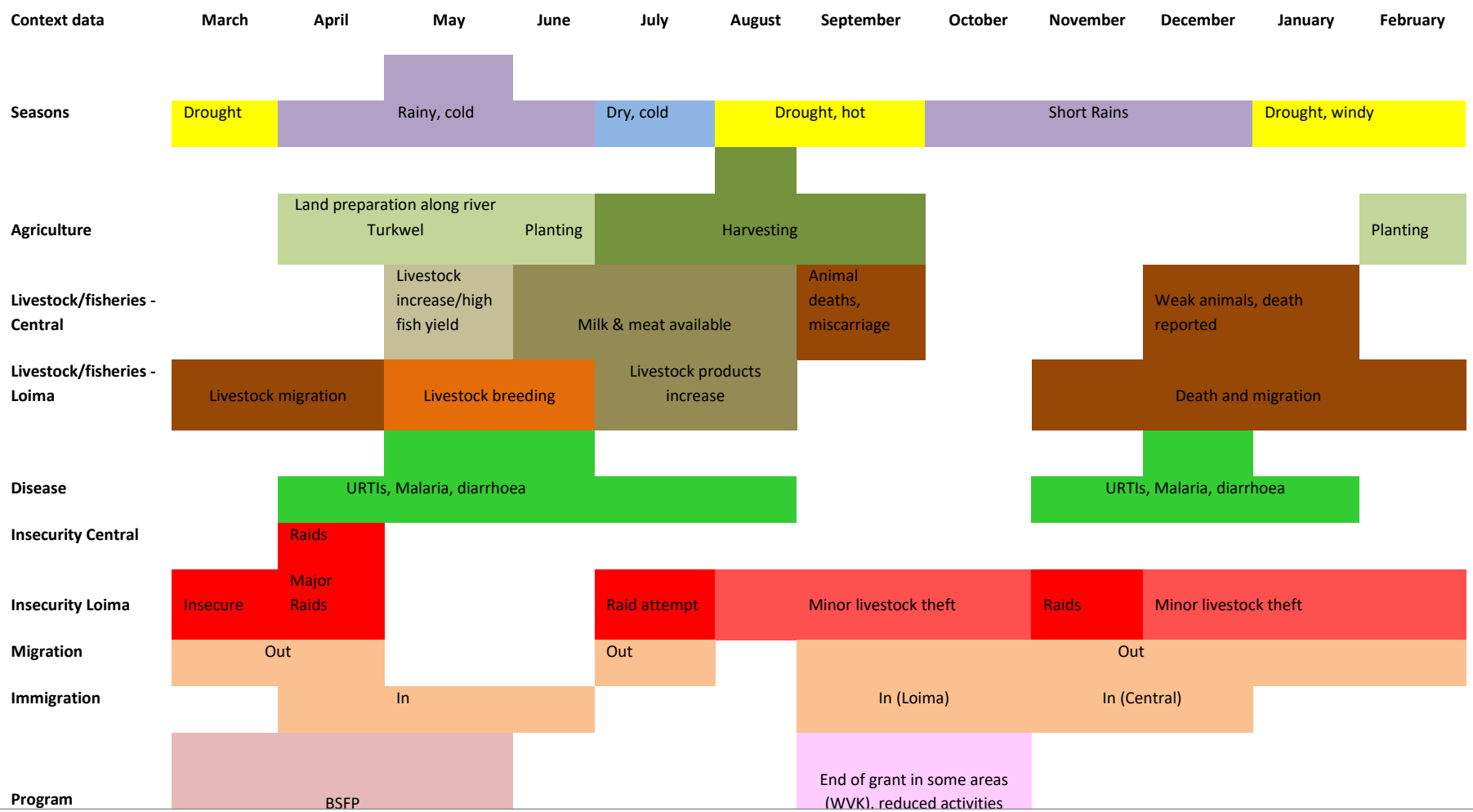
Figure 2: MUAC at admission Turkana Central and Loima districts

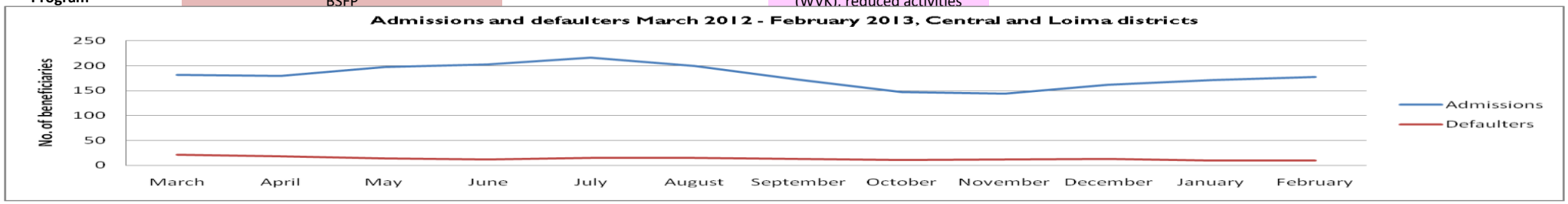


PROGRAM FIT TO CONTEXT

Program response to context over the period was found to be relatively good. The factors found to affect program admissions and defaulting were mainly morbidity patterns, insecurity and migration. Morbidity was found to be the major cause of malnutrition as per responses from caretakers on case-histories. From the assessment of the fit to context, during the periods when morbidity was on the increase, program admissions also increased an indication of program response to the context. During heightened insecurity namely raids from neighbouring communities defaulting was observed to be on the increase. In addition, an increase in defaulting was observed during migration occurring mostly during the dry season or as a result of insecurity, figure 3.

Figure 3: Program fit to context – Turkana Central and Loima

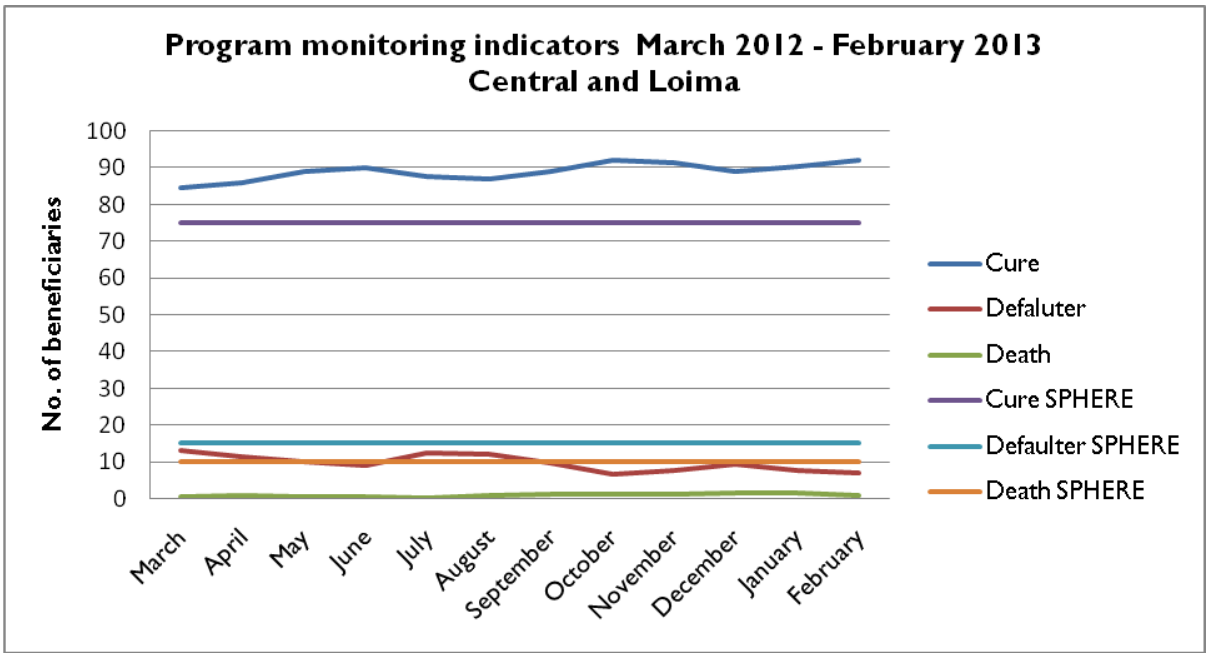




PROGRAM MONITORING INDICATORS (EFFECTIVENESS)

As regards program effectiveness as assessed through program monitoring indicators, the program has on overall performed well over the period having attained average rates of: cure – 88.9%, defaulter – 9.7% and death 0.8% within the recommended SPHERE standard of cure above 75%, defaulting of below 15% and death of below 10% respectively. In the months of June – August and December however an increase in defaulting was observed and which was largely attributed to insecurity as a result of raids as noted in the program fit to context, figure 4.

Figure 4: Turkana Central and Loima – program monitoring indicators

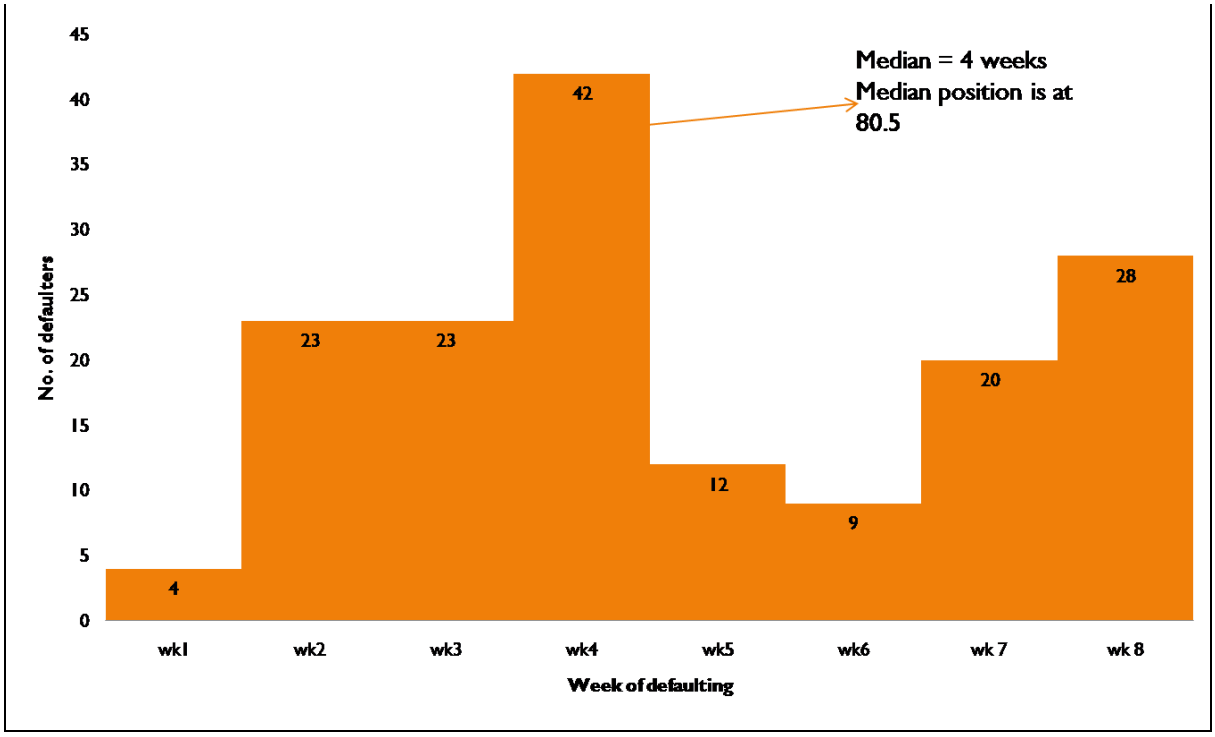


DEFAULTING

An investigation into the time of defaulting from the program revealed that majority of beneficiaries defaulted early (week 4 and below) with the median being at week 4. Beneficiaries defaulting early[4] are most probably current cases. Defaulting on overall was reported to be mainly due to migration. In most sites however the reason for defaulting was not recorded, figure 5.

[4] Early defaulting (Within 4 weeks of admission), SQUEAC guidelines, October 2012.

Figure 5: Turkana Central and Loima – week of defaulting



2.1.1.2 SUMMARY OF QUALITATIVE FINDINGS

Table 2: Summary of boosters and barriers – Turkana Central and Loima

Boosters	
Appreciation of program and malnutrition	The community is appreciative of the program and cited benefits such as recovery from malnutrition and provision of drugs. Double registration that was reported in a few sites however discourages some community members who do not engage in such. Many of the community members are conversant with malnutrition and in particular the signs and symptoms. Malnutrition is in addition considered a disease by many.
Ownership of program by health facility nurses	Overall the program has become acceptable by the nurses as part of the health facility work and thus enhancing the confidence of the community in the program.
Integration of nutrition and health services	Integration of nutrition and health services has over the time seen more children going for health services screened for malnutrition.
Consistent supply of RUTF	Over the last one year there has been a consistent supply of RUTF in the

	districts.
Program efficiency	The program was found to be efficiency in management of malnutrition activities during distributions with majority of mothers reporting to take less than 2 hours to be served by the program.
BSFP	The BSFP program that was on-going in March – May 2012 saw many children screened for malnutrition. In addition, it enhanced the community's confidence in nutrition programming as more children (without targeting) received supplementary rations.
Barriers	
Presence of stigma	Despite many of the community members citing malnutrition as a disease and citing the signs well, some caretakers of malnourished children reported to feel stigmatized.
Staffing	Some of the health facilities reported to have a high workload that was a challenge to attending to all beneficiaries appropriately. The nurses requested for an increment of allowances for conducting outreaches.
Migration	Seasonal migration and raids were found to be a barrier as the program is not able to access some of the pastoralists or persons migrating.
Community	Ignorance and negligence of caretakers as a result of illiteracy is a challenge amongst the community with some cases not taking children to the program even upon referral by different sources. Alcoholism in addition has been barrier with some caretakers not taking children to the program consistently.
Lack of adequate logistics at health facilities to conduct outreach	All the health facilities are reliant on the partners to provide vehicles to be able to conduct outreach. In the event of a challenge with the partner, then the health facilities are unable to conduct the outreach sessions. Further due to the limited staffing in the health facilities, partners have continued to support in implementing of activities further to OJT and supervision.
Insecurity	Insecurity, particularly in Loima district along the Kenya-Uganda border between the Tepes of Uganda and Turkana has seen the community occasionally displaced as well as the program challenged in delivery of services.
Treatment seeking behaviour	Some of the caretakers reported to have sought assistance from the traditional healers or attempted to give different foods at home before taking the child to the program/health facility at the onset of malnutrition. Reports on sharing and sale of ration are further a challenged to appropriate treatment seeking.
Community mobilization	The program has not incorporated key sources of referral e.g. traditional healers, TBAs and pharmacies all of whom reported to come across malnourished children, in its mobilization strategy.

	Inadequate mobilization activities in the IDP area in Turkana Central Despite the CHWs, being motivated by the mode of payment by some of the partners for the day of conducting distributions, it has in some cases encouraged laxity in conducting routine work such as active case finding and defaulter tracing which may be seen as not attracting any remuneration/incentive.

2.1.2 STAGE TWO

2.1.2.1 HYPOTHESIS TESTING

Based on the information collected and analyzed in Stage One (both quantitative and qualitative), there were observations of high and low coverage. The investigation concluded that coverage is likely to be relatively low in some sites and high in others.

The hypotheses were therefore that:

- 1: In areas where there is insecurity (particularly along the Turkana-Uganda border) coverage is low while in areas where there is no insecurity coverage is high.
- 2: Coverage is high in Central and low in Loima districts due to the different livelihood zones and actors.

The objective of Stage Two was to confirm the locations of areas of high and low coverage as well as the reasons for coverage failure identified in Stage One (above) using small area surveys. Eleven site areas in total were sampled to test the two hypotheses. Three areas were hypothesised to be insecure and three areas to be secure. As regards assessment of coverage of the two divisions, five and six site areas were assessed from Central and Loima divisions respectively (See annex 2.1c for findings per site). Active and adaptive case finding was used in identification of malnourished children.

In the test of hypothesis exercise for high/low coverage areas, the following results were found and calculations made using the decision rule (See section 1.3) in order to classify coverage as follows:

Table 3: Small area survey findings – Turkana Central and Loima

District/region	SAM not in program	SAM in program	SAM recovering in program	d(point coverage)	Point Coverage
Hypothesis 1					
Turkana – Uganda border region	1	4	6	2	>50%
Sites that are secure	0	3	4	1	> 50%
Hypothesis 2					
Central district	1	6	4	3	>50%
Loima district	1	7	10	4	>50%

As per the findings above Hypothesis # 1 and # 2 were denied as coverage is above 50% in all the areas.

2.1.3 STAGE THREE: WIDE AREA SURVEY

2.1.3.1 Developing the prior

The data gathered in stage one and two were consolidated and grouped into two; boosters and barriers. The prior was developed from the average of the two methods of weighted and simple scoring of boosters and barriers. The scoring process was participatory. A factor was identified and participants gave a score which was then averaged to provide the factor score as shown in the table below. The boosters were thereafter added to the minimum coverage (0.0%) while the barriers deducted from the maximum coverage (100.0%). A median value was thereafter calculated.

Table 4: Synthesis of boosters and barriers – Turkana Central and Loima

BOOSTER	SCORE		BARRIER	SCORE	
	Weighted	Simple		Weighted	Simple
Ownership of program by nurses and	3.5	5	Early defaulting/weak defaulter tracing/active case	1.5	5

CHWs			finding		
Knowledge of CHWs and nurses on admission criteria and IMAM	4	5	Low motivation of CHWs and nurses	2	5
Availability of plumpy nut	4	5	Migration	2.5	5
Community mobilisation	4	5	Ignorance/negligence/alcoholism	2	5
Integration of nutrition and health services	4.5	5	Stigma	2	5
Program fit to context	3.5	5	Double registration	1	5
Proximity to sites	4	5	Low staffing	2	5
Program effectiveness (standard monitoring)	4	5	Lack of adequate logistics at health facilities	1	5
Appreciation of program	4.5	5	Insecurity	2	5
BSFP	2	5	Late health seeking	2.5	5
Program efficiency (waiting time)	4	5	Lack of inclusion of key sources of referral e.g. traditional healers, TBAs and pharmacies	1.5	5
Total	**42**	**55**		**20**	**55**

1. Scoring of weighted boosters and barriers

   Prior weighted= ((0%+42%) + (100%-20%))/2= **61%**

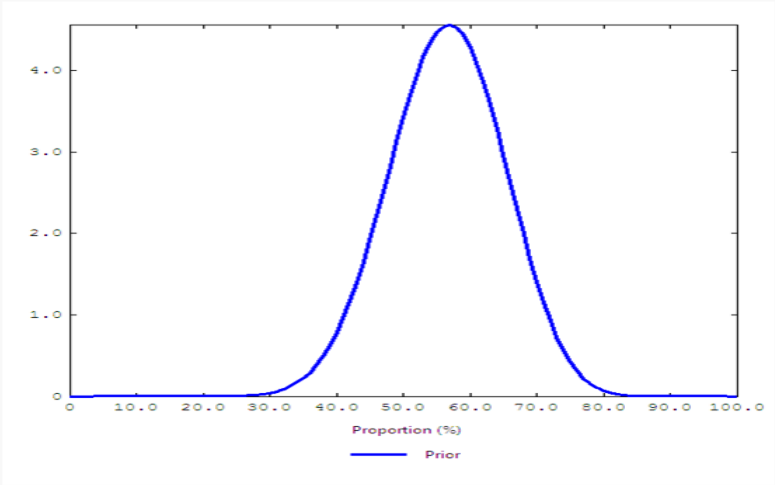
2. Simple scoring of boosters and barriers

   Prior un-weighted/simple = ((0%+55%) + (100%-55%))/2= **50%**

   Averaged Prior = (61%+50%)/2 = 55.5%

Using the Bayesian Coverage Estimate Calculator, the Prior was set as 55.5% (α=18.4 and β= 14.2) presented below.

Figure 6: Prior estimates Turkana Central and Loima- BayesSQUEAC



2.1.3.2 Sampling methodology for wide area survey

Sample size was computed as follows:

$$n = \frac{0.56 \times (1 - 0.56)}{(0.12/1.96)^2} - (18.4 + 14.2 - 2)$$

From the above a sample size of 36 was derived.

Calculations were then undertaken to determine the minimum number of villages to sample as shown in the table below:

Minimum number of villages:

Table 5: Computation of required villages Turkana Central and Loima districts

Target sample size	**36**
Average village population	1200(District figures)
Prevalence of SAM	1.5% (Integrated health and nutrition survey 2012)
% of children 6-59 months	15%(KDHS)

Using the formula for computing no. of villages:

$$n = \frac{36}{(1200 \times 0.15 \times 0.015}$$ = 14 villages

Sampling of villages

A sketched out map of Turkana Central and Loima was drawn from the main up to scale map of the County provided. The map was used in sampling the 14 villages (an extra 4 were selected) with several quadrants first drawn and sampling done in 9 of these as they covered 50.0% or more of the study area. A total of 2 villages were sampled per quadrant to obtain the required sample (14), based on proximity to the village to centre).

At the community level active and adaptive case finding was used through the local case definition of malnutrition as already established through qualitative data collection. In each village, a key informant/guide was identified and the case definition shared.

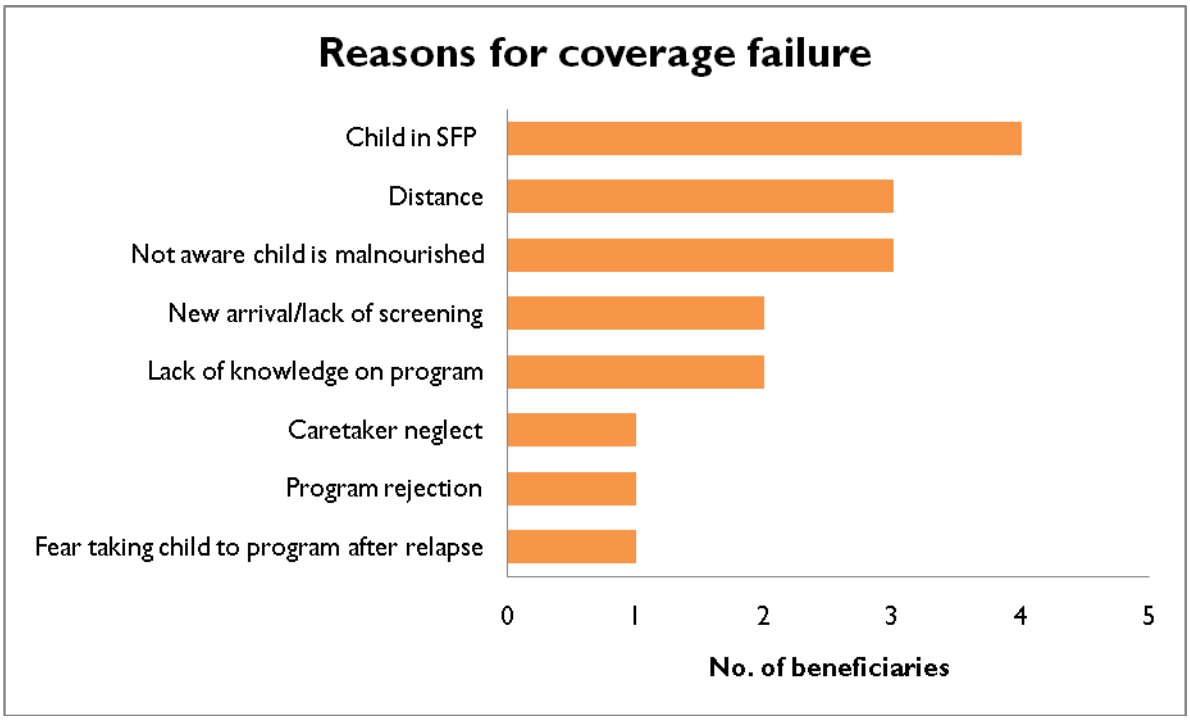
Wide area survey results

Table 6: Wide area survey summary findings – Turkana Central and Loima

SAM cases not in program	**14**
SAM cases in program	12
Total current cases	26
Recovering in program	7

(See annex 2.1e for findings per village)

Figure 7: Reasons for coverage failure as per wide area:



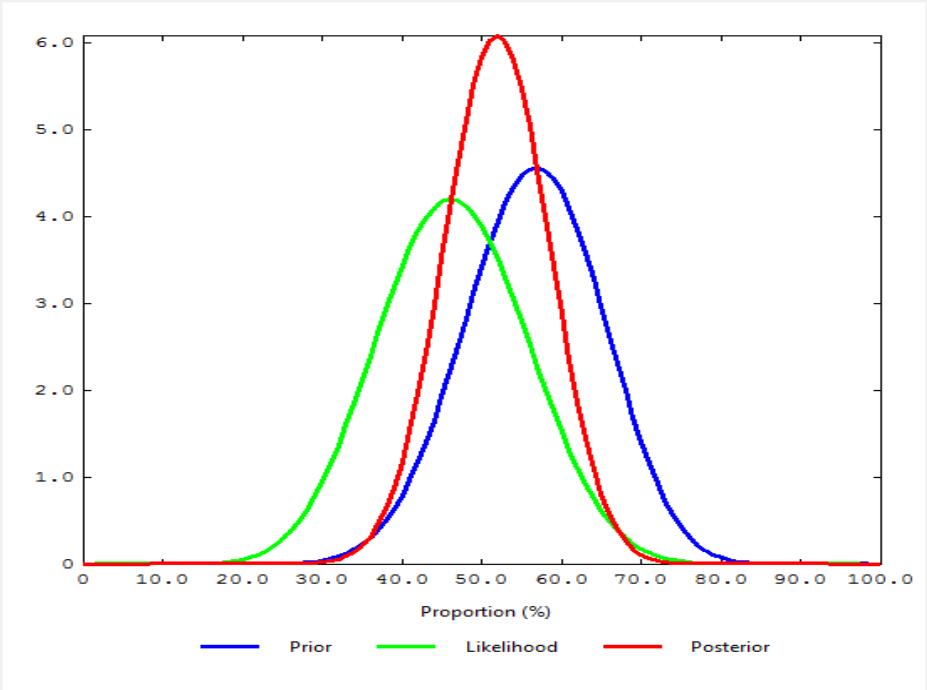
COVERAGE ESTIMATES

This report presents the point coverage as the preferred estimate of the situation as per findings on ground. The rationale is that there is relatively weak/inconsistent case finding and despite lack of data on average length of stay, the indicative prolonged length of stay as per findings on sharing of ration and sale of plumpy nut.

Table 7: Coverage survey estimates – Turkana Central and Loima

Likelihood estimates	**46.2%**
Point coverage (BayesSQUEAC - posterior)	**51.9% (39.4% - 64.4%)**

Figure 8: Point coverage estimate Turkana Central and Loima - BayesSQUEAC



The figure above indicates considerable overlap between the likelihood and prior.

CONCLUSION

From the Bayesian coverage calculator, the posterior point coverage is estimated at **51.9% (39.4% - 64.4%),** slightly above the recommended SPHERE standard of 50% in rural areas. Overall coverage of the program is thus acceptable.

2.2 TURKANA NORTH DISTRICT

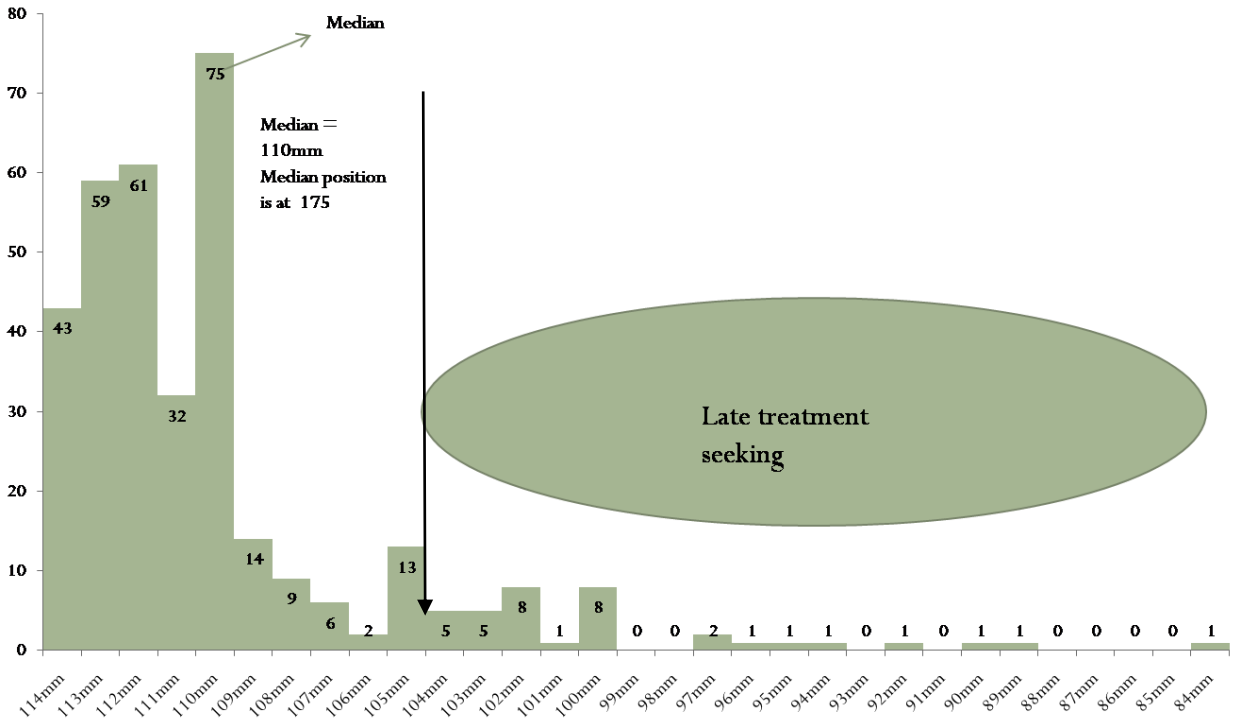
2.2.1 STAGE 1

2.2.1.1 QUANTITATIVE DATA

MUAC AT ADMISSION

An investigation of MUAC at admission to assess timelines of seeking treatment revealed a median value of 110mm, an indicator of early treatment seeking for majority of the beneficiaries. However a proportion of the community was found to be seeking treatment late at MUAC below 105, figure 9. Late health seeking was attributed to distance to sites particularly for the nomadic groups, presence of stigma and neglect by some caregivers.

Figure 9: Turkana North district MUAC at admission



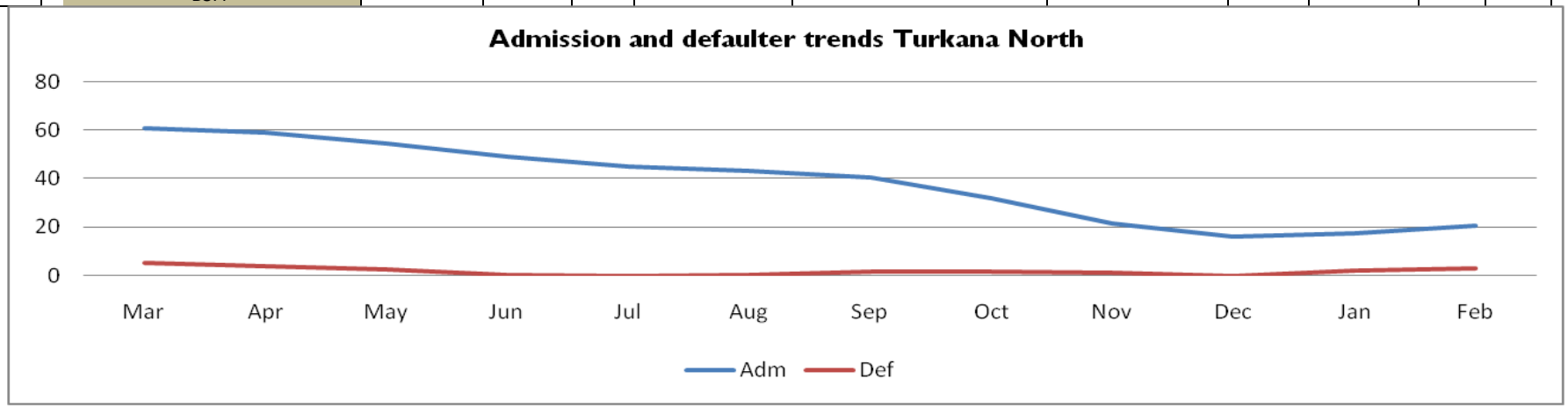
PROGRAM FIT TO CONTEXT

Program response to context was found to be weak. An investigation into the trend of admissions revealed an overall decline in admissions from March to December 2012. During the morbidity peak periods in May –June, August-September and November-December, the admissions declined in contrast to the finding on increased morbidity which had been found to be the major cause of malnutrition as per investigation on case history from caretakers. Insecurity incidents were found to be more towards the Kenya-Ethiopia border though

occasionally affecting program site areas that are proximal but not adversely within the larger Turkana North district. Migration however was noted to have contributed to the decline in admissions and the defaulting experienced over the period, figure 10.

Figure 10: Turkana North program response to context

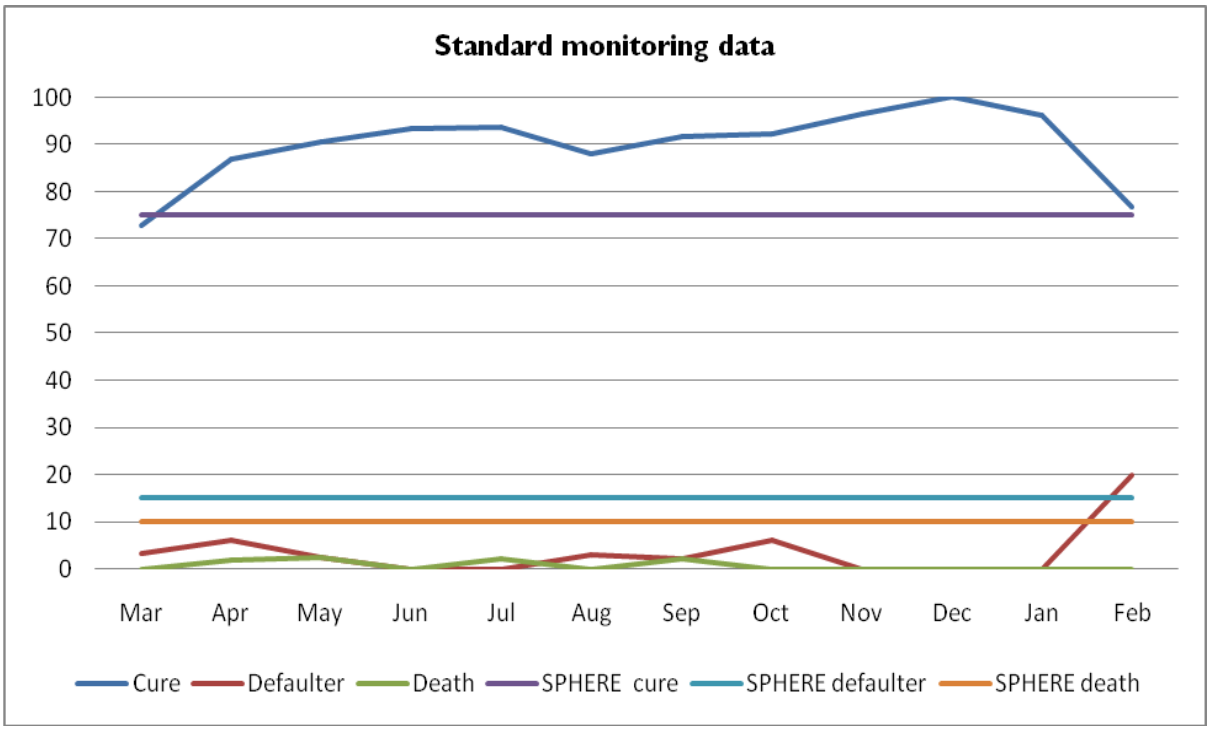
PROGRAM FIT TO CONTEXT – TURKANA NORTH												
	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
Seasons	Dry and hot	Rain			Cold in some areas		Dry, hot and windy	scattered light rains in a few areas			Dry and hot	
Livestock		More milk	Death of animals, reduced amount of livestock and milk		Reduced amounts of livestock and milk			Low breeding	Death and migration			
Labour	Charcoal Burning, livestock herding											
Disease			URTI, Malaria, diarrhoea			URTI, Malaria, diarrhoea			URTI, diarrhoea			
Insecurity	Insecure Kenya/Ethiopia border					Insecure				Insecure		
Migration	Out				Out							
Immigration			In						In			
Program	BSFP											



PROGRAM MONITORING INDICATORS (EFFECTIVENESS)

As regards program effectiveness as assessed through program monitoring indicators, the program has on overall performed well over the period having attained average rates of: cure – 89.9%, defaulter – 3.6% and death 0.7% within the recommended SPHERE standard of cure above 75%, defaulting of below 15% and death of below 10% respectively. There was a notable increase in defaulting above the 15% SPHERE cut off in February 2013 which was partially attributed to on-going migration. There was however inadequate association of the escalated rate to the context and thus errors in data recording also attributed to the high figures, figure 11.

Figure 11: Turkana North Program monitoring indicators

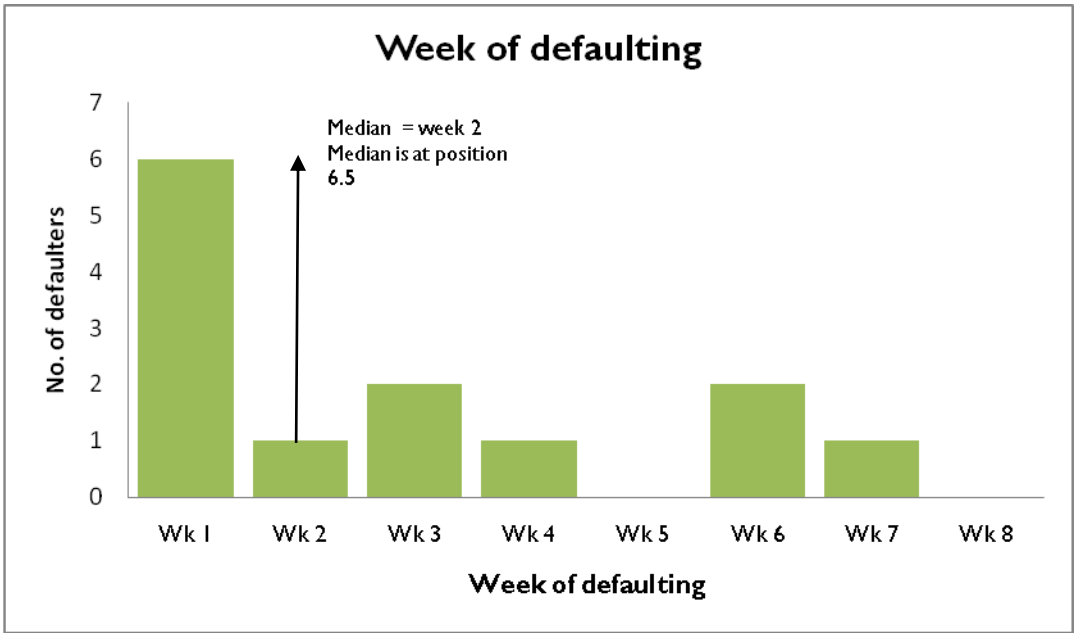


DEFAULTING

An investigation on the time of defaulting from the program revealed that majority of beneficiaries defaulted early with the median at week two. Beneficiaries defaulting early[5] are most probably current cases. Defaulting on overall was reported to be mainly due to migration and lack of access to program particularly in the rainy season. The reason of defaulting was however not recorded consistently, figure 12.

[5] Early defaulting (Within 4 weeks of admission). SQUEAC guidelines

Figure 12: Turkana North – Week of defaulting



2.2.1.2 SUMMARY OF QUALITATIVE FINDINGS

Table 8: Turkana North summary of boosters and barriers

Boosters	
Integration of nutrition and health services	Integration of nutrition and health services has over the time seen more children going for health services screened for malnutrition.
Treatment seeking behaviour	The treatment seeking behaviour was found to be fair with more of the caretakers reporting to seek assistance from the hospital or the OTP upon detection that the child was sick/malnourished.
Appreciation of program and malnutrition	The community overall expressed appreciation for the program. There were however requests by the community for program staff to enhance beneficiary monitoring during distributions and as well screening for new admissions. Many of the community members expressed knowledge of malnutrition and the signs and symptoms and consideration of malnutrition as a disease.
Ownership of program by health facility nurses	Overall the program has become acceptable by the nurses as part of the health facility work and thus enhancing the confidence of the community in the program. However there were challenges reported in recording of data in some sites during the outreaches particularly when nutrition staffs were not available.

Training and knowledge of nurses on IMAM	Most of the nurses expressed good knowledge and reported to have been trained in IMAM.
Program efficiency	The program was found to be efficiency in management of malnutrition activities during distributions with majority of mothers reporting to take less than 2 hours to be served by the program.
BSFP	The BSFP program that was on-going in March – May 2012 saw many children screened for malnutrition and admitted to the OTP and SFP.
Barriers	
Distance & poor infrastructure	Turkana North is very vast with distance to program sites by particularly the pastoralist communities being a barrier. Poor road infrastructure further compounds access to program.
Presence of stigma/adequate knowledge	Despite many of the community members citing malnutrition as a disease and citing the signs well, some caretakers of malnourished children reported to be stigmatized. Of the caretakers interviewed 25% reported to feel stigmatized. Some of the community members further did not understand very well the signs in relation to the program admission criteria.
Conflicting activities	Activities running at the same time to include FFA and fishing were a barrier to attending the program
Staffing	Despite the nurses having integrated nutrition activities into the health facility work, there are complaints particularly on the workload and which was cited as a barrier to attending to all beneficiaries appropriately. In addition the nurses requested for an increment of allowances for conducting outreaches. In Lapur division, it has been particularly difficult to have nurses stay due to the remoteness/poor facilitating environment. The CHWs complained about low remuneration/incentive that was many times delayed with some reporting to not have been paid at all in 2013.
Migration	Seasonal migration was found to be a barrier as the program is not able to access some of the migrants.
Community	Negligence of caretakers as a result of illiteracy is a challenge amongst the community with some caretakers not taking children to the program even upon referral by different sources. Alcoholism amongst most of the community members further challenges response to the program. Caretakers were in addition reported to forget the distribution return dates.

Plumpy nut stock outs	Plumpy nut stock outs were reported in some of the health facilities with delays experienced before replenishing of stocks.
Insecurity	Insecurity particularly along the Kenya- Ethiopia border has seen the community in sites proximal occasionally displaced as well as a challenged in delivery of services.
Community mobilization	The program has not incorporated key sources of referral e.g. traditional healers, TBAs and pharmacies all of whom reported to come across malnourished children, in its mobilization strategy.

2.2.2 STAGE TWO

2.2.2.1 HYPOTHESIS TESTING

Based on the information collected (both quantitative and qualitative) and analyzed in Stage One, there were observations of high and low coverage. The investigation concluded that coverage is likely to be relatively low in some sites and high in others.

The hypothesis was therefore that:

- Coverage is high in some areas and low in others within Lokitang, Upper and lower Kaaleng divisions.
- Coverage is low in Lapur division and high in the other divisions of Lokitang, Upper and lower Kaaleng.

Nine site areas in total were sampled to test the two hypotheses. Three areas were hypothesised to be insecure and three areas to be secure. As regards assessment of coverage of the two divisions, three sites were assessed from Lapur division and six sites from Kaaleng and Lokitang division (See annex 2.2c for findings per site).

In the test of hypothesis exercise for high/low coverage areas, the following results were found and calculations made using the decision rule (See section 1.3) in order to classify coverage as follows:

Table 9: Small area survey findings – Turkana North

District/region	SAM not in program	SAM in program	Total current cases	SAM recovering in	d(point coverage)	Point Coverage

				program		
Hypothesis 1						
High Coverage areas	0	3	3	1	1	Covered cases are >3 thus coverage is > 50%
Low coverage areas	2	3	5	1	2	Covered cases are >2 thus coverage is >50%
Hypothesis 2						
Lapur divisions	8	2	10		5	Covered cases are <5 thus coverage is <50%
Loikitang, Upper & Lower Kaaleng divisions	2	6	8		4	Covered cases are > 4 thus coverage is > 50%

As per the findings above Hypothesis # 1 was denied whereas hypothesis # 2 was accepted. Following the findings above and discussions with the Nutrition Support Officer, Lapur division was excluded in stage 3 of the wide area survey.

2.2.3 WIDE AREA SURVEY

2.2.3.1 Developing the prior

The data gathered in stage one and two were consolidated and grouped into two; boosters and barriers. The prior was developed from the average of the two methods of weighted and simple scoring of boosters and barriers. The scoring process was participatory. A factor was identified and participants gave a score which was then averaged to provide the factor score as shown in the table below. The boosters were thereafter added to the minimum coverage (0.0%) while the barriers deducted from the maximum coverage (100.0%). A median value was thereafter calculated.

Table 10: Synthesis of boosters and barriers – Turkana North

BOOSTER	SCORE		BARRIER	SCORE	
	Weighted	Simple		Weighted	Simple
Program effectiveness (routine program data)	4	5	Lack of access distance/poor infrastructure/seasonal rivers	3	5
BSFP	2.5	5	Illiteracy (confusion about OTP days)	1.5	5
Community awareness of malnutrition	3.5	5	Stigma	2.5	5
Health seeking behaviour	3	5	Community mobilisation	3	5
Appreciation of program	4	5	Insecurity	1.5	5
Integration of nutrition activities with other health services	3.5	5	Alcoholism/child neglect	2	5
Ownership of nutrition activities	3.5	5	Migration	2.5	5
Training and knowledge of nurses and CHWs on IMAM	3.5	5	Busy caretakers/ conflicting activities e.g. FFA, fishing	2	5
Inclusion of TBAs	3	5	Lack of plumpy nut	0.5	5
Varied sources of referral and knowledge about program	3.5	5	Motivation of CHWs and nurses	2	5
Program waiting time (efficiency)	3	5	Lack of adequate inclusion of traditional healers	1.5	5
Presence of nutrition officers	3	5	Workload of nurses	1.5	5
			Program fit to context	3.5	5
Total	**40**	**60**		**27**	**65**

3. Scoring of weighted boosters and barriers

   Prior weighted= ((0%+40%) + (100%-27%))/2= 56.5

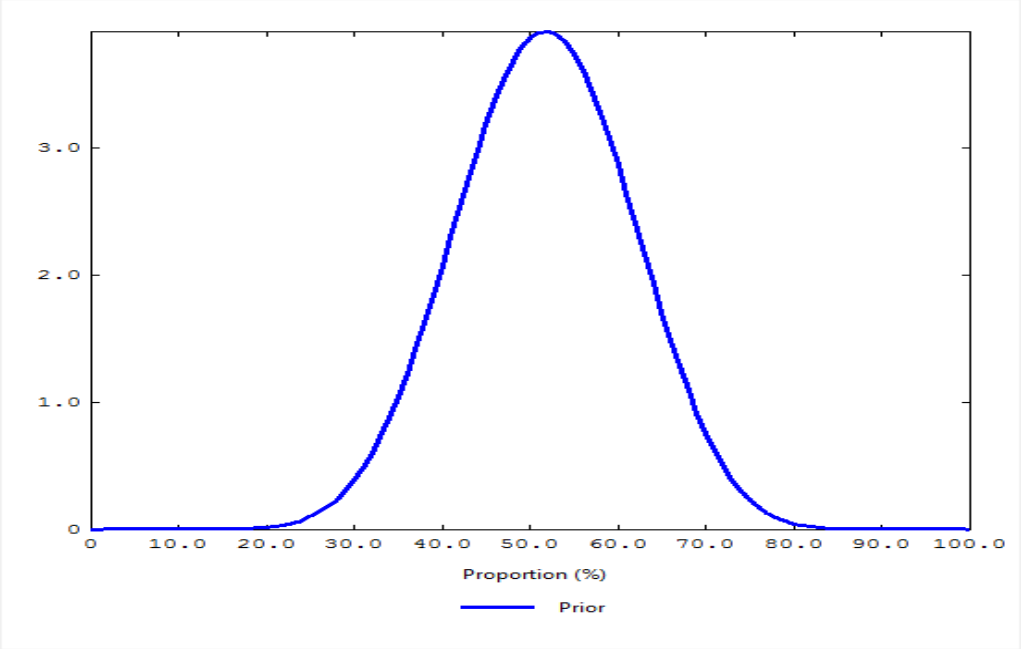
4. Simple scoring of boosters and barriers

   Prior un-weighted/simple = ((0%+60%) + (100%-65%))/2= 47.5

   Averaged Prior = (47.5%+56.5%)/2 = 52%

Using the Bayesian Coverage Estimate Calculator, the Prior was set as 52% (α=12.7 and β= 11.9) presented below.

Figure 13: Prior estimates Turkana North - BayesSQUEAC



2.2.3.2 Sampling methodology for wide area survey

Sample size was computed as follows:

$$n = \frac{0.52 \times (1 - 0.52)}{(0.14/1.96)^2} - (12.7 + 11.9 - 2)$$

From the above a sample size of 27 was derived.

Calculations were then undertaken to determine the minimum number of villages to sample as shown in the table below:

Minimum number of villages:

Table 11: Computation of required villages – Turkana North

Target sample size	**27**
Average village population	1000
Prevalence of SAM	1.0% (Integrated health and nutrition survey 2012)
% of children 6-59 months	15%(KDHS)

Using the formula for computing no. of villages:

$$n = \frac{27}{(1000 \times 0.15 \times 0.01} \quad = 18 \text{ villages}$$

Sampling of villages

A sketched out map of Turkana North was drawn from the main up to scale map of the County provided. The map was used in sampling the 18 villages with several quadrants first drawn and sampling done in 9 of these as they covered 50.0% or more of the study area (excluded Kibish and Lapur divisions). A total of 2 villages were sampled per quadrant to obtain the required sample (18), based on proximity to the village to centre).

At the community level active and adaptive case finding was used through the local case definition of malnutrition as already established through qualitative data collection. In each village, a key informant was identified and the case definition shared.

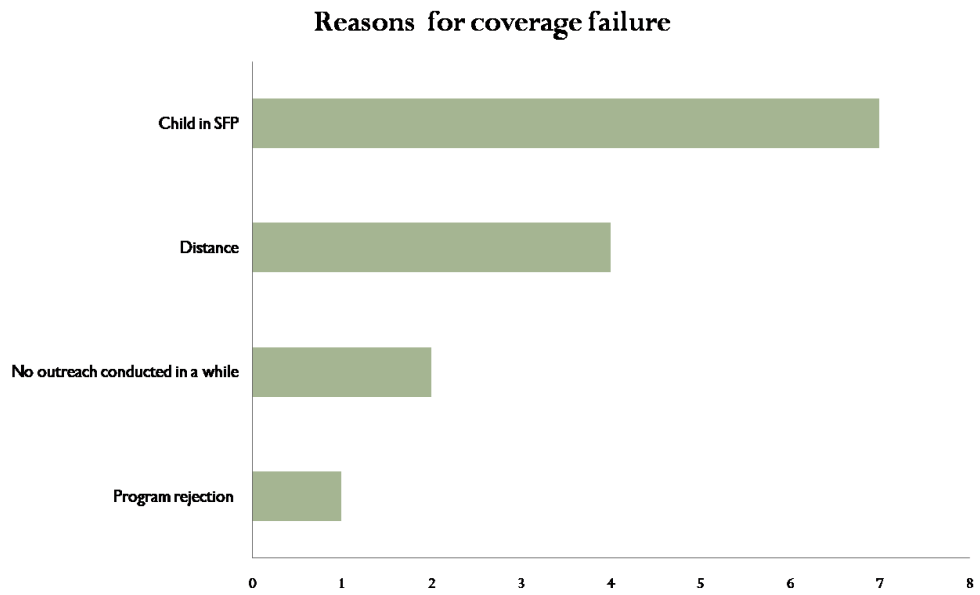
Wide area survey results

Table 12: Wide area survey summary findings Turkana North

SAM cases not in program	**16**
SAM cases in program	16
Total current cases	32
Recovering in program	8

(See annex 2.2e for findings per village)

Figure 14: Reasons for coverage failure



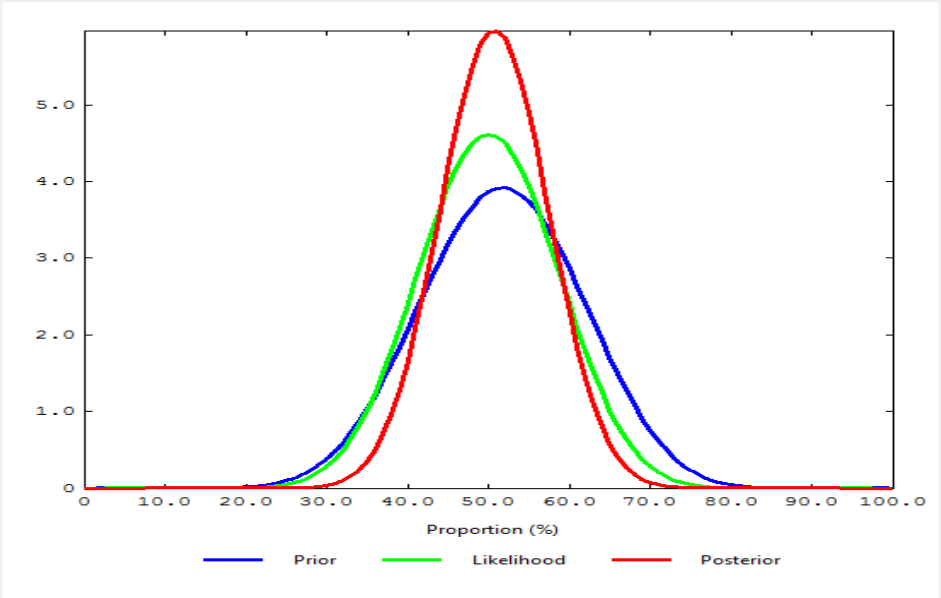
COVERAGE ESTIMATES

Point coverage is presented as the preferred estimate of the situation as per findings on ground. The rationale is that there is relatively weak case finding to include discontented CHWs and despite lack of data on average length of stay, the indicative prolonged length of stay as per findings on sharing of ration and sale of plumpy nut.

Table 13: Coverage estimates Turkana North

Likelihood estimates	**50%**
Point coverage (BayesSQUEAC - posterior)	**50.7%** **(37.6% - 63.4%)**

Figure 15: Point coverage BayesSQUEAC



The figure above indicates strong overlap between the likelihood and prior.

CONCLUSION

From the Bayesian coverage calculator, the posterior point coverage is estimated at **50.7 %(37.6% - 63.4%), a** point above the recommended SPHERE standard of 50% in rural areas. Overall coverage of the program is thus acceptable.

2.3 TURKANA WEST DISTRICT

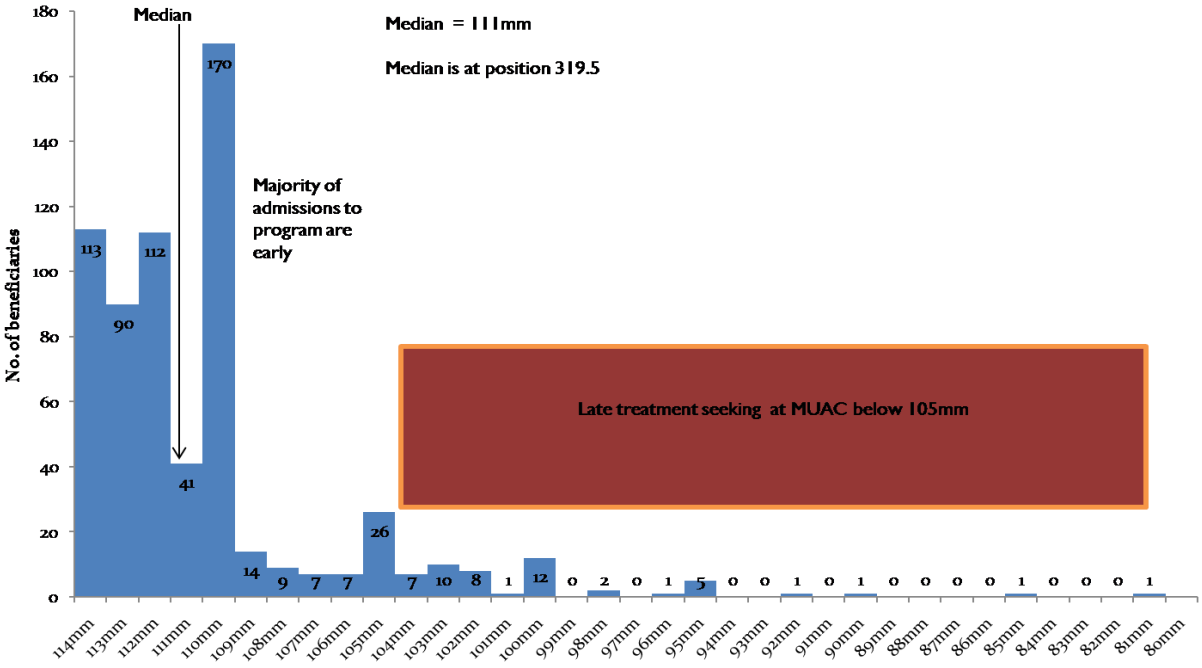
2.3.1 STAGE 1

2.3.1.1 QUANTITATIVE DATA

MUAC AT ADMISSION

Assessment of MUAC at admission in Turkana West revealed a median value of 111mm, an indicator of early treatment seeking for majority of the beneficiaries. However a proportion of the community was found to be seeking treatment late at MUAC below 105, figure 16. The late seeking for the beneficiaries with MUAC below 105mm was found to be as a result of mainly migration/displacement and parental neglect despite knowledge that child is malnourished.

Figure 16: MUAC at admission Turkana West



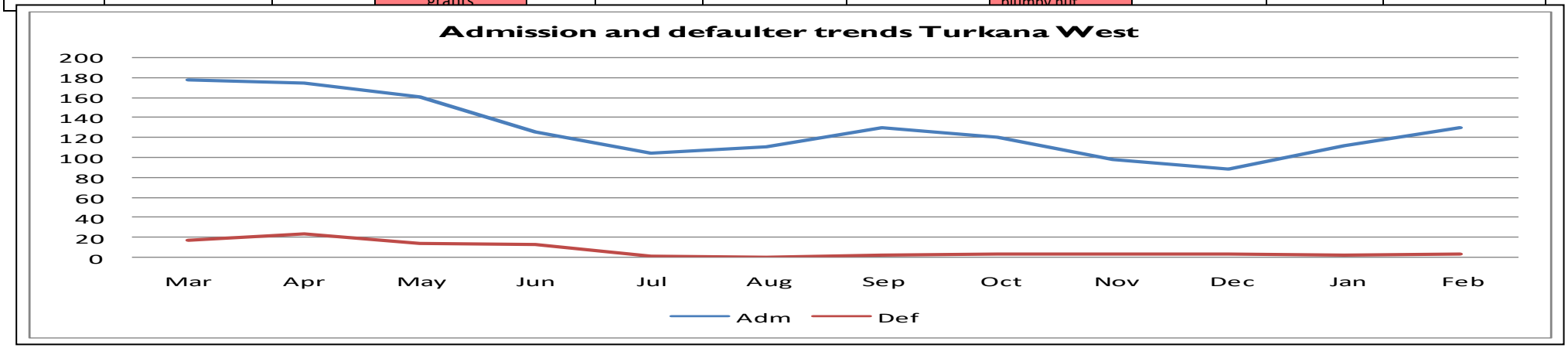
PROGRAM FIT TO CONTEXT

The program admissions and defaulters over the period co-related well to the context, figure 17. Though the program was found to record high admissions at peak morbidity times, migration and transition of IRC grants saw less than expected admissions over the April to July period. Low scale banditry particularly along the Kenya-Uganda border also

reduced program admissions over the period as a result of displacements. In September there was an increase in admissions as a result of drought experienced over the August-September period and as well beginning of migration back into area. The decline in admissions over the October – December period during a peak morbidity period is attributed to plumpy nut stock outs in November an on-going migration. The increase in admissions over the January-February period is largely attributed to drought at the beginning of the year.

Figure 17: Program response to context Turkana West

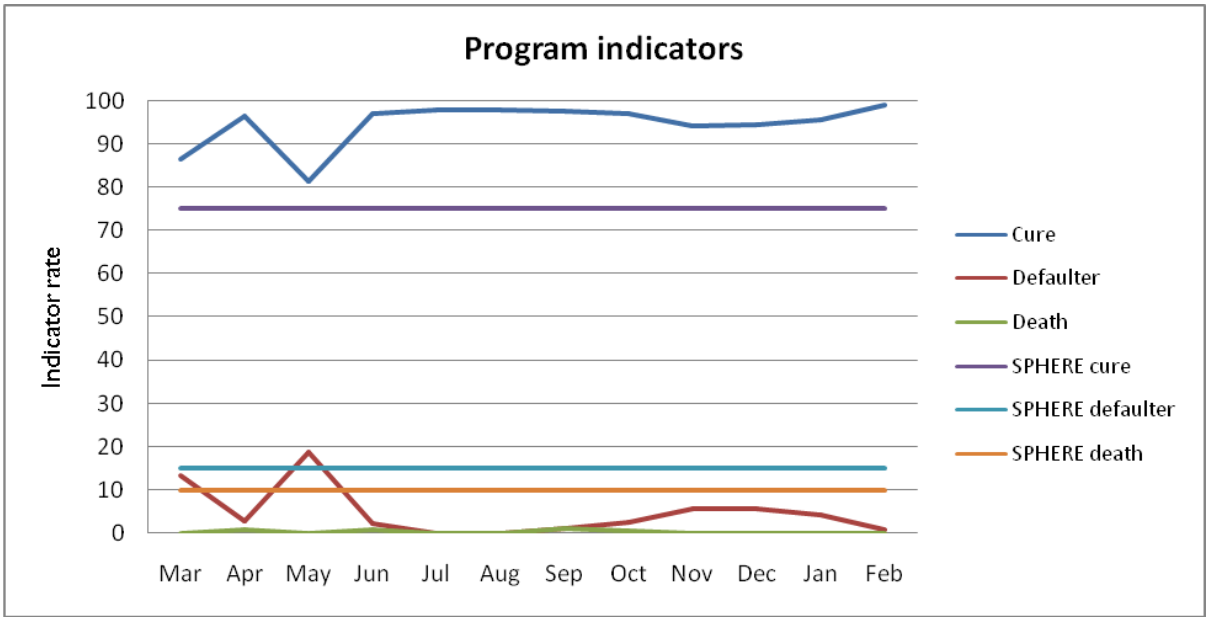
	PROGRAM FIT TO CONTEXT - TURKANA WEST											
Context data	**MARCH**	**APRIL**	**MAY**	**JUNE**	**JULY**	**AUGUST**	**SEPTEMBER**	**OCTOBER**	**NOVEMBER**	**DECEMBER**	**JANUARY**	**FEBRUARY**
Seasons	Rain		Rain	Cold		Dry		Short rains		Dry, drought		beg. of rains in a few parts
Agriculture	Ploughing, Planting & weeding (FFA)			Harvesting								Land preparation
Livestock	Increase in milk	Milk reduction, death of weak animals					Low breeding			Death and migration of animals		
Labour	IGAs, FFA/ land tilling		Herding, trading, search for water & pasture, charcoal burning									
Disease		Malaria, ARTIs, diarrhoea		ARTIs					Diarrhoea, URTIs, Malaria			
Insecurity	Low scale banditry and cattle rustling (Particularly along the Turkana-Uganda border)							Raids in Oropoi	Low scale banditry and cattle rustling (particularly along the border)			
Migration	Out						Out					
Immigration	In						In					
Program			Transition of IRC grants						Stock outs of plumpy nut			



PROGRAM MONITORING INDICATORS (EFFECTIVENESS)

The program has on overall performed well as regards program effectiveness as assessed through program monitoring indicators, figure 18. The program has attained average rates of: cure – 95%, defaulter – 4.8% and death 0.2% within the recommended SPHERE standard of cure above 75%, defaulting of below 15% and death of below 10% respectively. There was high defaulting in the month of May that was largely attributed to transition of the IRC grants and thus reduced program activities at this time as per the program fit to context above.

Figure 18: Turkana West program indicators

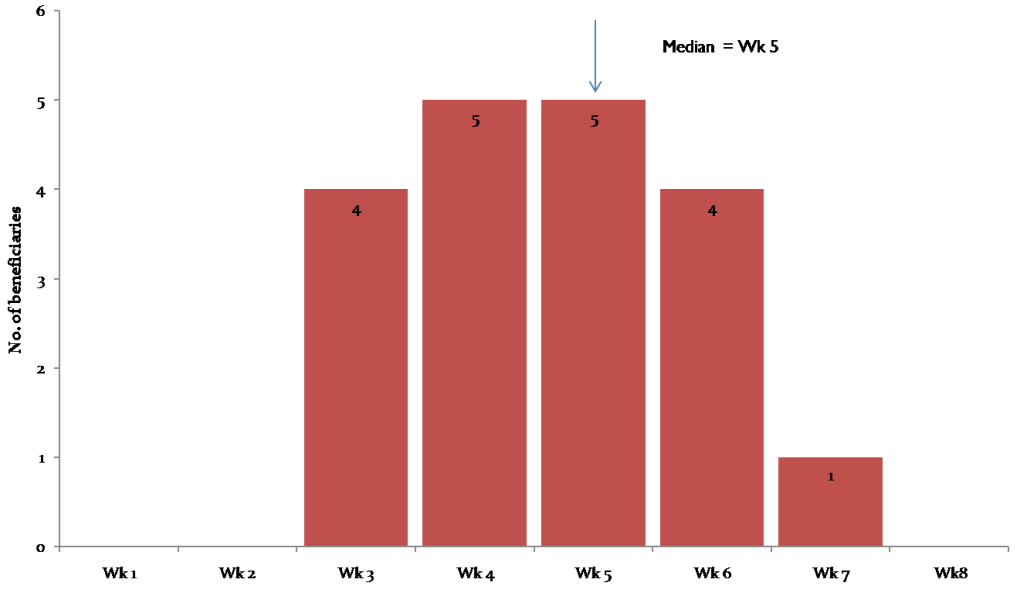


DEFAULTING

An investigation on the time of defaulting from the program revealed that the median defaulting was at week 5 and probable that this were exited as cured[6] figure 19. The defaulting recorded was attributed to migration. Overall, there were few defaulters recorded in Turkana West which was attributed to linkage efforts to different OTP sites of migrating communities by CHWs particularly in Oropoi division.

[6]Defaulting after week 4 (Recovering or recovered SAM case), SQUEAC guidelines October 2012.

Figure 19: Turkana West – week of defaulting



2.3.1.2 SUMMARY OF QUALITATIVE FINDINGS

Table 14: Summary of boosters and barriers Turkana West

Boosters	
Community Mobilization	Efforts to link pastoral communities to sites proximal to migratory routes have enhanced program coverage particularly in Oropoi division. The CHWs have identified a pastoral community leader to support in linkage activities in migration. As well the CHWs have ensured that the beneficiary cards are pinned to the MCH card to ensure safety and facilitate monitoring of beneficiaries in new sites. The program has been able to incorporate TBAs in its mobilisation strategy.
Appreciation of program and malnutrition	The community is appreciative of the program and further considers malnutrition as disease with many of the community members are conversant with the signs and symptoms.
Ownership of program by health facility nurses	Overall the program has become acceptable by the nurses as part of the health facility work and thus enhancing the confidence of the community in the program.
Integration of nutrition and health services	Integration of nutrition and health services has over the time seen more children going for health services screened for malnutrition.

Nurses knowledge on IMAM	The nurses expressed considerable knowledge of IMAM.
Program efficiency	The program was found to be relatively efficient in management of malnutrition activities during distributions with majority of mothers reporting to take less than 3 hours to be served.
Complementary programs (BSFP and Cash transfer)	The BSFP program that was on-going in March – May 2012 saw many children screened for malnutrition. In addition, it enhanced the community's confidence in nutrition programming as more children (without targeting) received supplementary rations. The cash transfer program has also enhanced confidence and appreciation of IRC which is viewed to be offering a variety of programs and ultimately improving overall livelihoods.
Availability of logistical support	The use of 4×4 vehicles is quite appropriate for the terrain ensuring continuity of activities in difficult terrain and during the rainy season.
Barriers	
Presence of stigma	Despite many of the community members citing malnutrition as a disease and citing the signs well, some caretakers of malnourished children reported to be stigmatized. Of the caretakers interviewed 18% reported to feel stigmatized.
Low motivation	The nurses requested for an increment of allowances for conducting outreaches with the CHWs requesting for an overall review of their remuneration.
Migration	Seasonal migration was found to be a barrier as the program is not able to access migrants in some of the areas.
Community	High illiteracy levels are a barrier to coverage with caretakers forgetting return dates and expressing ignorance/negligence on the need to take children to the program despite referral. Alcoholism is further a challenge amongst the community. Some of the community members reported to be discouraged by rejection of children upon screening further indication of lack of understanding of program criteria that is highly associated to the low literacy levels.
Distance	Distance was cited as a barrier to program access particularly for pastoral communities.

Seasonal rivers	Flooding of seasonal rivers occasionally hampers access to the program
Other competing priorities	Other competing work priorities to include FFA and home activities have been a barrier to program attendance.
Lack of facilitating logistics within health facilities	All the health facilities are reliant on the partners to provide vehicles to be able to conduct outreach. In the event of a challenge with the partner, then the health facilities are unable to conduct the outreach sessions. In May – June 2012 during IRC grants transition, the health facilities were unable to conduct outreaches.
Insecurity	Insecurity particularly along the Kenya-Uganda border particularly in Oropoi division has periodically been a challenge to provision of services.
Plumpy nut stock outs	Stock outs of plumpy nut were reported in particular in November 2012.
Inadequate sensitization	Some of the community members reported to reject the program due to the fear that plumpy nut would cause diarrhoea amongst the children.

2.3.2 STAGE TWO

2.3.2.1 HYPOTHESIS TESTING

Based on the information collected and analyzed in Stage One, there were observations of high and low coverage as seen in the admissions per site. The investigation concluded that coverage is likely to be relatively low in some sites and high in others.

The hypothesis was therefore that:

- # 1: Coverage is high within town centre catchment areas and low in the areas where sites are not within town catchment areas.
- # 2: In areas where there is insecurity (particularly along the Turkana-Uganda border) coverage is low while in areas where there is no insecurity coverage is high.

The objective of Stage Two was to confirm the locations of areas of high and low coverage as well as the reasons for coverage failure identified in Stage One (above) using small area surveys. To test this hypothesis, eleven site areas were selected, three sites were selected from areas presumed to be insecure and two sites presumed to be secure. As regards town areas, three sites were selected and regarding non-town sites three sites selected (See annex 2.3c for findings per site).

Active and adaptive case finding was used in identification of malnourished children.

In the test of hypothesis exercise for high/low coverage areas, the following results were found and calculations made using the decision rule (See section 1.3) in order to classify coverage as follows:

Table 15: Small area survey findings Turkana West

District/region	SAM not in program	SAM in program	SAM recovering in program	d	Point Coverage
Hypothesis 1					
Town Centre catchment sites e.g. Loki and Kakuma	2	4		3	>50%
Non – town centre catchment sites	0	1		0	>50%
Hypothesis 2					
Insecure areas	0	3		1	>50%
Secure areas	0	2		1	>50%

As per the findings above Hypothesis # 1 and # 2 were denied as coverage is above 50% in all the areas.

2.3.3 WIDE AREA SURVEY

2.3.3.1 Developing the prior

The data gathered in stage one and two were consolidated and grouped into two; boosters and barriers. The prior was developed from the average of the two methods of weighted and simple scoring of boosters and barriers. The scoring process was participatory. A factor was identified and participants gave a score which was then averaged to provide the factor score as shown in the table below. The boosters were thereafter added to the minimum

coverage (0.0%) while the barriers deducted from the maximum coverage (100.0%). A median value was thereafter calculated.

Table 16: Synthesis of boosters and barriers Turkana West

BOOSTER	SCORE		BARRIER	SCORE	
	Weighted	Simple		Weighted	Simple
Community awareness of malnutrition	3.5	5	Migration	2.5	5
BSFP	3	5	Insecurity	2	5
Community mobilization	3.5	5	Program rejection	1.5	5
Health seeking behaviour	3.5	5	Seasonal rivers	1	5
Appreciation of program	4	5	Stigma	2	5
Integration of nutrition activities with other health services	4	5	Distance/poor infrastructure	2	5
Ownership of nutrition activities	3.5	5	Other work commitments	1.5	5
Nurses and CHWs knowledge on IMAM	3.5	5	Illiteracy (mother cannot remember date of distribution)	1.5	5
Inclusion of TBAs	1.5	5	Alcoholism/neglect	1.5	5
Program fit to context	4	5	Lack of plumpy nut	0.5	5
Program effectiveness (routine monitoring data)	4.5	5	Motivation of CHWs and nurses	1.5	5
Presence of many outreach sites	3.5	5	Fear of reaction of plumpy nut e.g. diarrhoea	0.5	5
Program waiting time efficiency	3	5			
Availability of logistical support	3.5	5			
Cash transfer program	2.5	5			
Total	51	75		18	60

5. Scoring of weighted boosters and barriers

   Prior weighted= ((0%+51%) + (100%-18%))/2= **66.5%**

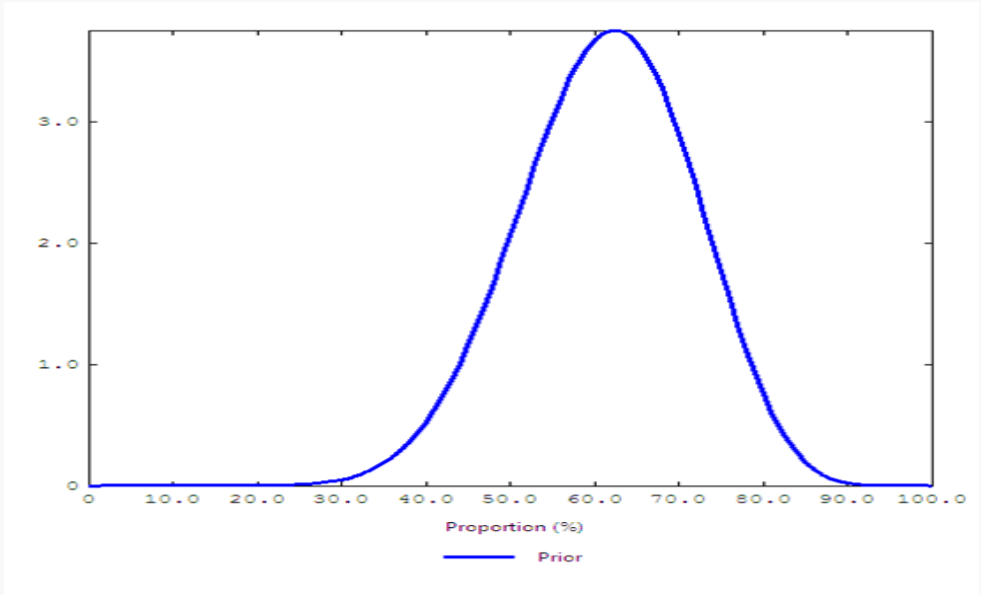
6. Simple scoring of boosters and barriers

   Prior un-weighted/simple = ((0%+75%) + (100%-60%))/2= **57.5%**

   Averaged Prior = (66.5%+57.5%)/2 = 62%

Using the Bayesian Coverage Estimate Calculator, the Prior was set as 62% (α=13.1 and β= 8.3) presented below.

Figure 20: Prior estimates BayesSQUEAC – Turkana West



2.3.3.2 Sampling methodology for wide area survey

Sample size was computed as follows:

$$n = \frac{0.62 \times (1 - 0.62)}{(0.13/1.96)^2} - (13.1 + 8.3 - 2)$$

From the above a sample size of 35 was derived.

Calculations were then undertaken to determine the minimum number of villages to sample as shown in the table below:

Minimum number of villages:

Table 17: Computation of required villages Turkana West

Target sample size	**35**
Average village population	1200(District figures)

Prevalence of SAM	1.9% (Integrated health and nutrition survey 2012)
% of children 6-59 months	15%(KDHS)

Using the formula for computing no. of villages:

$$n = \frac{35}{(1200 \times 0.15 \times 0.019} \quad = 11 \text{ villages}$$

Sampling of villages

A sketched out map of Turkana West was drawn from the main up to scale map of the County provided. The map was used in sampling the 11 villages (An extra 2 villages were sampled) with several quadrants first drawn and sampling done in 8 of these as they covered 50.0% or more of the study area. A total of 2 villages were sampled per quadrant to obtain the required sample (11), based on proximity to the village to centre).

At the community level active and adaptive case finding was used through the local case definition of malnutrition as already established through qualitative data collection. In each village, a key informant was identified and the case definition shared.

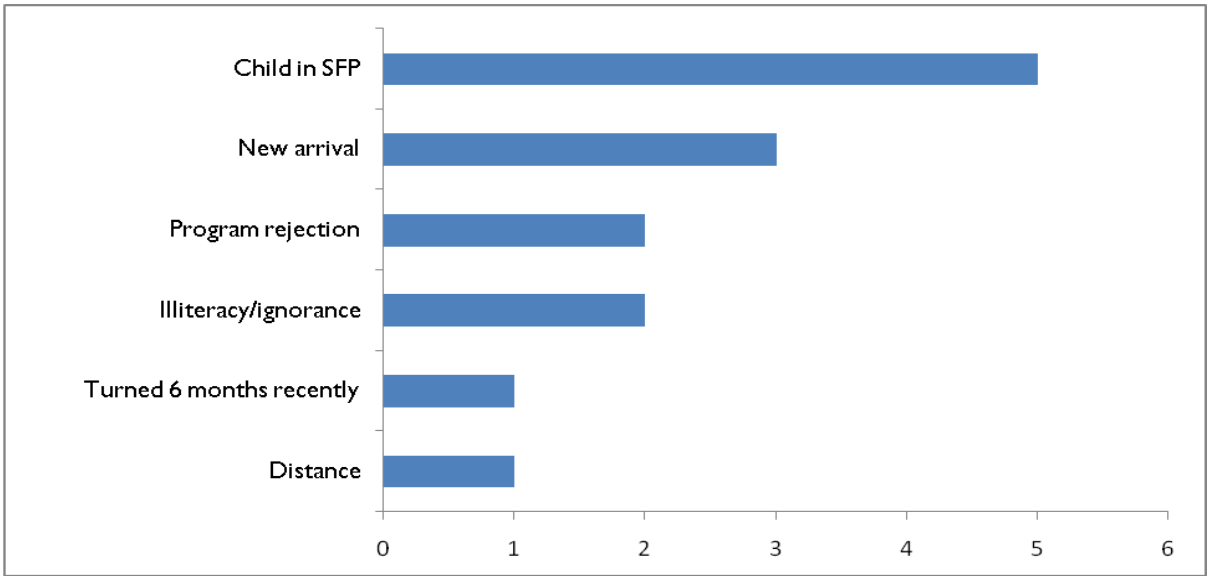
Wide area survey results

Table 18: Wide area survey summary results Turkana West

SAM cases not in program	**14**
SAM cases in program	14
Total current cases	28
Recovering in program	18

(See annex 2.3e for findings per village)

Figure 21: Reasons for coverage failure as per wide area survey results:



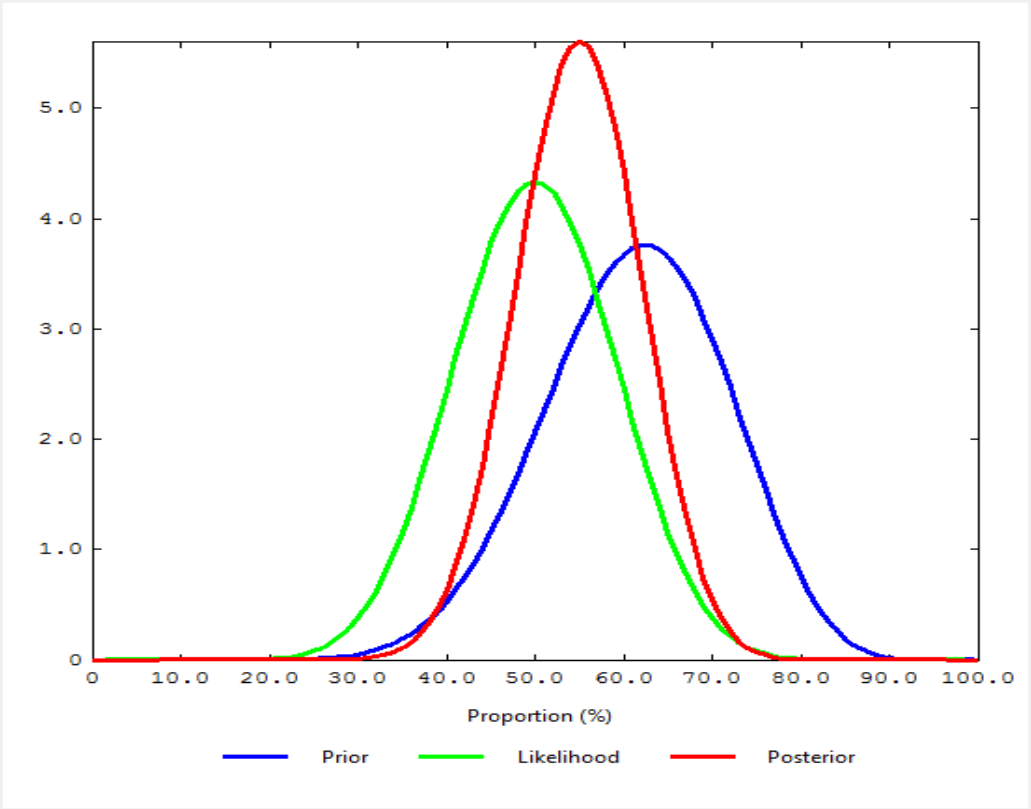
COVERAGE ESTIMATES

Point coverage is the preferred estimate of the situation as per findings on ground. Despite Turkana West presenting better treatment seeking and active case finding in comparison to other districts there is indicative prolonged length of stay as per findings on sharing of ration and sale of plumpy nut. Comparison across the districts is further enabled by presentation of a similar coverage estimator.

Table 19: Coverage survey estimates Turkana West

Likelihood estimates	**50%**
Point coverage (BayesSQUEAC - posterior)	**55.1% (40.8% - 68.4%)**

Figure 22: Point coverage estimate Turkana West - BayesSQUEAC



The figure above indicates considerable overlap between the likelihood and prior.

CONCLUSION

From the Bayesian coverage calculator, the posterior point coverage is estimated at **55.1% (40.8% - 68.4%)** above the recommended SPHERE standard of 50% in rural areas. Overall coverage of the program is thus acceptable.

2.4 TURKANA SOUTH AND EAST

Turkana South and East districts are considered as one region as regards surveillance. The investigation however found there were differences in coverage between the two districts and therefore different wide area surveys (stage three) were conducted.

2.4.1 STAGE 1

2.4.1.1 Quantitative data

MUAC AT ADMISSION

Assessment of MUAC at admission revealed median values of 111mm and 112mm Turkana South and East respectively. In both districts the MUAC at admission is an indicator of early treatment seeking for majority of the beneficiaries with Turkana East recording earlier admission. A proportion of the community was however found to be seeking treatment late at MUAC below 105, figures 23 and 24 below. The late seeking for the beneficiaries with was mainly found to be as a result of on-going migration, distance for some beneficiaries, displacements particularly in Turkana East and initial health seeking through other sources e.g. traditional healers in Turkana South.

Figure 23: MUAC at admission Turkana South

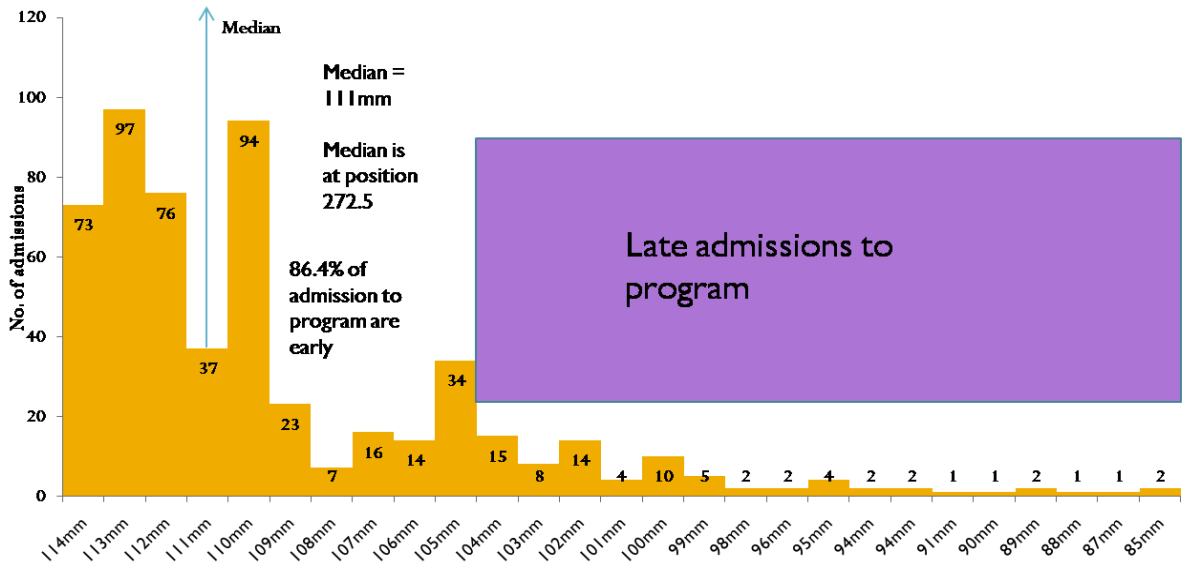
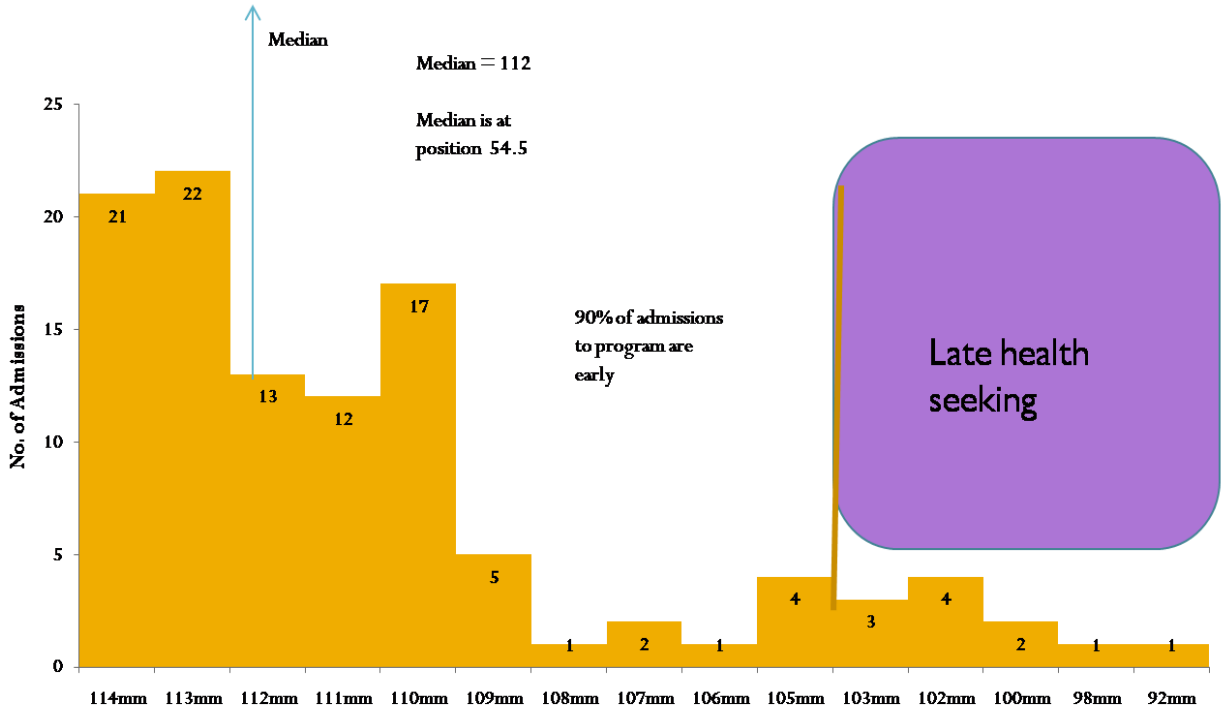


Figure 24: MUAC at admission Turkana East



PROGRAM FIT TO CONTEXT

There is weak relation of program admissions and defaulters to context in Turkana South over the period. The program recorded a declining trend of admissions from March to December 2012 even during peak morbidity times and when there was migration back into the area. From January to February 2013 there is an increase in admissions largely as a result of the drought that was experienced from August 2012, figure 25. In regard to Turkana East the relation of admissions to the context is stronger. The increased defaulting observed from March to June and July to October is as a result of insecurity and stock outs of plumpy nut in some of the health facilities from September 2012, figure 26. Continuous insecurity particularly in the Southern part of Turkana East is overall a challenge to optimal admissions.

Figure 25: Program response to context Turkana South

Program fit to context - Turkana South

Context data	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Seasons	Dry						Drought					
	Little rain	Heavy rains/ flooding			Dry	Drought						Little rain
Agriculture	Land preparation, ploughing and weeding	Planting, First harvest	Weeding, planting	Weeding/ harvesting	Harvesting. Preparation for second planting							Preparation for planting
Livestock		livestock stolen, and killed by floods	Animal breeding, lot of milk		Low breeding, less milk, disease outbreak	No milk, animal dying	Death and theft					
Labour	FFA	FFA, Cash for work				FFA		FFA	FFA in some areas			FFA
Disease		RTI, Diarrhoea, malaria, brucellosis										
Insecurity	Raids and conflicts											
Immigration		In and within										Move to mountains to avoid floods
Migration	Out					Out						
Program	BSFP											

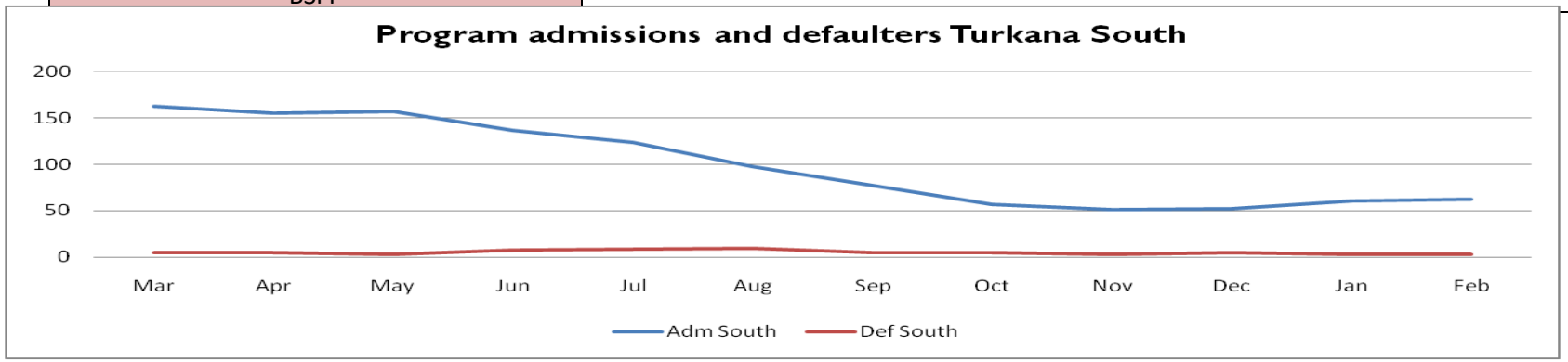
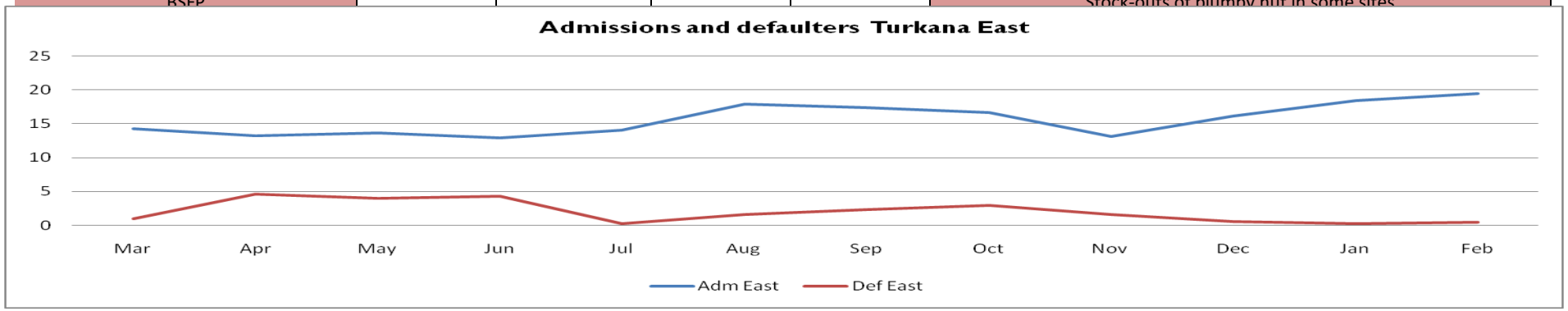


Figure 26: Program fit to context Turkana East

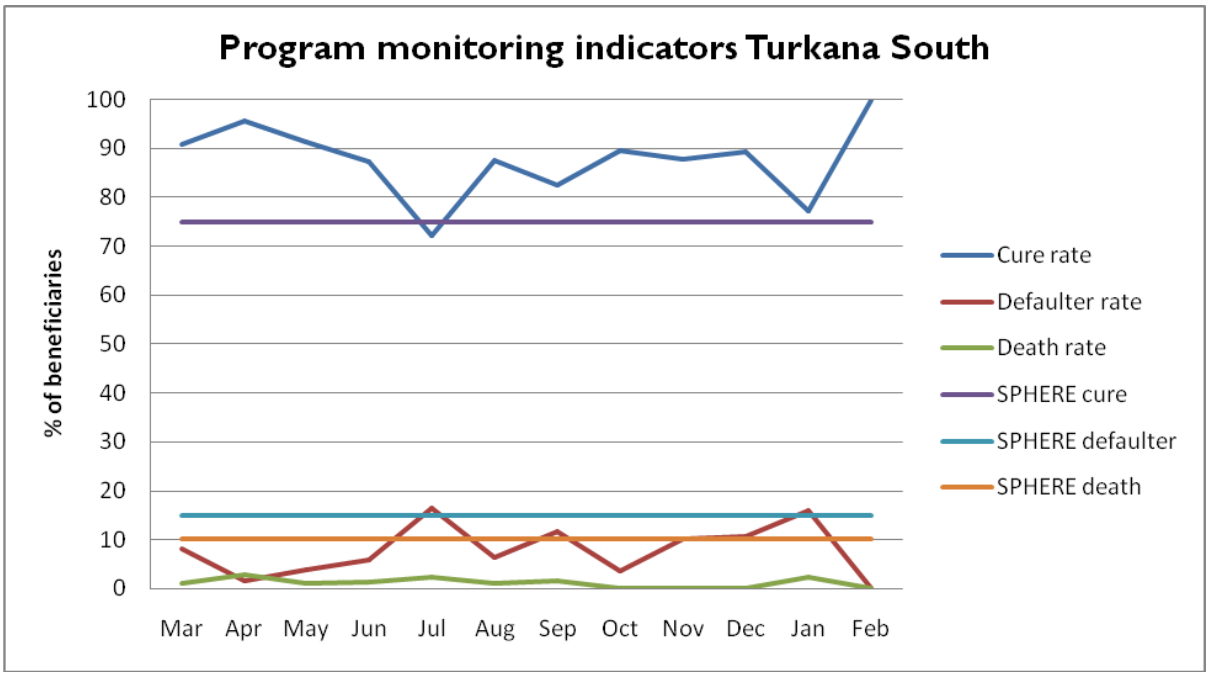
Context data	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
Seasons	Dry period	Rain					Dry period					
Livestock	No livestock disease, animals stolen and some killed		Animal breeding, some milk available, some animals stolen and others killed				Death and theft of animals					
Agriculture	Irrigation Farming											
Labour	FFA											
Disease												
		Malaria, URTIs, diarrhoea										
Insecurity	Raids and conflicts											
Migration & Immigration	In	Out										
Program	BSFP						Stock-outs of plumpy nut in some sites					



PROGRAM MONITORING INDICATORS

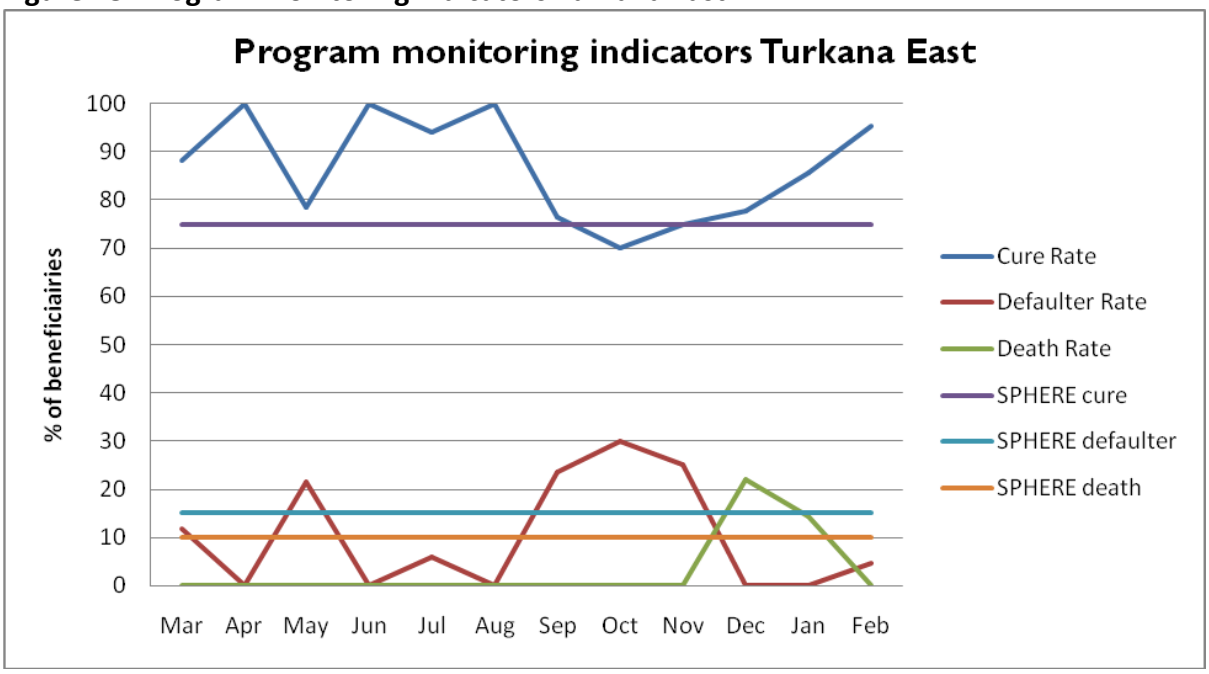
In both Turkana South and East the programs overall performed well and attained average indicators within the recommended SPHERE standards (Turkana South; cure – 87.5%, defaulter 7.5% and cure 1.0% whereas Turkana East cure - 86.7%, defaulter – 10.1% and death 3.0%). In regard to Turkana South, in July the cure rates went to below 75% (72.1%) whilst defaulting was above 15% (16.3%). This was occasioned by movements from insecure sites to Lokichar after the rains with an increase in conflicts over pasture. There were no reasons recorded for the high defaulting in January and thus the need to enhance monitoring, figure 27.

Figure 27: Program monitoring indictors Turkana South



In Turkana East high mortality rates above the SPHERE standards were recorded in December and January. These were attributed to having only one exit that was a death in each of the months. The defaulting that peaks particularly in July 2012 and January 2013 is mainly as a result of insecurity and stock outs of plumpy nut in some of the health facilities from September 2012, figure 28.

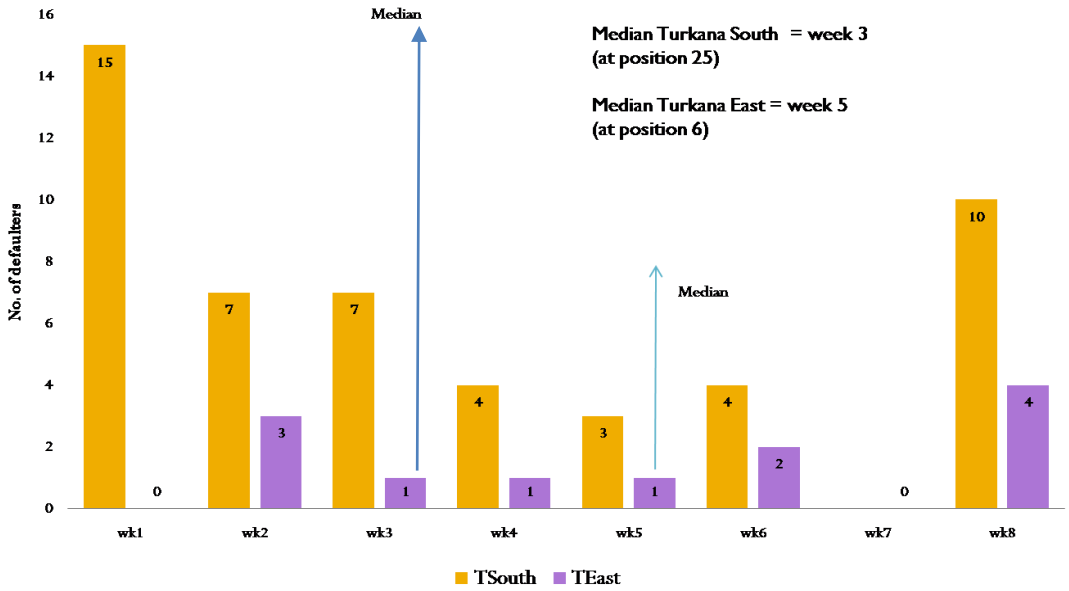
Figure 28: Program monitoring indicators Turkana East



DEFAULTING

An investigation on the time of defaulting found that there was early defaulting in Turkana South at a median of week 3. In Turkana East however the median defaulting was at week 5, figure 29. The reasons for early defaulting in Turkana South were reported as continuous migration as a result of both drought and conflicts and insecurity and busy mothers especially those in FFA lack permission to attend program.

Figure 29: Turkana South and East – Week of defaulting



2.4.1.2 SUMMARY OF QUALITATIVE FINDINGS

Table 20: Summary of boosters and barriers Turkana South and East

Boosters	
Community knowledge on malnutrition	Most of the community members expressed knowledge of malnutrition and were able to cite the key signs of malnutrition to include wasting and distended abdomen. Overall the community regards malnutrition as a disease.
Inclusion of TBAs	Some of the TBAs have been incorporated in the mobilisation strategy and conduct screening and referrals.
Appreciation of program	The community is appreciative of the program and cited benefits such as provision of plumpy nut, child recovery and management of other illnesses. In addition the community reported the decentralized sites to have enhanced access to the program.
Treatment seeking behaviour for SAM	Overall the treatment seeking behaviour for SAM was found to be appropriate despite a few caretakers from Turkana South reporting to seek treatment from traditional healers initially on detection that the child was malnourished.
Motivation of CHWs	The CHWs particularly in the WVK expressed approval for the current mode of payment which is given for the day worked.
Nurses knowledge on IMAM	The nurses expressed considerable knowledge of IMAM.
Program efficiency	The program was found to be efficient during distributions with majority of caretakers reporting to take less than 1 hour before being served.
BSFP	The BSFP program that was on-going in March – May 2012 saw many children screened for malnutrition. In addition, it enhanced the community's confidence in nutrition programming as more children received supplementary rations.
Barriers	
Lack of training on IMAM for some of the nurses	Nurses from a few of the health facilities reported to lack training on IMAM.
Conflicts & raids	On-going internal conflicts and raids particularly in Turkana South have occasionally interfered with attendance to the program.
Presence of stigma	Despite many of the community members citing malnutrition as a disease and

	citing the signs well, some caretakers of malnourished children reported to be stigmatized. Of the caretakers interviewed 42.8% and 33% in Turkana South and East reported to feel stigmatized.
Community mobilization	The mobilization strategy has not included traditional healers from whom the community seeks care.
Staff attitude/bias	Some of the staffs were reported to scold mothers who had malnourished children and thus intimidating them and consequently fear to take children to the program. In addition some staffs were reported to favour their relatives a practice that discouraged some of the community members.
Migration	Continuous migration within and from the districts was found to be a barrier as the program is not able to access some of the migrants.
Community	High illiteracy levels amongst the community and as a result expressing ignorance/negligence on the need to take children to the program despite referral. Alcoholism is further a challenge to ensuring consistent attendance. Cultural barriers e.g. fear of removal of clothes were in addition cited as a barrier to seeking care from the program.
Distance	Distance was cited as a barrier to program access particularly for pastoral communities.
Other competing priorities	Other competing work priorities to include FFA and home activities have been a barrier to program attendance. Lack of permission from the FFA work to attend the program further compounded the challenge.
CHW payment method	The mode of payment of CHWs of payment only for the days worked does not motivate/encourage continuous work throughout the month and thus a challenge to active case finding and defaulter tracing amongst other mobilisation activities.
Specific to Turkana East	
Insecurity	Insecurity particularly in the Southern part of Turkana East is a challenge to accessing beneficiaries. The program was unable to access Kapedo and Lomelo divisions for the entire period of March 2012 to February 2013.
Lack of access to some sites due to rains	Some sites were inaccessible during the rains due to poor road infrastructure.
Lack of staff in some sites/understaffing	A few health facilities were reported to lack staff, experience high staff transition or have few staff to implement the program effectively.
Shortage of supplies in some facilities	Some health facilities reported stock outs of both plumpy nut and CSB particularly from September 2012. As a result the community is discouraged from seeking treatment by the shortage and being turned away.

Children in SFP	SAM children were found admitted in the SFP.

2.4.2 STAGE TWO

2.4.2.1 HYPOTHESIS TESTING

Based on the information collected and analyzed in Stage One, there were observations of high and low coverage as seen in the admissions per site. The investigation concluded that coverage is likely to be relatively low in some sites and high in others.

The hypothesis was therefore that:

- Coverage is high in agro-pastoral and formal employment zones and low in the pastoral zones.
- Coverage is high in Turkana South and low in Turkana East largely due to insecurity in the latter.

The objective of Stage Two was to confirm the locations of areas of high and low coverage as well as the reasons for coverage failure identified in Stage One (above) using small area surveys. Eighteen site areas in total were sampled to test the two hypotheses. Ten areas were hypothesised to be pastoral and eight to be agro pastoral/formal employment casual labour. As regards assessment of coverage of the two districts, nine and seven site areas were assessed from Turkana South and East respectively (See annex 2.4c for findings per village). Active and adaptive case finding was used in identification of malnourished children.

In the test of hypothesis exercise for high/low coverage areas, the following results were found and calculations made using the decision rule (See section 1.3) in order to classify coverage as follows:

Table 21: Small area survey findings Turkana South and East

District/region	SAM not in program	SAM in program	SAM recovering in program	d	Point Coverage
Hypothesis 1					
Agro pastoral/formal employment	7	9	3	8	Covered cases are > 8 thus coverage is >

areas					50%
Pastoral areas	10	7	10	8	Covered cases are <8 thus coverage is < 50%
Hypothesis 2					
South	7	12	10	9	Covered cases are >9 thus coverage is > 50%
East	4	10	3	7	Covered cases are <7 thus coverage is < 50%

As per the findings above Hypothesis # 1 and # 2 were accepted.

Despite the above findings a decision was taken to proceed to stage three with agro-pastoral and pastoral areas combined. However Turkana South and East were assessed separately due to the need to inform planning for different actors intervening and in-charge of the two districts. Insecurity in Turkana East further caused uncertainty of accomplishment of the survey in the district therefore creating a need to plan separately to ensure at least achievement of assessment of coverage of Turkana South.

2.4.3 WIDE AREA SURVEY

2.4.3.1 Developing the prior

The data gathered in stage one and two were consolidated and grouped into two; boosters and barriers. The prior was developed from the average of the two methods of weighted and simple scoring of boosters and barriers. The scoring process was participatory. A factor was identified and participants gave a score which was then averaged to provide the factor score as shown in the table below. The boosters were thereafter added to the minimum

coverage (0.0%) while the barriers deducted from the maximum coverage (100.0%). A median value was thereafter calculated.

Table 22: Synthesis of boosters and barriers Turkana South and East

BOOSTER	**Turkana South**		**Turkana East**	
	Weighted	Simple	Weighted	Simple
Community knowledge on malnutrition	4	5	3.5	5
Awareness and appreciation of program	4	5	3.5	5
Availability of plumpy nut	4	5	3	5
Decentralization of outreaches	4	5	4	5
Inclusion of TBAs	4	5	3	5
Health seeking for SAM	3.5	5	4	5
Motivation of CHWs	4	5	4	5
Program effectiveness	4	5	4	5
Program waiting time	4	5	4	5
Facility nurses and CHW knowledge of IMAM	4	5	3.5	5
BSFP	4	5	3	5
Total	**43.5**	**55**	**39.5**	**55**

BARRIER	**Turkana South**		**Turkana East**	
	Weighted	Simple	Weighted	Simple
Lack of training on IMAM for some of the nurses	1	5	1	5
Conflicts	2	5	3	5
Community mobilization	2.5	5	2.5	5
Stigma	2	5	2	5
Staff attitude/bias	1	5	2	5
Distance	2.5	5	2.5	5
Cultural belief	1	5	1	5
Busy caretaker to include lack of permission from FFA work	1.5	5	1.5	5
Neglect/alcoholism/ignorance	2	5	2	5
Lack of inclusion of traditional healers, private clinics	1.5	5	1.5	5
Migration	2.5	5	1.5	5
CHWs payment method	2.5	5	2.5	5
Specific to Turkana East				
Insecurity			4	5

Lack of access to some sites due to rains			2	5
Lack of personnel in some sites/understaffing			2	5
Shortage of supplies in some facilities/community discouraged by the shortage			1.5	5
Child in SFP			1	5
	22	60	33.5	85

Computing the prior – Turkana South

1. Scoring of weighted boosters and barriers

   Prior weighted= ((0%+43.5%) + (100%-22%))/2= **60.75%**

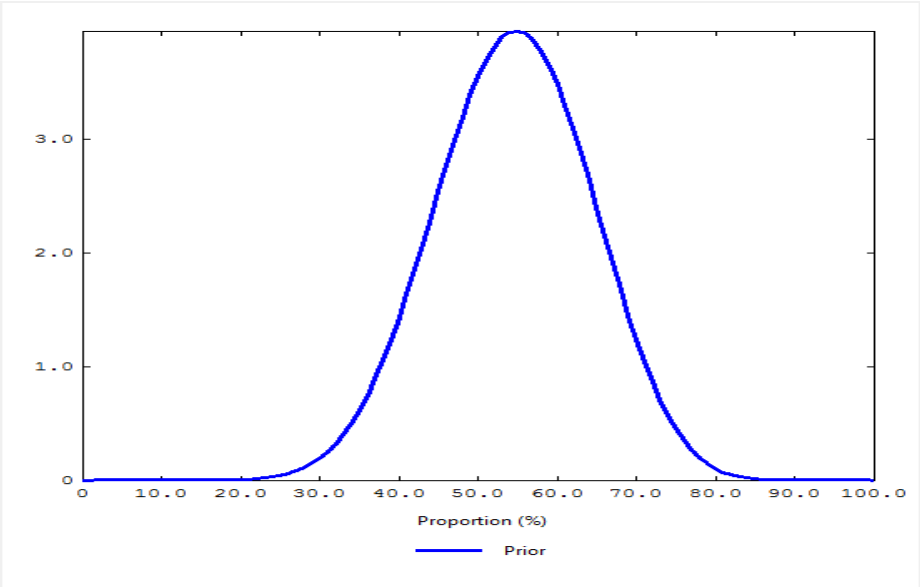
2. Simple scoring of boosters and barriers

   Prior un-weighted/simple = ((0%+55%) + (100%-60%))/2= **47.5%**

   Averaged Prior = (60.75%+47.5%)/2 = 54%

Using the Bayesian Coverage Estimate Calculator, the Prior was set as 62% (α=13.5 and β= 11.3) presented below.

Figure 30: Prior estimate Turkana South - BayesSQUEAC



Computing the prior – Turkana East

1. Scoring of weighted boosters and barriers

   Prior weighted= ((0%+39.5%) + (100%-33.5%))/2= 53**%**

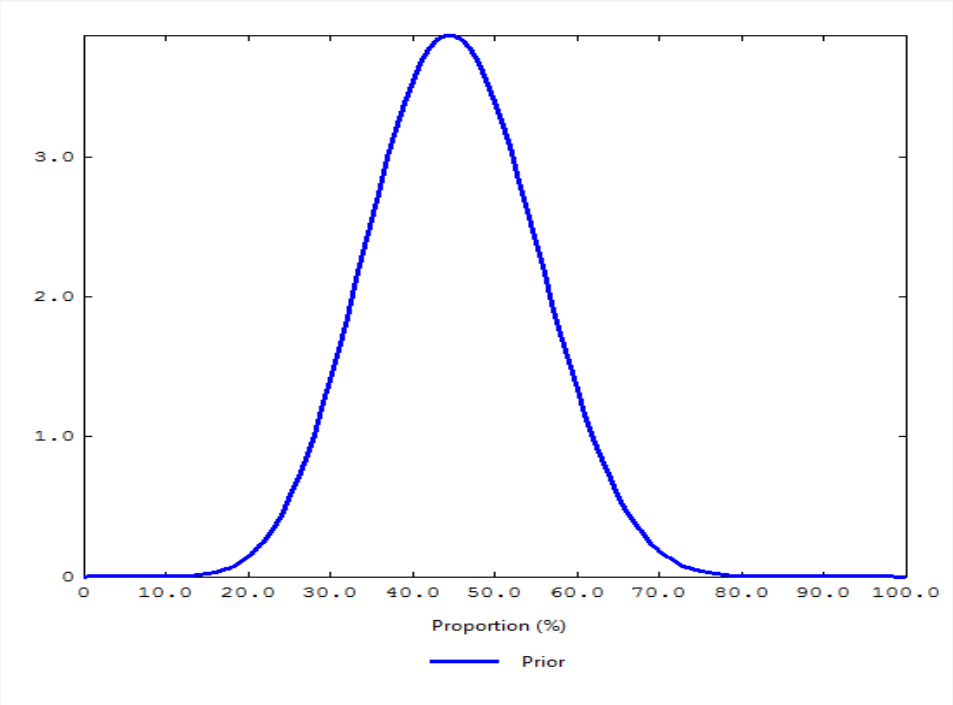
2. Simple scoring of boosters and barriers

   Prior un-weighted/simple = ((0%+55%) + (100%-85%))/2= 35**%**

   Averaged Prior = (53%+35%)/2 = 44%

Using the Bayesian Coverage Estimate Calculator, the Prior was set as 62% (α=10.7 and β= 13.1) presented below.

Figure 31: Prior estimate Turkana East - BayesSQUEAC



2.4.3.2 Sampling methodology for wide area survey

Sample size was computed as follows:

Turkana South:

$$n = \frac{0.54 \times (1 - 0.54)}{(0.14/1.96)^2} - (13.5 + 11.3 - 2)$$

Turkana East:

$$n = \frac{0.44 \times (1 - 0.44)}{(0.14/1.96)^2} - (10.7 + 13.1 - 2)$$

From the above sample sizes of 27 and 28 for Turkana South and East were derived respectively.

Calculations were then undertaken to determine the minimum number of villages to sample as shown in the table below:

Minimum number of villages:

Table 23: Computation of required villages Turkana South and East

	Turkana South	**Turkana East**
Target sample size	**27**	**28**
Average village population	900	650
Prevalence of SAM	2.1% (Integrated health and nutrition survey 2012)	2.1% (Integrated health and nutrition survey 2012)
% of children 6-59 months	15%(KDHS)	15%(KDHS)

Using the formula for computing no. of villages:

Turkana South:

$$n = \frac{27}{(900 \times 0.15 \times 0.021}$$ = 10 villages

Turkana East:

$$n = \frac{28}{(650 \times 0.15 \times 0.021}$$ = 14 villages

Sampling of villages

A sketched out map of Turkana South and East was drawn from the main up to scale map of the County provided. The map was used in sampling the 10 and 14 villages from Turkana South and East respectively. Several quadrants were first drawn and sampling done in 4 and 5 of these respectively as they covered 50.0% or more of the study area. A total of 3 villages were sampled per quadrant to obtain the required sample, based on proximity to the village to centre. An extra 2 villages and 1 village were sampled from Turkana South and East respectively. Two quadrants were left out in Turkana East due to insecurity.

At the community level active and adaptive case finding was used through the local case definition of malnutrition as already established through qualitative data collection. In each village, a key informant was identified and the case definition shared.

Wide area survey results

Table 24: Wide area survey summary results Turkana South and East

	Turkana South	Turkana East
SAM cases not in program	12	7
SAM cases in program	8	5
Total current cases	20	12
Recovering in program	7	3

(See annex 2.4e for findings per village)

Figure 32: Reasons for coverage failure Turkana South

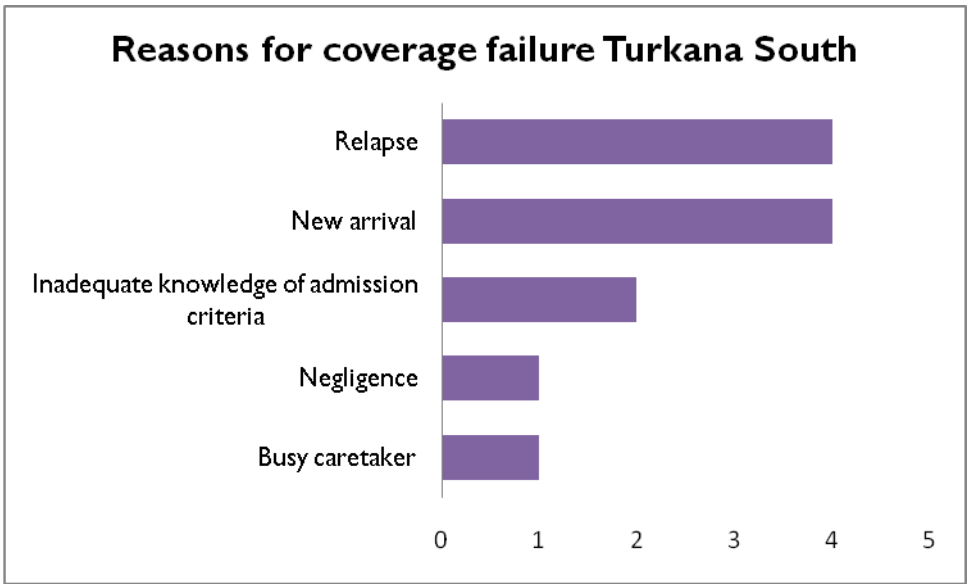
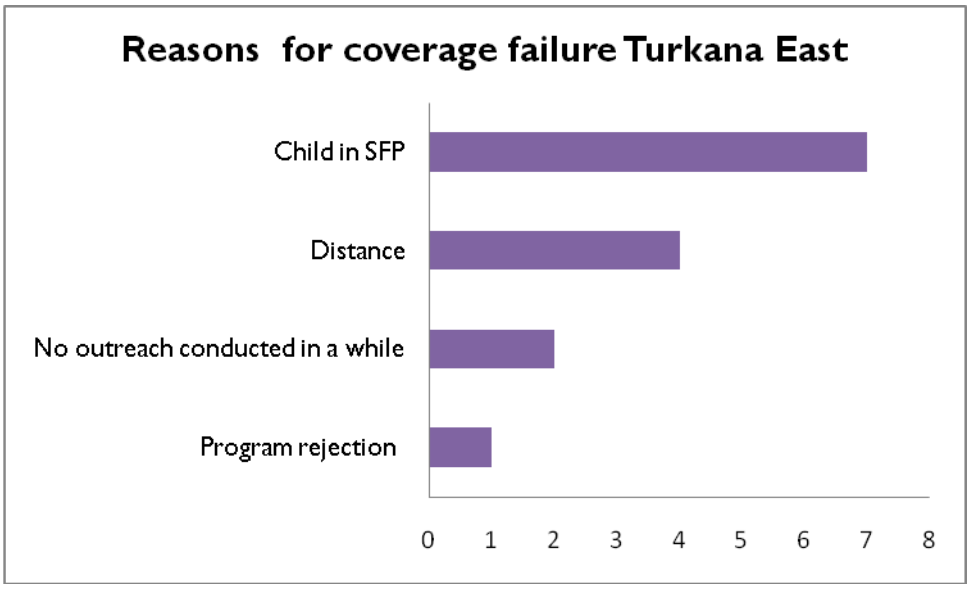


Figure 33: Reasons for coverage failure Turkana East



COVERAGE ESTIMATES

Point coverage is presented as the preferred estimate of the situation as per findings on ground. The rationale is that there is weak case finding and despite lack of data on average length of stay, the indicative prolonged length of stay as per findings on sharing of ration and sale of plumpy nut.

Table 25: Coverage survey estimates Turkana South and East

	Turkana South	Turkana East
Likelihood estimates	**40%**	**41.6%**
Point coverage (BayesSQUEAC - posterior)	**50.2%** **(37.0% - 63.6%)**	**43.5%** **(28.4% - 59.9%)**

Figure 34: Point coverage estimate Turkana South -BayesSQUEAC

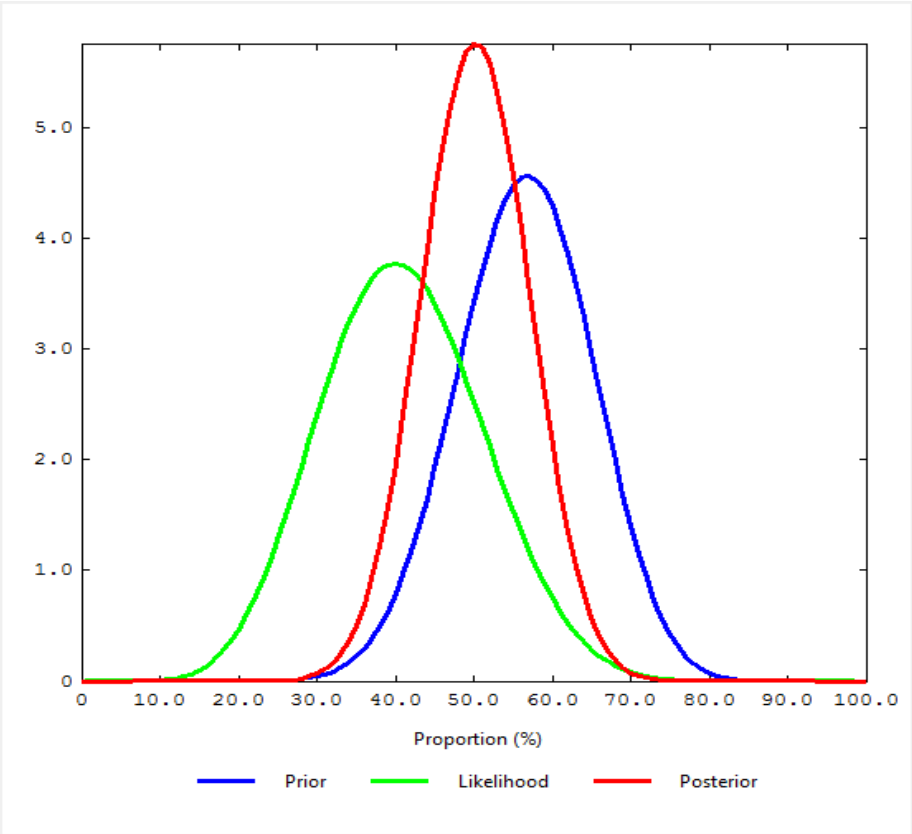
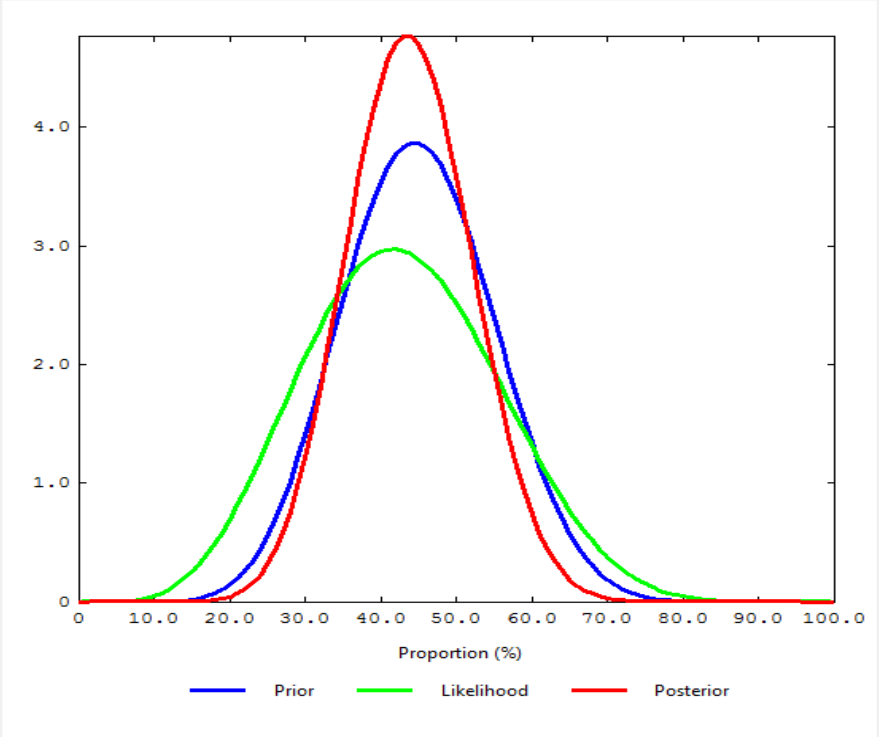


Figure 35: Point coverage estimate Turkana East - BayesSQUEAC



The figures above indicate considerable overlap between the likelihood and prior.

CONCLUSION

From the Bayesian coverage calculator, the posterior point coverage is estimated at **50.2% (37.0% - 63.6)** and **43.5% (28.4% - 59.9%)** in Turkana South and East respectively. The coverage in Turkana South is just slightly above the recommended SPHERE standard of 50% in rural areas and therefore overall headline coverage of the program is acceptable. In Turkana East the coverage is below the recommended SPHERE standard and therefore considered as unsatisfactory.

3.0 SUMMARY AND RECOMMENDATIONS

Table 26: Key/legend of source of information

*	Caretakers of program beneficiaries	Ω	Facility data extraction	Φ	Program manager/staff
O	Nurse in charge of health facility	√	Traditional healer	Ʊ	District Nutrition Officer
Δ	CHW	≈	Community members	¶	Nutrition Support Officer
∑	Area chief/admin leader	ɯ	Village elder	Ψ	WFP officer
∂	Small area survey	Ɣ	Chemist attendant	∏	Public Health Officer
∞	Caretakers of coverage failures	∩	Traditional birth attendant	∫	Literature /program data review

Table 27: Overall Summary of boosters, evidence and Sources

Booster	**Evidence**	**Source**
Community knowledge of malnutrition Overall majority of the community members have an understanding of malnutrition. Most of the community members consider malnutrition as a	- Community definition of malnutrition and ability to	≈, Δ

disease and in addition were able to cite various signs to include wasting, distended abdomen, silky hair, irritability and general apathy. Further the community was able to cite different causes cutting across the categories of causes as per the UNICEF conceptual framework of malnutrition of immediate, underlying and basic. Nutrition programming has been on-going in the County for many years and as such a considerable proportion of the community understands well basic aspects of nutrition/malnutrition.	cite various signs. - Self referrals by many of the caretakers	 *
Treatment seeking behaviour Majority of the caregivers reported appropriate health seeking for management of malnutrition from the health facility/hospital on detection that the child was malnourished.	- MUAC at admission range of 110 -112mm for majority of the beneficiaries	*, Ω
Community appreciation of IMAM programming Many of the community members are overall aware of the program and appreciative of the services provided. In particular, majority cited benefits such as child recovery, management of other illnesses, immunization and provision of plumpy nut. The BSFP program further enhanced confidence in nutrition programming activities to be able to cover more children during critical periods. Double registration in a few sites however is discouraging to some community members.	- No. of admissions to the program	≈, Δ, ϕ
Integration of management of malnutrition into routine health activities &		

ownership of program by nurses Integration of management of malnutrition into routine health activities has not only enhanced coverage of children but is well appreciated by the community. The community reported to be able to receive different services from one visit in many sites. Increased ownership of management of malnutrition activities has in addition enhanced effective and efficient delivery of services further enhancing the community's confidence in the program being run from the health facilities. The nurses knowledge of IMAM which is greatly attributed to the on-job training (OJT) conducted by the DNOs and the program officer has contributed enormously to the provision of services.	- No. of referrals by health facilities/hospitals to the IMAM program of children seeking other health services - Program monitoring indicators - Time taken during distributions	≈, O, Ω *
Program effectiveness The program on average over the year has attained acceptable indicators of cure, defaulter and death as per SPHERE standards. Attainment of acceptable indicators is a pointer to an effective program further enhancing the community's confidence particularly as regards high cure and low death rates.	- Program monitoring indicators	Ω
Program efficiency The program was reported to be efficient in delivery of services by majority of the caretakers as assessed through the time taken to attend to caretakers during distribution. Long waiting times during distributions in situations where there are other activities to attend to has been found to discourage caretakers from attending the program. Activities such as FFA, household chores and taking care of livestock were in some cases found to hinder mothers from attending the	- Time taken during distributions	*

program.		

Table 28: Overall summary of Barriers, Evidence, Sources and Recommendations

Barrier	Evidence	Source	Recommendations
Migration, distance & seasonal rivers (lack of access)/program structure There is on-going seasonal migration due to the pastoral nature of part of the community. The migration is both within districts and between districts. The program sites are not always accessible to the community during migration and flooding of seasonal rivers. In addition distance by some communities was reported as a barrier.	-Coverage failures citing lack of access to program as a challenge. -Key informants and community reporting migration and distance to be a challenge.	≈*Δ∞	Track the migration by communities all over the County and ensure program is sensitive to movements through having flexible outreaches that are not permanently stationed or flexibility to increase outreaches. The programs should in addition seek to borrow from the IRC method in Oropoi of enhancing linkages of migrating communities to new sites. Flexibility in programming for communities cut-out by seasonal rivers to avoid missing rations. Use plot to travel strategies as one of the guidelines in determination of outreach sites.
Insecurity Insecurity largely due to cattle rustling is a challenge in Turkana and in particular along the border areas to Uganda and to Pokot and Samburu Counties. Internal conflicts and raids further contribute to insecurity and consequently community displacements. Bandit attacks have in addition hampered relief efforts particularly in	-Lack of programming in parts of Turkana East. -Lack of programming periodically during insecurity.	Φ≈Δ	Continued planning for and liaising with local authorities to provide security so as to facilitate access to communities living in insecure areas. Continue support for peace-initiatives as ultimately livelihoods to include nutrition security of the community is threatened.

Turkana East with staff having been shot at and even killed on various occasions.			
Community mobilization There is inadequate community sensitization and active case finding. There is inadequate coverage of the IDPs and pastoral migrating communities. Inadequate sensitization compounded by low literacy levels is attributed to the presence of stigma, barriers such as cultural beliefs and forgetting of program return dates. As well the program has not included all sources of referral in the mobilisation strategy to include traditional healers. The program heavily relies on CHWs for mobilisation.	-Inadequate coverage of IDPs. -Lack of screening for new arrivals and children recently turning 6. -Presence of stigma -Fear that plumpy nut will cause diarrhoea. -Inadequate inclusion of key sources of traditional healers, TBAs and chemists.	∞*√ Y∩	Conduct mass screening and referrals for the IDP community **(Immediate**). Conduct a social investigation to understand the challenges facing the IDP community. Include all sources of referral namely traditional healers, chemists and TBAs. In addition the program should explore including members of the MTMSGs, based on how effective the groups are.
Community Sociological issues of the community to include child negligence and alcoholism are a challenge to treatment seeking behaviour amongst some community members even upon referral to the program.	-Lack of coverage failure due to negligence in some cases occasioned by alcoholism	∫ ΦΔ	Enhanced mobilisation and particularly sensitization due to the low literacy levels. Engagement of local authorities in referral of children of

Low literacy levels in community are further a challenge to optimal understanding of the program.	-Presence of stigma -Forgetting of return dates -Lack of coverage due to previous program rejection. -Cultural beliefs e.g. fear to remove clothes.		negligent of alcoholic caretakers.
Staffing issues Lack of staff and training for some of the nurses on IMAM is a challenge to provision of services in some site areas. Overall the staff attitude of demanding for increased allowances during outreach sessions is a challenge to adequate and effective implementation of IMAM activities. The staff attitude in addition in some health facilities particularly in Turkana East and South was found to intimidate the community. The mode of payment/provision of incentives of CHWs in some areas does not encourage work throughout but only during the periods worked. The competence of some of the CHWs was further found to be a barrier to effective implementation of work.	-Reports by health facility nurses on training -Fear of taking child to program after relapse -Reports by health facility nurses and program staff on allowances. -Reports by community members and coverage failures on staff attitude.	O Φ ∂	Prioritize new nurses on OJT and monitor uptake of the IMAM trainings. Health management team to continue emphasis that IMAM both at the health facility and outreach sites is part of the health activities. Staff should advise/counsel the community members in a professional manner taking into consideration the literacy levels. There is need to have a standard effective way of remunerating the CHWs/community unit to ensure continuous mobilisation activities.

A delay in payment/provision of incentives of the CHWs or lack of payment with the program relying heavily for referrals is a challenge to coverage.	-Reports by CHWs on delays in payment		Timely payment/provision of incentives of the CHWs, particularly those who have not received anything over the last few months **(Immediate).**
Stock outs at health facilities Plumpynut stock outs for prolonged periods of time were particularly noted in Turkana East. Stock outs of CSB particularly in Turkana South and East were further noted to affect the OTP as the beneficiary caretakers are discouraged by being turned away and relay the message to the community that there are no services available (to include OTP). Lack of timely reporting by health facilities was cited as the main reason for delays in re-stocking. Additionally rains in some cases hampered the delivery of plumpy nut to health facilities.	-Reports from facilities such as Lokwamosing and Kaaruko. -Reports by community	O∂≈Δ	Distribution of plumpy nut and CSB to facilities experiencing stock outs **(Immediate).** Seek to establish a reporting/requisition system that does not hamper treatment of beneficiaries. Strengthen communication between the program and the community on actual situation of stock-outs. Assess rain patterns and plan accordingly for distribution to the health facilities.
Competing interests/conflicting activities Activities that coincide with distributions are a challenge to program attendance. These include livelihood activities such as fishing, farming and also routine household and FFA work. Caretakers registered under the FFA reported lack of permission to attend the program. The balance of achievement of work and seeking	-Reasons for coverage failure -Reports by key informants	∂≈ Φ	There is need for enhanced mobilisation/sensitization to ensure that despite the need to implement activities beneficiaries need to seek treatment. Assess further the reports on lack of permission from FFA work to attend program and advice the implementation agency (TRP and Child fund) accordingly/work out modalities to ensure

treatment for malnourished children is further challenged by reports by the community that the outreaches are conducted for very few hours during the day that may not accommodate all the caretakers well.			both activities are achieved.
Children in SFP The presence of SAM children in the SFP is a barrier to optimal coverage of the OTP and an indicator of inadequate monitoring of children. Inadequate staff/health facility staff overwhelmed particularly by the SFP work was reported as the main challenge to effective monitoring.	-Reasons for lack of coverage -Reports by health facility in charges	∞	Enhance monitoring in the SFP. Additionally the MoH and partners should assess SFP workload distribution in all health facilities and explore ways of ensuring a balance with staffing.
Monitoring and Evaluation Unexplained aspects of some of the data and deviations from the fit to context are a barrier to adequate monitoring of the program. Lack of comprehensive data entry in some areas particularly during outreach sessions by other health staff when nutrition staffs are absent.	-Missing data/information in register -Missing program indicators. -Program response to context -Inclusion of non functional sites at district level	∫ Φ	Strengthen data collection and recording at the health facility level. Strengthen data analysis at district level. Maintain an updated database. Strengthen M&E of mobilization activities.

Figure 36: Concept map of relationship between barriers.

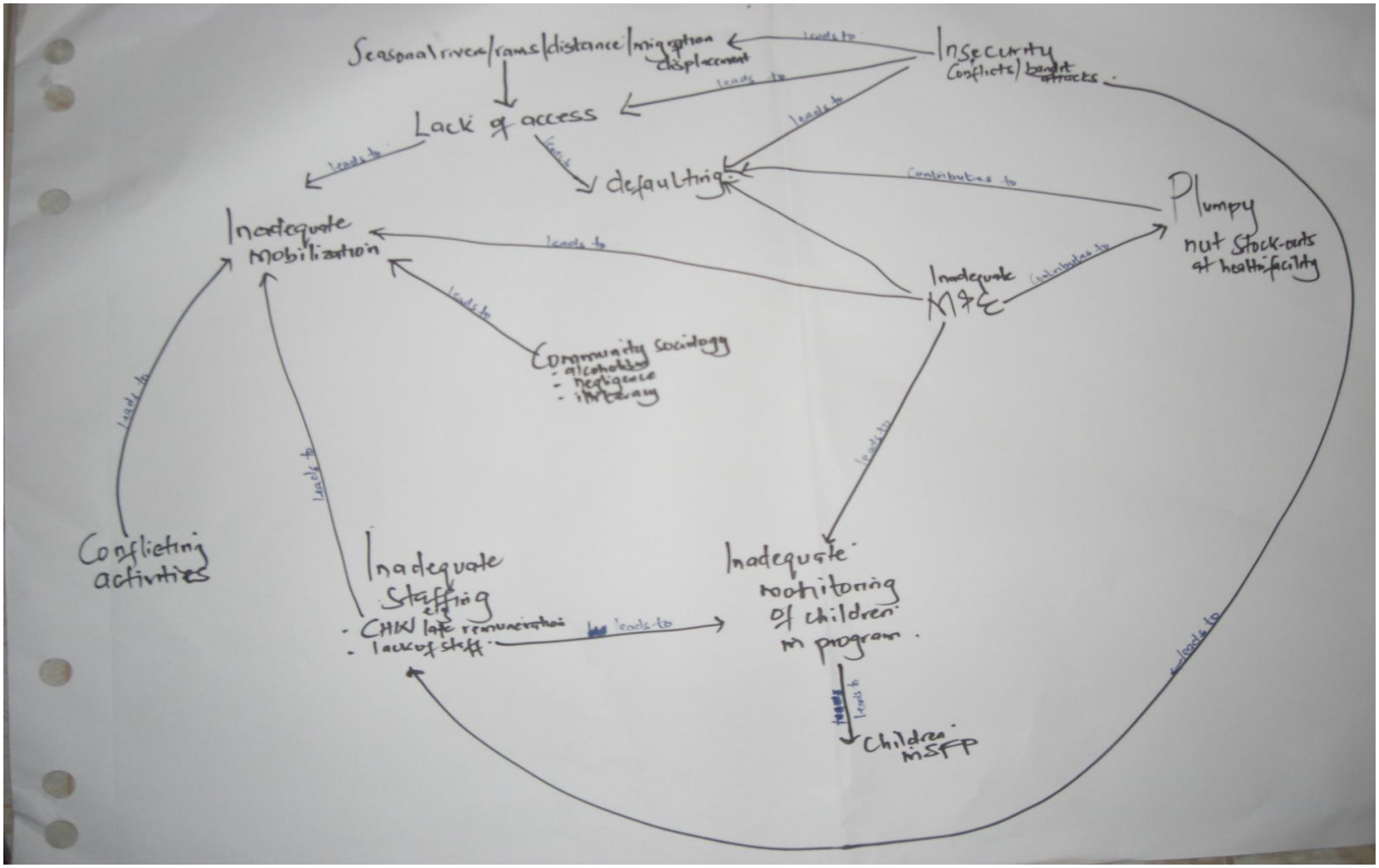


Table 29: Logical framework - Recommendations

Barrier	Recommendations	Indicator	Period of measurement	Responsible
Migration, distance & seasonal rivers (lack of access)/program structure	Track the migration by communities all over the county and ensure program is sensitive to movements through having flexible outreaches that are not permanently stationed or flexibility to increase outreaches. The programs should in addition seek to borrow from the IRC method in Oropoi of enhancing linkages of migrating communities to new sites. Use plot to travel strategies as one of the guidelines in determination of outreach sites. Flexibility in programming for communities cut-out by seasonal rivers to avoid missing rations.	-Outreach document that outlines migratory patterns and incorporates flexible sites/ /strategies for accessing pastoral communities -No of sites borrowing the IRC strategy -No. of substitute distributions conducted.	Annually/one-off Bi-annual Annually/one-off	County authorities/partners/MoH
Insecurity	Continue planning for and liaising with local authorities to provide security so as to facilitate access to communities living in insecure areas. Continue support for peace-initiatives as ultimately livelihoods to include nutrition security of the community is threatened.	-Outreach sessions conducted in insecure sites. -No. of projects integrating/supporting peace initiatives	Monthly Annually	Local authorities/ Program managers/MoH

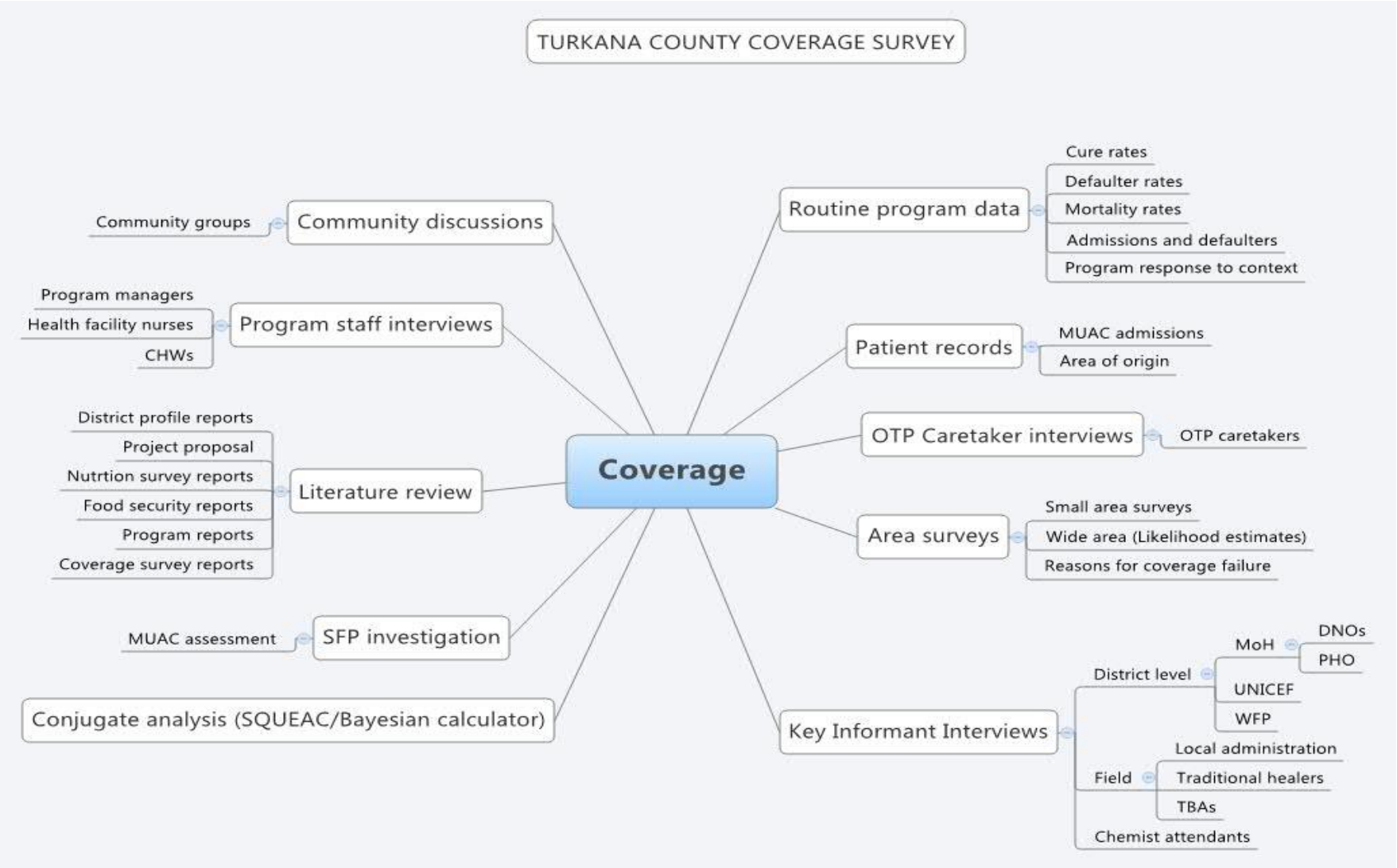
Community mobilization	Conduct mass screening and referrals for the IDP community. Conduct a social investigation to understand the challenges facing the IDP community. Include all sources of referral namely traditional healers, chemists and TBAs. In addition the program should explore including members of the MTMSGs, based on how effective the groups are.	No. of mass screenings conducted No. of children referred to the program from the IDP community Social assessment conducted No. of traditional healers, private pharmacies and TBAs incorporated in community mobilization	Quarterly Monthly Annually/one-off Quarterly	MoH (PHO) Program manager, CHW/community unit MoH/partners(WVK) Partners(Merlin, IRC,WVK) CHW/community unit
Community sociological aspects	Enhanced mobilisation and particularly sensitization due to the low literacy levels. Engagement of local authorities in referral of children of negligent of alcoholic caretakers.	No. of sensitization sessions conducted No. of caretakers referred by local authority	Monthly Monthly	MoH (PHO)/Partners(Merlin, IRC,WVK)/ CHW/community unit
Staffing issues	Prioritize new nurses on OJT and monitor uptake of the IMAM trainings.	No. of OJT sessions conducted for new	Monthly	Nutrition officers/MoH

		staff		
	Health management team to continue emphasis that IMAM both at the health facility and outreach sites is part of the health activities.	No. of sensitization meetings/joint monitoring sessions held	Quarterly	MoH/Joint monitoring teams
	Staff should advise/counsel the community members in a professional manner taking into consideration the literacy levels.	-0 beneficiaries reporting staff attitude/intimidation as a barrier	Quarterly	Facility in charges/ CHW/community unit
	There is need to have a standard effective way of remunerating the CHWs/community unit to ensure continuous mobilisation activities.	-no. of referrals by CHWs	Monthly	MoH(PHO)/Partners(Merlin, IRC,WVK)
	Timely payment of the CHWs.	-Monthly/timely remuneration of CHW	Monthly/agreed upon period	Partners(Merlin, IRC,WVK)
Stock outs at health facilities	Seek to establish a reporting/requisition system that does not hamper treatment of beneficiaries.	-Monthly supply to health facilities	Monthly	MoH(DNOs/facility in-charge)/UNICEF/WFP/ Partners
	Strengthen communication between the program and the community on actual situation of stock-outs.	No. of sensitization sessions	Monthly	CHW/community unit

	Assess rain patterns and plan accordingly for distribution to the health facilities.	-Contingency planning during rainy season	Bi-annual (short and long rains season)	Partners(Merlin, IRC,WVK)/MoH
Competing interests/conflicting activities	There is need for enhanced mobilisation/sensitization to ensure that despite the need to implement activities beneficiaries need to seek treatment. Assess further the reports on lack of permission from FFA work to attend program and advice the implementation agency (TRP and Child fund) accordingly/work out modalities to ensure both activities are achieved.	No. of sensitization sessions 0 beneficiaries reporting conflicting interests as a barrier	Monthly Quarterly	Partners(Merlin, IRC,WVK)/MoH/ CHW/community unit MoH/TRP/ Partners(Merlin, IRC,WVK)/
Children in SFP	Enhance monitoring in the SFP. Additionally the MoH and partners should assess SFP workload distribution in all health facilities and explore ways of ensuring a balance with staffing.	0 SAM children in SFP	Quarterly	MoH (facility in charge)/ Partners(Merlin, IRC,WVK
Monitoring and Evaluation	Strengthen data collection and recording at the health facility level. Strengthen data scrutiny at district level. Maintain an updated database.	Comprehensively filled out registers at health facilities Accurate, comprehensive data Updated	Monthly Monthly Monthly	MoH(facility –in charge, DHRIOs), Partners(Merlin, IRC,WVK and UNICEF

	Strengthen M&E of mobilization activities.	County/district database M&E templates for collecting information on mobilization/utilisation of the templates	Monthly	

Annex 1: Sources and methods of data collection



Annex 2: Specific annexes for the districts

2.1 TURKANA NORTH CENTRAL AND LOIMA	2.1a. Mapping of sites SITES IN TURKANA CENTRAL & LOIMA DI
	2.1b. Admissions and defaulters per site TURKANA CENTRAL ADMISSIONS AND DE
	2.1c. Small area survey findings SMALL AREA SURVEY FINDINGS TURKANA (
	2.1d. Quadrant sampling TCentral and Loima Quadrant sampling.JI
	2.1e. Wide area survey findings WIDE AREA SURVEY FINDINGS PER SITE T
2.2 TURKANA NORTH	2.2a. Mapping of sites MAPPING OF SITES IN TURKANA NORTH.
	2.2b. Admissions and defaulters per site TURKANA NORTH ADMISSIONS AND DE

	2.2c. Small area survey findings SMALL AREA SURVEY FINDINGS PER SITE 1
	2.2d. Quadrant sampling TNorth Quadrant sampling.JPG
	2.2e. Wide area survey findings WIDE AREA SURVEY FINDINGS AS PER SI1
2.3 TURKANA WEST	2.3a. Mapping of sites SITES IN TURKANA WEST.doc
	2.3b. Admissions and defaulters per site TURKANA WEST ADMISSIONS AND DE
	2.3c. Small area survey findings SMALL AREA SURVEY FINDINGS PER SITE 1
	2.3d. Quadrant sampling TWest Quadrant sampling.JPG
	2.3 e. Wide area survey findings

	WIDE AREA SURVEY FINDINGS TURKANA '
2.4 TURKANA SOUTH AND EAST	2.4a. Mapping of sites SITES IN TURKANA SOUTH AND EAST.do
	2.4b. Admissions and defaulters per site TURKANA SOUTH AND EAST ADMISSIO
	2.4c. Small area survey findings SMALL AREA SURVEY FINDINGS PER SITE T
	2.4d. Quadrant sampling TSouth and East Quadrant sampling.JF
	2.4e. Wide area survey findings WIDE AREA SURVEY FINDINGS AS PER SIT