SQUEAC REPORT
Dollo Ado Refugee Camp
Melaku Begashaw, September 2012

COVERAGE MONITORING NETWORK
## ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARRA</td>
<td>Administration for Refugee and Returnee Affairs</td>
</tr>
<tr>
<td>BSFP</td>
<td>Blanket supplementary Feeding Program</td>
</tr>
<tr>
<td>CNC</td>
<td>Community Nutrition Center</td>
</tr>
<tr>
<td>CM</td>
<td>Community Mobilization</td>
</tr>
<tr>
<td>CMAM</td>
<td>Community Management of Acute Malnutrition</td>
</tr>
<tr>
<td>C.I.</td>
<td>Credible Interval</td>
</tr>
<tr>
<td>LOS</td>
<td>Length of Stay</td>
</tr>
<tr>
<td>MUAC</td>
<td>Mid Upper Arm Circumference</td>
</tr>
<tr>
<td>MAM</td>
<td>Moderate Acute Malnutrition</td>
</tr>
<tr>
<td>OTP</td>
<td>Outpatient Therapeutic Program</td>
</tr>
<tr>
<td>SQUEAC</td>
<td>Semi Quantitative Evaluation of Access and Coverage</td>
</tr>
<tr>
<td>SC</td>
<td>Stabilization Center</td>
</tr>
<tr>
<td>TSFP</td>
<td>Targeted Supplementary Feeding Program</td>
</tr>
<tr>
<td>SAM</td>
<td>Severe Acute Malnutrition</td>
</tr>
<tr>
<td>TFP</td>
<td>Therapeutic Feeding Program</td>
</tr>
</tbody>
</table>

Front cover photograph courtesy of: © Alexandra Rutishauser
EXECUTIVE SUMMARY

Introduction

This investigation was conducted in Dollo Ado refugee camps, Somali Region, Ethiopia, in October 2012. The objective of the survey was; to assess access and coverage and identify barriers to program’s service uptake of the Outpatient Therapeutic Programme (OTP) funded by ECHO and implemented by IMC in collaboration with UNHCR and ARRA.

Methods

The study uses quantitative and qualitative methods as well as cross-sectional surveys using Bayesian probability method. OTP coverage was calculated using period coverage.

Results/Conclusion

- OTP coverage was **78.5% (95% CI=68.3%-86.5%)**. In terms of geographical coverage, programme coverage distribution showed a good level of coverage in many parts of the programme catchment area. Generally, programme coverage meet SPHERE minimum standards (>90% in a camps setting) in most parts of the camp; however, overall coverage does not meet SPHERE minimum standards for coverage of a therapeutic feeding programme in camp setting. Moreover, Melkadida sub-camp has a better standard of service and programme coverage than Kobe. Overall, program coverage is high and with little retuning of the program it is possible to achieve even higher coverage to meet or exceed Sphere minimum standards. This is because most of uncovered children are already in the program but they are in the wrong program.

- Community mobilization activities should be strengthen to meet the program’s current situation (both at community and CNC level (Kobe camps)), allowing community health promoters to do a continuous case finding at community level (especially Kobe) and assessing odema at CNC level during first stage screening can help the program achieve better coverage and efficacy.

- The programme captures cases well before they deteriorate and this is indicated by a steady decrease in admissions since IMC took over the programme. Further, the median MUAC on admission of 12.6cm shows that the programme admits children into its OTP program indicating a high treatment seeking behavior from the community side and an effective community mobilization and quality of service from the program side. The programme efficacy is such that there are few cases that deteriorated into SAM. Therefore the programme should continue to deliver quality services and treat children. The programme combines weight-for-height and MUAC as admission criteria in order
not to miss any SAM child. Screening concentrates on MUAC and WHZ and little emphasis is given for assessing children for edema (which is clearly emphasized on the intervention guideline). Therefore it is of little coincidence that all of the children who were found by the wide area survey as uncovered were edematous. However, these children were in SFP program. Therefore, the programme should use edema assessments for all children.

➢ The Length of stay in the program is unacceptably high. Increased length of stay for outpatient programs implies increased Default as mothers could be exhausted both by the length of stay as well as by not seeing improvement in their children condition. The believed cause of extended Length of stay is sharing and selling of plumpy’nut. This is confirmed by different sources and methods. This resulted in increased number of the categories of program performance indicator of discharged as non-responder for cases that have been in the program for a long time without being cured and are discharged using a maximum length of stay rule (usually 8 weeks). Discussions show that households are selling plumpy’nut to buy foods which are culturally acceptable to the communities i.e. Spaghetti, flour and rice. This is causing non responses and affecting the program.

➢ Awareness about malnutrition and its causes is very high in the camps. Nonetheless, adherence to protocol for treatment of SAM is sub-optimal. Sharing and selling seems to affect the program and a sustainable solution is required to address this issue.

➢ SQUEAC investigation revealed that there is a very high treatment seeking behavior which is favorable to the program’s success.

➢ There is a very good perception about the program. During the survey mothers repeatedly say ‘IMC is mother of Kobe’.

➢ At all levels (both program staff and community) repeatedly said GFD is not appropriate for the community (cultural issues). They prefer to have flours, rice and Spaghetti. This is the root cause of defaulting and relapsing into severe acute malnutrition based on investigations and casual analysis. The small area survey found children who were in the programme and discharged as unrecovered. Similarly children were found and referred to the necessary program during the wide area survey. The problem with those children who were in the program but discharged into another program i.e. SC; but did not go to SC (SC defaulter) seems to be wide and will affect the program in the medium to long run. The program has an effective follow-up of this children but there are still children who were transferred but did not go to SC. The follow up should be strengthened and the issue should be addressed. These cases will have a negative impact for the program.
Some uncovered children are not in the program due to the fact that they do not have a slip from ARRA or due to the perceived suspicion of program staff of double registration (sometimes valid). This has caused rejected cases that would have been in the program. This needs a careful investigation and the program should address it. In many programmes it is noted that rejection of referrals has vital consequences for programme coverage. The consequences are:

- rejected children families may become unwilling to be admitted even when their children's condition deteriorates (one such case was encountered by the survey team);
- Carer’s of rejected children may actively publicly criticize the programme leading to other carers becoming unwilling to be send their child even when referred or when they believe their child to be malnourished.
- Carer’s of other children notice that many children are rejected by the programme and may become unwilling to attend even when referred or when they believe their child to be malnourished;
- Community-based volunteers may become disillusioned with the programme or may delay referrals thus negating the advantages of early treatment which allows the bulk of cases to be treated in OTP rather than stabilisation centres;
- Local leaders may become disillusioned with the programme leading to problems with programme acceptance and the dissemination of programme information.

This is true especially for severe cases with complication in Dollo camps.
INTRODUCTION

The La Nina phenomenon that is usually associated with below normal rains has affected large part of horn of Africa countries of Somali, Kenya, Ethiopia, Uganda and Tanzania. The below normal rains has caused critical water shortage for both human and animals and pasture. This deteriorated the already fragile food security situation and caused stress migrations of animals and populations in search for water and pasture. This resulted in a wave of refugee influx into Ethiopia caused an opening of additional camps in addition to the existing refugee population since 2008 at Dolo camps.

Dolo Ado is located in the South Eastern part of Ethiopia. The increased influx of refugees from Somalia to Dolo Ado during the first half of 2011 has dramatically increased the population of refugees in Dolo camps. From July 2011 to December 2011, the population of refugees in Dollo went from 88,771 to 142,306. This influx has seen the opening of three more camps: Kobe, Hilaweyn and Bur-Amino, in addition to the two camps that were already established; Bokolmayo in 2009 and Melkadida in 2010.

In response to the crisis, International Medical Corps (IMC) started emergency nutritional intervention of Blanket Supplementary Feeding Programs (BSFP) on July, 2011. Further, IMC took over the Outpatient Therapeutic Feeding Programme (OTP) on January 2012 in Kobe and Melkadida Camps while the SC is still managed by MSF-SPAIN.

Repeated multi-agency assessments depicted a fast and steady decrease in malnutrition and mortality rates in the refugee camps. As part of its monitoring, evaluation and operational research activities within the programme IMC has conducted a programme coverage survey using Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) Survey methodology. It is part of the routine programme monitoring for the ongoing nutrition interventions in the Refugee camps of Melkadida and Kobe.

The program is financially managed by IMC UK in collaboration with UNHCR and the Administration for Refugees and Returnees Agency; and funded by ECHO under the program name of Emergency Nutrition Intervention for Somali refugees in Ethiopia.

Based on information from UNHCR all beneficiaries of the program are refugees with a total population size of 66,819 of which 17,634 are of under-fives years old. However, the coverage survey investigates coverage of OTP program but barriers and boosters of program coverage will apply to other programs. Breakdown of beneficiaries is presented below:-
Table 1 Program beneficiaries at Dollo refugee camp of IMC OTP program (Melkadida and Kobe)

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Total Population</th>
<th>Target population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Camp Population (All ages)</td>
<td>66,819</td>
<td></td>
</tr>
<tr>
<td># of children 6-59 months of age</td>
<td>17,634</td>
<td>15,870</td>
</tr>
<tr>
<td># of pregnant and lactating women</td>
<td>2,673</td>
<td>2,405</td>
</tr>
<tr>
<td># of Children with MAM (6-59 months children)</td>
<td>3,473</td>
<td>3,126</td>
</tr>
<tr>
<td># of children with SAM (6-59 months children)</td>
<td>1,483</td>
<td>1,335</td>
</tr>
<tr>
<td># of children with SAM (6-59 months children) transferred from OTP to TSFP</td>
<td>1,112</td>
<td>1,003</td>
</tr>
<tr>
<td>Total other malnourished children over 5 years and adults</td>
<td>448</td>
<td>402</td>
</tr>
</tbody>
</table>

The programme is managed from 8 Community Nutrition Centers (situated within the community and managed by IMC staff. The Community Nutrition Centers (CNCs) provide screening of children and manage Severe and moderate cases in TSFP and OTP. The nutrition program in each CNC is run by clinic staffs that are at the level of a nurse. They are given specific CMAM training and support throughout the programme.

Screening first happens at CNCs and if the Community Nutrition Promoter founds his MUAC to be below 13.5 he will send the child into another room where the child’s medical condition is assessed by a health worker. The assessment includes a history of the child’s condition, taken from the career. The health worker also gives the child a full medical examination to rule out complications requiring inpatient care. The examination includes checks for odema, appetite, vomiting, temperature, respiration rate, anemia, superficial infections, and alertness and hydration status. All information from the medical check is recorded on the child’s OTP card.
Moreover, all 6-59 months with no nutritional condition are covered by BSFP in CNCs (as of August 2012, 906 children were admitted into the BSFP). SCs are managed by ARRA and MSF with skilled medical staff. There is one SC in Kobe camp which is managed by MSF. The SC in Melkadida was closed due to very low admissions of complicated cases from Melkadida into SC programs. In most nutrition programs the number of complicated cases will decline as the OTP and SFP programmes expand their coverage and treat more cases of acute malnutrition before complications develop. Care in the SC follows standard protocols for the initial stage of inpatient treatment for severe acute malnutrition. Life-threatening problems are identified and treated, specific deficiencies are corrected, metabolic abnormalities are reversed and feeding is begun. The process take four to ten days to complete.

**Figure 1:- Organigram of the nutrition program**

Besides treating acutely malnourished children, the program has a very strong preventive component using home visits and baby friendly counseling rooms.
Both the preventive and curative programs are integrated with a community mobilization component with paid volunteers. Each CNC has one outreach supervisor and each zone within CNC have one Community Nutrition Promoter (CNP). CNPs screen children at CNC level, announce program days using microphones, trace defaulters and absentees and work with nutrition staff during distributions. Moreover, there are lead mothers who are selected from the community to teach mothers and to facilitate follow up using r care groups.
OBJECTIVES OF THE STUDY

The overall objective of the survey was to strengthen routine programme monitoring and increase programme coverage in the camps.

More specifically, the coverage exercise aimed to:

1. Develop specific recommendations based on survey outcomes to improve acceptance and coverage of the nutrition programme;
2. Enhance capacities of key IMC technical staff in Dollo Ado to undertake coverage survey using SQUEAC methodology;
3. Identifying barriers to access to the BSFP, TSFP, TFP services using data gathered from those cases found with acute malnutrition and not admitted in the programme at the time of the survey;
4. Estimating the overall coverage of OTP programme in Dolo IMC run CMAM programme
5. Giving recommendations to Dolo programme based on the survey findings to improve access to the CMAM services and increase programme coverage in the project areas;
SQUEAC is a Semi-quantitative method. It uses the Bayesian method and Bayesian probability theories, rather than the usual frequentist method to generate coverage value.

A Bayesian approach is ‘the explicit use of external evidence in the design, monitoring, analysis, interpretation and reporting of a scientific investigation’

A Bayesian approach is:

- more flexible in adapting to each unique situation
- more efficient in using all available evidence
- more useful in providing relevant quantitative summaries than traditional methods

Broadly speaking, there are two views on Bayesian probability that interpret the probability concept in different ways. According to the objectivist view, the rules of Bayesian statistics can be justified by requirements of rationality and consistency and interpreted as an extension of logic. According to the subjectivist view, probability quantifies a personal belief. SQUEAC uses the second approach.

Classical statistics, often called frequentist statistics, does not handle uncertainty well. It deals with the frequency of events, and measures probability based upon what would be observed if enough tests were completed. Bayesian statistics, on the other hand, measures probabilities based only on the data observed, and use subjective probabilities where there is no data. A subjective probability is one based not on facts but on a person’s beliefs.

SQUEAC extensively applies the Bayesian theories at every level. To do this it depends on in-depth analysis of barriers and boosters to coverage by:

- Concept mapping
- Mapping of coverage using small area surveys:
- Uses a ‘risk mapping’ approach
- Estimation of overall coverage using Bayesian techniques

The SQUEAC investigation is based on the principle of triangulation. This means that data need to be collected and validated by different sources and different methods. The exercise ends when there is redundancy; i.e. no new information is gained from further investigation using different sources or methods. SQUEAC achieves its efficiency by using a three stages approach:

---

the development of the Prior, the development of the Likelihood and the generation of the Posterior. The first two stages aim to identify potential barriers and provide two individual estimations of coverage. During the Prior building process, existing routine data which have previously been collected and compiled are combined with qualitative data to produce a coverage “picture” after the Bayesian thinking. Building the Prior provides a projection of coverage levels for both the entire target area and also specific areas suspected of relatively high or low coverage within the programme’s target zone. The Likelihood is built with data collected during a wide area field survey in randomly selected zones. The Active Case Finding (ACF) method is used to identify severely malnourished children as well as children enrolled in the programme who are still malnourished or almost completely rehabilitated. During the wide area survey, additional qualitative data are collected in order to explain why some severely malnourished children are not enrolled in the OTP. The last stage, the generation of the Posterior, combines the two initial stages and provides the overall coverage estimation, including Credibility Intervals (C.I), by taking into account the “strength” of each component of the equation. The Posterior is calculated using the Bayesian calculator.

**STEPS TO CONDUCT A SQUEAC SURVEY**

The following section summarizes the methodology used for the SQUEAC. During prior building, purposive sampling was taken in three CNCs. Informal group discussions with lay persons in the community was conducted in four camps and four communities per CNC, one considered to be close to and one distant from the catchment areas. These interviews were conducted over a period of three days.

The wide area survey will comprises active and adaptive case finding (during second stage sampling), with house-to-house case finding where key informants were not used by the survey team or could not be found. The survey randomly sampled zones/sub zones from 8 catchment areas.

**Figure: - 2. Stages in SQUEAC**
Stage 1: Building the Prior
The “Prior” can be defined as an expression of our beliefs about the results of the investigation. *Triangulation, Iteration and redundancy* principles guide the data collection. The prior building process begins with routine programme data analysis and collection of qualitative data which is used to generate a coverage estimate (prior belief). To do this various data was collected:

**Programme data analysis**
At this stage we use programme data. SQUEAC analyses a programme’s routinely collected data to assess three things:

- the accuracy of data related to coverage
- whether or not a programme is responding well to the changing demands of its context
- and whether there are zones within the programme’s target area expected to have either a relatively weak or strong coverage

Common and easily accessible data relating directly to a programme’s coverage include admission and defaulter data; these are first analyzed in isolation before being compared to international standards for indicators (SPHERE) related to the implementation zone in order to evaluate the programme’s capacity to respond to changes in demand for its services.

**Analysis of admission data over time**
The number of admissions to the programme is compiled and presented in the form of a graph in order to assess whether changes in admissions occurred over the lifespan of the programme.

**MUAC at admission**
The measurement of the MUAC at admission is also part of the data available on the individual admission card and an indicator for early detection of cases. The compilation of data collected from each OTP site makes it possible to investigate the timeliness of treatment seeking behaviors. For easier interpretation, data will be plotted in a histogram.

*Interpretation of MUAC on Admission*
The median MUAC on admission can be used as an indicator of beneficiaries' health-seeking behavior. More specifically, it reflects how early or late they seek care. The higher the MUAC on admission the earlier they seek care and the lower the MUAC on admission the later they seek care. A median MUAC on admission of < 10.0 cm usually indicates late treatment-seeking behavior.

Distance and referral source are also important variables that will also be analyzed to see how the programme is responding to the community’s needs.
Discharge Outcomes

Discharge outcomes are also another important element of the routine data analysis. Ideally, a nutrition programme is considered to be good if it meets the SPHERE standards (cure - >75%, defaulters – <15%, death – <10%).

Qualitative Data Collection

Collecting qualitative data is an important part of the SQUEAC investigations because it allowed further development of the hypotheses (high or low coverage in some of the sites) which began to be formed during the analysis of existing quantitative data. Qualitative data provides vital information concerning the underlying causes of low or high coverage including principal barriers to programme access. It is essential to triangulate the information gathered by source and method. Triangulation is a process which verifies the data collected by comparing the data gathered via one source and method with that gathered via others. Thus it becomes possible to minimize reliance on overly anecdotal, biased or inaccurate information. At the same time the collection of anecdotal data allows the surveyor to see the programme, at least to some extent, through the eyes of the target population and other important stakeholders. This is invaluable if the survey is to lead to relevant recommendations for the improvement of coverage in the target areas. The main methods of qualitative data collection used during the SQUEAC investigations include:

The aim of collecting qualitative data is twofold. Firstly it allows more detailed development of the hypotheses which began to be developed during the analysis of existing data described in the previous section. Secondly, this data provides vital information concerning the underlying causes of low or high coverage including principle barriers to access inhibiting higher coverage.

It is essential when collecting qualitative data to triangulate the information gathered by source and method. Triangulation is a process which verifies the data collected by comparing the data gathered via one source and method with that gathered via others. Thus it becomes possible to minimise reliance on overly anecdotal, biased or inaccurate information. At the same time the collection of anecdotal data allows the surveyor to see the programme, at least to some extent, through the eyes of the target population and other important stakeholders. This is invaluable if the survey is to make relevant recommendations for the improvement of coverage in the target area. The main methods of qualitative data collection commonly used during SQUEAC investigations are described below.

- The Informal Discussion Group

This method of gathering qualitative data is an excellent tool for the surveyor when aiming to suspend their own judgement and attempting to understand the perspective of the target
population. During informal discussion groups the surveyor avoids leading questions relying instead on the informants’ responses to generic open questions to guide the conversation, while ensuring that the subjects discussed remain pertinent to coverage. The surveyor does not have a predetermined list of questions but may create a list of preconceptions which require confirmation or denial. These may subsequently be reviewed by the survey team in the light of information gathered. It is normal to start with a general discussion of common diseases in the village in question and thus establish the level of general concern created by malnutrition. In this way it becomes clear whether the condition is considered a priority by the population as if it is not, those affected will be less likely to prioritize treatment.

Common methods of treatment and health seeking behaviour are also discussed to discover in what light the conventional health system used by the nutrition programme is seen. Only later on is the programme itself discussed; the surveyor waits to discover whether it is mentioned naturally. In this way the effect of the surveyor’s own prejudices can be minimized and a new perspective is more easily understood, reviewed and then checked in subsequent groups.

This method is most commonly used with relatively homogeneous groups of lay informants: that is members of the general public not necessarily directly targeted by the programme or by programme stakeholders having a similar role, like opinion leaders, village chiefs, etc. It must be remembered that impressions of the programme or the actions of beneficiaries are not necessarily first hand and that any programme stakeholders in the group may not feel comfortable declaring themselves.

- **The case history**

  In this context a case history is gathered when a key stakeholder such as a beneficiary or former beneficiary is willing to discuss her/his experience during an informal discussion group. Should this happen the surveyor may gather a more comprehensive breakdown of the development, treatment and outcome of the condition from the stakeholder’s own perspective. Discrepancies in perceptions of the cause of the disease or negative experiences of the programme are examples of factors which may suggest barriers to access and low coverage.

- **The Semi-structured interview**

  This method requires the surveyor to have a list of questions or ideas which will be touched on. It can be used to confirm or deny information collected during the informal discussion groups or to cross check the surveyor’s own preconceptions with those of medical staff. Although the surveyor will have a list of questions, the informant is free to raise connected issues occurring to him or her. These interviews are commonly conducted with key stakeholders in the population such as village chiefs or religious leaders and programme/ MoH staff.

- **Simple-structured interview**
This method uses a predetermined list of questions to create a directly comparable set of data. It is most often used with target beneficiaries when they have been positively identified. This method can be applied to the caregivers of target beneficiaries, whether or not they are covered by the programme or health centre staff that may have little time to answer open questions.

**Small area survey**

- **Projection of spatial variations in coverage**

Existing data can also be used to provide a projection of zones of relatively high and low coverage across a programme’s target area. A wide range of data can be used for this purpose such as the location of admissions, defaulters, outreach workers, topographical barriers and many others. A key method of data analysis is layered mapping. Maps are particularly useful as they can provide a clear understanding of the demographic distribution in a programme’s catchment area which can then be compared to data sets collected by the programme. When using maps it is essential to plot the distribution of the area’s population as accurately as possible in order to allow an accurate idea of where possible gaps in programme coverage may be found. When the home locations of admitted cases are compared to the location of zones it will not be clear if there are pockets of uncovered zones with no admissions if all the zones are not marked. The same exercise is done for the homes of defaulters and the outreach workers residence.

None of these data can be used to firmly establish areas of high and low coverage. For example, if an area has no admissions, this can be explained by low coverage, but it can also be explained by a low prevalence or an unusually low <5yrs population. The population of zones may be radically different if, for example, a resettlement area is compared to a well established village. Nevertheless, taken together and combined with the global programme data already analyzed, this method allows a strong hypothesis to be built up of the general level of coverage achieved by the programme as well as any smaller zones of expected high or low coverage. Each dataset is plotted onto an acetate overlay allowing data to be easily compared visually by adding or removing layers. It should be noted that in the event that a hand drawn map is used it will inevitably introduce some degree of inaccuracy in the survey work.

- **Field data collection**

The small area survey focuses on potentially high and low coverage areas. A number of zones are selected according to the number of admissions and defaulters recorded. The zones selected are distributed between the survey teams. Each team used an active/adaptive case-finding methodology to identify cases (as per the case definition) that are either covered or not by the program.
The steps for testing a hypothesis/making a classification using SQUEAC small area survey data are:

(a) Set the standard \((p)\): The standard \((p)\) is generally set according to SPHERE minimum standards for therapeutic programmes (50% for rural areas, 70% for urban areas and 90% for refugee camps)

(b) Carry out the small area survey

(c) Use the total number of cases found \((n)\) and the standard \((p)\) to calculate the decision rule. For example, if \(n = 9\) and \(p = 50\%\) then:

\[
d = \lfloor \frac{n \times p}{100} \rfloor = \lfloor 9 \times 50 / 100 \rfloor = \lfloor 4.5 \rfloor = 4
\]

(d) Apply decision rule: if the number of cases in the program is > \(d\) then the coverage is classified as good (otherwise it is classified as bad).

**Mind Mapping exercise and report**

During the qualitative data phase, which lasted for some days and saw the survey teams visiting several zones across the entire target district, a *MindMap* approach was used to review, discuss and analyze the results gathered. A *MindMap* is a tool designed to facilitate the presentation and analysis of quantitative and/or qualitative data and the relationships between them. Potential barriers to access, as well as information suggesting high or low coverage are grouped thematically. It was thus possible to challenge correct, verify and refine the team’s preconceptions regarding the causes of low or high coverage on a rolling basis allowing the subjects covered during qualitative data collection to be adapted to confirm the new understandings gained.

The *MindMap* exercise is generally done by hand, however the information can be later presented in a computerized format. The *Xmind* software can be freely downloaded from the Internet (type *Xmind* in Google). The software is easy to use and to teach. The principal
advantages of using software such as Xmind are that it can produce graphics for inclusion in the report as well as streamlining the production of the SQUEAC report.

**Data ranking**
Attributes appearing in the MindMap are likely to push the coverage “up” or “down”. The various elements don’t have the same impact on coverage and a “weight” is given to each one. The exercise starts by listing all positive and all negative elements affecting the coverage. Later on ranking scores were given for each attribute, generally 5 points for the higher score and 1 point for the lower score. The sum was done for each column.

**The Prior**
The Prior is the expression of beliefs about coverage based on qualitative data (or quantitative data transformed into qualitative data) provided by the MindMap exercise. Data collected during CSAS surveys undertaken by Valid over the last six years indicate that coverage is very unlikely to be below 20% or above 80%. Similarly, a review of all surveys in Ethiopia showed the maximum-minimum coverage achieved to date in any setting confirms this range of coverage values. Assuming the camp is well run and can achieve higher coverage the maximum coverage was taken to be 90% for this survey. The Prior mode is determined by adding the sum of the total “positive points” to the bottom 20% and by subtracting the total “negative points” from the top 90%. The mode is calculated as the mid-point between the “built-up” and “built-down” results.

**Synthesis of Quantitative and Qualitative Data**
In SQUEAC investigations a mind mapping exercise is used to synthesize all quantitative data analyzed and qualitative information gathered. The exercise allows the survey team to collate all the data in such a way that it facilitates discussion and interpretation. The exercise is done by putting together pieces of flip chart paper to create a “wall” to write on. The theme or topic being investigated, which for this case is coverage, is put at the centre of the wall and then subtopics based on the various sources of quantitative data and qualitative information are written down branching out from the central theme. Corresponding data and information are then written down per sub-theme or topic and the process is continued until all points of investigation are exhausted. The mind mapping exercise can also be facilitated and captured using X-mind (a mind mapping software that allows for the recording of a mind map electronically.

After completing stage one we will come up with a coverage result called Priori³.

---
³This is an application of the Bayesian method
Stage 2: Building the Likelihood

In order to improve and make the *Prior* value (which was developed in stage 1) stronger, more data is added. Quantitative data as well as additional qualitative data are collected during a wide area survey. Zones in the different Community Health Centers (CNCs) catchment areas are randomly selected to undertake an exhaustive *Active Case Finding* exercise.

Generally speaking, this stage confirms the location of areas of high and low coverage and the reasons for coverage failure identified in stage one (above) using small-area surveys.

Wide area survey

In order to improve and make the *Prior* value stronger, more data are added. Quantitative data as well as additional qualitative data are collected during a wide area survey. Zones in the different HCs catchment areas are randomly selected to undertake an exhaustive *Active Case Finding* exercise.

**Sampling method**

Random stratified sampling was used. The Strata were Community Nutrition centers (CNCs).

Sample size calculation

Considering the data already collected during the *Prior building stage*, the sample size of zones to be surveyed doesn’t need to be very large; the main point is ensuring that each area is represented. Nevertheless, it is preferable that the “value” of the *Likelihood* has the same “weight” as the value of the *Prior*; an appropriate sample size can be calculated in order to achieve this. The estimation is based on the curve of the *Prior* which was produced by the Bayes Calculator developed for the SQUEAC investigations. In order to ensure the equal contribution of each parameter, an exercise is used superimposing the curves for the *Prior* and
the Likelihood to establish in advance the appropriate sample size\(^4\) (the number of children which need to be identified), for a precision level of +/- 10%.

The first step to calculate sample size is to determine the minimum number of children to sample to achieve the desired confidence (+/- 10%):

\[
n = \left( \frac{\text{Prior}(1 - \text{Prior})}{(\text{Precision} \div 1.96)^2} - (\alpha + \beta - 2) \right)
\]

\(n=\)Sample size of minimum number of children needed
\(\text{Prior}=\)A picture of our beliefs of what coverage would be based on available data and qualitative investigations
\(\text{Precision}=\)taken to be +/-10%
\(\alpha \text{ and } \beta=\) Values from our priori (The Bayes SQEAC calculator generates it)

Therefore:-

\[
n = \left( \frac{0.77(1 - 0.77)}{(0.1 \div 1.96)^2} - (16.8 + 5.9 - 2) \right)
\]
In order to achieve a confidence (+/-10%), and based on our prior we needed to identify a minimum of 48 cases in stage 3 survey.

To determine the minimum number of zones to sample and achieve 48 cases, we used the following formula:

\[
n_{\text{villages}} = \left[ \frac{n}{((\text{Average village population}_{\text{all age}}) \times \frac{\text{Percentage of population}_{\text{6 to 59 months}}}{100} \times \frac{\text{Prevalence of SAM}}{100})} \right]
\]

\(n=\text{The minimum number of cases required (minimum sample size)}\)
\(\text{Average village population}=\text{It was calculated to be 300 households per zones}\)
\(\text{Under five proportion}=24\%\)
\(\text{SAM prevalence}=1.8\%\)

\[
n_{\text{villages}} = \left[ \frac{48}{300 \times \frac{24}{100} \times \frac{1.8}{100}} \right] = 38
\]

Sample size conclusion: During wide area survey teams will visit 38 zones in order to get 48 cases that meet the program case definition criteria.

Coverage calculation
Coverage for nutrition programmes is called period coverage: the equation components include not only severely malnourished children at the time of the investigation but also children who are currently in the OTP programme and irrespective of their nutritional status: children who are in the rehabilitation phase will show an increased MUAC which will pass from “red” to
“yellow” and eventually to “green” (or oedema may already have disappeared). This coverage choice is based on the nature of the condition. For example, for EPI programmes, a child is “covered” from the moment he receives the antigen, this is a rapid and transversal action. In the case of the management of severe acute malnutrition, the intervention is different because rehabilitation is a process and not a transversal action.

Contrary to the coverage called point coverage (where only severely malnourished children are accounted for); the period coverage appears to be more suitable in the case of malnutrition management. However, it is far from being perfect because, in reality, it gives less weight to the ability of the programme to identify children (particularly if the number of non-covered cases is low) and the emphasis is given to the rehabilitation process. In addition, the period coverage tends to overestimate coverage in programmes with a tendency to keep children in the OTP for longer.

Period coverage is designed to take into account the number of children treated by the programme over its recent duration, including those who are no longer cases; i.e. children from 6-59 months who were admitted as SAM cases but are currently recovering and no longer SAM on the day of the assessment. Period coverage can therefore provide a good reflection of programme performance over recent months. Point coverage on the other hand, shows the ratio of SAM cases in the programme compared to the total number of SAM cases identified by the assessment. Point coverage does not include children registered in the programme who are partially recovered and no longer SAM. Point coverage estimates, with the stricter definitions, provide a reflection of programme performance ‘right now’.

The following formula is used to calculate period and point coverage:

**Formula 1: Period coverage**

\[
\text{Period coverage} = \frac{\text{Children enrolled in the programme, malnourished or not malnourished}}{\text{Children enrolled in the programme, malnourished or not malnourished} + \text{children malnourished but not enrolled}} \times 100
\]

**Formula 2: Point coverage**

\[
\text{Point coverage} = \frac{\text{Malnourished children admitted in the programme}}{\text{Total malnourished children}} \times 100
\]

For this survey due to the fact that the program has a well functioning community mobilization it is decided to use period coverage.
STAGE 3: GENERATION OF THE POSTERIOR

A SQUEAC Bayesian Calculator\textsuperscript{5} used to estimate overall coverage of OTP programmes was recently developed. The software enables the creation of graphs for the Prior, the Likelihood and the Posterior. The Posterior, representing the coverage estimate, is automatically generated by the Calculator indicating a point estimate and 95% credibility interval from the resulting Posterior.

![Graph of Prior, Likelihood, and Posterior distributions]

Case Definition

Beneficiaries will be admitted to the nutrition programme based on the revised Joint UNHCR, WFP, ARRA and Implementing Partner Joint Guidance on Nutrition and Food Response in the Dolo Ado Refugee Programme, issued in September 2011. The following table summarizes the admission criteria:-

<table>
<thead>
<tr>
<th>SN</th>
<th>Program</th>
<th>Admission criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OTP</td>
<td>Children 6-59 months MUAC &lt; 11.5 CM (115mm) and/or - WHZ&lt;-3 Z-score, +/++bilateral pitting edema.</td>
</tr>
<tr>
<td>4</td>
<td>SC</td>
<td>Bilateral oedema grade +++ or Marasmic-Kwashiorkor MUAC &lt;125mm**, Bilateral oedema grade + or ++ AND no</td>
</tr>
</tbody>
</table>

\textsuperscript{5} The calculator can be freely downloaded from [www.brixtonhealth.com](http://www.brixtonhealth.com)
appetite/severe medical complications

No appetite or unable to eat test dose of RUTF

Severe medical complications:

- Intractable vomiting,
- Fever > 39°C or hypothermia < 35°C.
- Lower respiratory tract infection according to IMCI guidelines for age:
  - ≥ 60 respirations/minute for under two-months.
  - ≥ 50 respirations/minute from two to twelve months.
  - ≥ 40 respirations/minute from one to five years.
  - ≥ 30 respirations/minute for over five years.

Ideally, under-five children will be admitted through screening in the CNC or through the community-based nutrition promoters. However, in practice and findings of the SQUEAC investigation the bulk of screening happen at CNCs. Practically, the program screen all children bi-monthly on regular basis at CNCs and those children who are found to be below 13.5cm will be referred to the next room where the OTP and SFP nurses do a further screening using weight for height and Oedema assessments. At the first stage children will be assessed using only MUAC and Oedema assessment may happen only if the child looks Odematous (visual perception).
RESULTS OF THE SQUEAC INVESTIGATION

Stage 1: Building the Prior

Programme data analysis

Analysis of admission data overtime

Trends on admission in the programmes life will depict much information about programme coverage and the evolution of the programme. As explained in the introductory section the programme has started on January 2011. Compiled data from the programme was collected and analyzed.

Observation of admission shows a high admission of cases when IMC take over the programme from MSF, and a steady decrease in admission both in OTP and TSFP. This is an indication that the programme has effectively identified most SAM children at the beginning and effectively treated them. It also indicates effective community screening.

As the camp dwellers are entirely refugees with no other income, seasonal calendars couldn’t be used since all are new to the location.

MUAC on admission
The measurement of the MUAC admission is a strong indicator of late/early detection as well as health seeking behavior and effectiveness of community mobilization activities.

The median admission of MUAC is 12.6cm which is very high and it shows that the programme admits children well before they are malnourished and well above the cut-off point for SAM cases. This is a direct outcome of continuous screening of children using MUAC at the CNCs. Nonetheless, children being there should not been admitted as late as 10cm and one will expect all to be in the OTP programme well before they become below 11.5cm. Also it is important to note here that since admission is being done by both z scores and MUAC those children with high MUAC are admitted using z score, hence a high MUAC at admission.

Disaggregation by each CNC indicates that all facilities admit children well before they deteriorate and this has contributed for high efficacy (Fig 5 to 7).
Length of stay (LOS) in the programme

Based on the joint UNHCR/WFP and Unicef nutrition intervention guideline for refugee camps the maximum length of stay in OTP programme should be 8 weeks. However, analysis of routine data shows the median Length of Stay (LOS) is 9 weeks. This shows that half of the admissions into the OTP program exit the programme well above the recommended length of stay. This is true for the entire programme as well as across each CNC (Fig 8).

Increased length of stay for outpatient programs implies increased Defaulting as mothers could be exhausted both by the length of stay as well as by not seeing improvement in their children condition. The wide area survey found children who were severe and who do not want to continue as the program did not make any difference in their children condition.

---

**Fig 5. Admissions on MUAC less than 11.5cm in Melkadida refugee camp sub camp CNC4 CMAM programme (January-August 2012)**

**Fig 8. Length of stay in CMAM programs for OTP for Melkadida and Kobe sub camps of Dolla camps**
The cause of extended Length of stay is the inability of children to reach the target weight gain resulting in increased Non-responder rate (as per the joint guideline, cases are defined non-recovered if they did not meet the discharge recovered criteria of weight gain after 12 weeks in treatment in normal circumstances and 16 weeks when the child fails to meet the programs exit criteria).

This resulted in increased number of the categories of program performance indicators of "discharged as non-responder" for cases that have been in the program for a long time without being cured and are discharged using a maximum length of stay rule 8 weeks).
Discharge outcome

Analysis of discharge outcomes show that the program meets or exceeds Sphere minimum standards for all program performance indicators.

Defaulter tracing was not possible as most of the defaulted have left to Somalia for cultivating their land and return back to the camps.

![Programme performance indicators between February and October 2012 for the Dollo CMAM Programme](image)

Qualitative data collection

Finding of qualitative discussions using different methods and sources is summarized below:

Findings of discussion with Beneficiaries (In depth interviews and group discussion)

<table>
<thead>
<tr>
<th>Positives</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have understanding of the concepts of malnutrition</td>
<td>CNCs are far from homes</td>
</tr>
<tr>
<td>Community Nutrition Promoters pass key messages accurately</td>
<td>The weather condition is too hot</td>
</tr>
<tr>
<td>Behavioral change observed in community</td>
<td>Sometimes wood fire collecting from the forest in order to get more income. This a challenge for them as they will run short of time to attend the program</td>
</tr>
<tr>
<td>Beneficiaries think they are treated with respect at nutrition centers</td>
<td>Fetching water takes time (queue) due to this they may come late home</td>
</tr>
</tbody>
</table>
At nutrition centers they are properly trained how to feed RUTF

Positive perception about the programme

Beneficiaries are happy to be provided with routine medicines at Community Nutrition Centers (CNCs)

**Findings from Lay people (Informal group discussions)**

<table>
<thead>
<tr>
<th>Positives</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding of malnutrition within community</td>
<td>Long distance to HC</td>
</tr>
<tr>
<td>Understanding good health seeking behavior</td>
<td>Understanding RUTF as food</td>
</tr>
<tr>
<td>Good awareness of CMAM awareness</td>
<td>Sharing of food (culturally acceptable and to think otherwise is a taboo)</td>
</tr>
<tr>
<td>Good perception of CMAM</td>
<td></td>
</tr>
</tbody>
</table>

**Findings from discussion with outreach workers (Community Nutrition Promoters)**

<table>
<thead>
<tr>
<th>Positives</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well trained</td>
<td>Refused to admit children into SC due to high opportunity cost for mothers</td>
</tr>
<tr>
<td>Early referral</td>
<td>Sharing and selling</td>
</tr>
<tr>
<td>CNP lives with community</td>
<td>Double registration</td>
</tr>
<tr>
<td>Good perception of the program both by community and promoters (IMC is mother of Kobe)</td>
<td>The amount of GFD does not cover the household consumption need and it has an effect on the nutritional status of children</td>
</tr>
<tr>
<td>Effective follow up</td>
<td>There is a gap in community follow up</td>
</tr>
<tr>
<td>Screening by trained staff</td>
<td>Refugees totally depend on assistance and do not have any other income generation-promising to sell the food to meet some needs</td>
</tr>
<tr>
<td>Continuous screening</td>
<td></td>
</tr>
<tr>
<td>Good understanding of the programme and admission criteria</td>
<td></td>
</tr>
<tr>
<td>Motivated</td>
<td></td>
</tr>
</tbody>
</table>
**Small area survey**

To test the hypothesis about coverage, small area surveys were conducted in areas where the investigation suggests high and low coverage. The sampling of this areas is purposive i.e. we select areas that were believed to be high/low coverage or areas then find cases in those areas to see whether our hypotheses were correct (based on investigations done so far).

The results show a wide variation where in some of the places the coverage was as high as 100% and in others it was 0%:

Overall, the results of the small surveys shows there is variation in coverage but this meet our hypothesis as to where coverage are poor and better (using decision rule that was illustrated in the methodology part). Melkadida seems to have a better coverage as compared with Kobe. Nonetheless, the teams decided to go to the next stage and generate an overall coverage level keeping in mind that there are some discrepancies in coverage levels between Melakadida and Kobe.

**Spatial Coverage**

Maps that specifically identify the zones (the lower tier of camp administration) were hard to find, instead all zones were listed and admissions were tallied per zone for all CNCs. The data showed that admission into OTP sites is localized to some zones than others. For instance, in Melkadida zone A, B, D, O, P and S have more admissions than others. Moreover, Kobe has fewer admissions per CNC than Melkadida. However, some of the variation in coverage between different zones is explained by differences in population size and yet the discrepancies show there are some areas which are performing better than the others. For instance, qualitative investigations that were done to explain this discrepancy reflect community mobilization activities are weaker and this may be one give one explanation to the difference in admissions between the two sites. Moreover, screening at community level is again very rare in Kobe where us there is a lot of evidence that screening is better at Melkadida. One of the findings of the investigation was the use of slips at community level in Melkadida which was very rare at Kobe. On a positive note, zones at Kobe have generally lower populations than in Melkadida. But the program expected more children from Kobe than Melkadida but the admissions since January are similar. As of August 2012 the program admitted 531 children in Melkadida and 500 under-five children into its OTP program. Moreover, the program plans to screen 143 children in Melkadida camps as compared with 1192 childrenen in Kobe camps (based on results of a nutrition survey). Despite large caseload expectation from Kobe, the actual admission is equal to the well established and better managed Melkadida camps. Therefore, in Kobe screening at CNC and community level should be done to properly readmit those uncovered children.
Synthesis of Quantitative and Qualitative Data
(Results of the Dolo ado Mind mapping Exercise)

Following are the results from the mind mapping exercise conducted as part of the prior building. This information was used to generate the prior.

**Informal group discussion with Community**
Informal group discussions were conducted amongst groups of men and women in the various communities in Melkadida and Kobe sub camps. All eight Community Nutrition Centers were covered. Within each CNC one zone was selected and the selection was done randomly as there are no variables as distance that should be considered because distance is not an issue at all (this is confirmed by collecting data from OTP sites cards; the result was CNCs are less than 30 waking minutes from the community). The purpose of the discussions was to get a general
idea of the views and perceptions of the community at large on issues related to children’s health and health care in general and on nutrition in particular.

Local Terms used by the community to explain malnutrition

*Hunfaro* = Very weak

*Bush harub* = Covered by disease. This word is used by communities who speak a different language from the Somali language. It was not known even to OTP staff who know Somali language

*Barar* = Swollen, Oedematous

*Malo* = Less blood in the system others translate it as ‘skin and bone’

*Malnutrition* = Inadequacy of blood in the system

Causes of malnutrition (community’s understanding)

- Drought, famine and civil war will cause malnutrition;
- Breast feeding can prevent malnutrition, colostrums can prevent malnutrition;
- When it is hot weather morbidity increases;
- Traditionally, children were used to cow milk back in Somalia. But now they do not have access to milk and they believe this is the main cause of malnutrition in the camps

Common illness among under five children (community’s understanding)

- Common illness: Diarrhea, vomiting, fever, malnutrition, cough, ear discharge
- Most common disease diarrhea and vomiting
- Hot season the time of vomiting and diarrhea
- Diarrhea and malnutrition are most serious
- Diarrhea cause malnutrition and death
- Malnutrition = Inadequacy of blood in the system
- Symptoms of malnutrition are edema, loss of appetite, colorless skin, bone and skin, very weak child, lack of enough blood and no flesh in the body
- Children at risk according to community’s perception are those children <4 years, <3 years and <2 years (different responses from various discussions)
- Health seeking behavior
  - They send children to Sheiks before sending to HCs
  - HC is far (Kobe)...only ARRA
Awareness of CMAM

- They think ARRA and IMC can treat Busharub (malnutrition);
- Information about the programme come from IMC and ARRA;
- OTP is for children who are sick and malnourished once
- Generally discussions revealed positive perception about the programme;
- Sharing of nutritional foods especially Porridge or CSB is common according to discussion;
- Waiting time at CNCs is acceptable to communities. Generally they know the disease, they know the services and they know the location. They appreciate the program. They did not know about the program while in Somalia

Defaulting and non-attendance

- Participants in the discussion said they do not know any person or groups who are out of the programme;
- Defaulting happens when families go to Somalia to plough and crop their land. The reason for going back is the perceived thinking that the food being provided at the camps falls short of the household’s demand. This is because mostly households sell what they received from distribution points and buy spaghetti and rice which are more culturally acceptable for the refugee communities. The problem is the terms of trade when they buy this items is very much poor against beneficiaries, hence shortage will happen triggering returning back for a season to harvest and fill gaps;

Interview with beneficiary

- The child was born in Dollo camps and the child is now 12 months old. This child has a very long length of Stay (L.O.S), 19 weeks. The child was admitted in to OTP when he got diarrhoea. He was taken to Health centre and was referred by the HC to the nutrition programme.
- The mother is well aware of the program. Since this is a camp there seems to be knowledge of the programme in all communities. Based on the responses from this mother waiting time at community nutrition centers is 20 minutes.
- **What did the nurses say about condition of the child?:** Counseling includes appetite test. How to feed the child and hygiene.
- The beneficiary can distinguish RUTF is for a very sick child.
- There is no stigma associated with those children who go to the programme.

Perception about the programme:
• The mother believes she is treated well at the program (program staff treat her very well)
• Mother explained about interruption of OTP programme (On June), and the child was transferred to other programme
• The mother is a mother of 9 and her husband has a second wife with 9 children. She says oftentimes there is a shortage of food in her house.

In-depth interview with OTP Nurses

• All interviewed nurses were trained (twice);
• Discussion and interview revealed that before the training there were inconsistencies in implementing the program and following a specific guideline as there were multiple guidelines. But the training helped nurses to use a single manual;
• **Challenges**: Non responders are many. Many of them do not respond to the treatment. Nurses believe sharing and selling are the causes. An interesting explanation was given to this by one nurse. He said children from better-off families (in terms of education and income) respond quickly than others
• Shop: Plumpy’nut is available in shops in Bokolmayo
• Recording (my observation): OTP nurses do the registering and there is no problem.
• Common diseases: Diarrhea, URTI, Chicken pox (April, May and June) and Pneumonia (in 2012). In August 2012 there was a diarrheal disease outbreak.
• Causes of malnutrition: People do not have any other means and shortage of food is the cause of malnutrition. Moreover, refugees will sell all the foods as it is not culturally acceptable. They will sell this food and buy other foods like Spaghetti and rice.
• Screening: there is community level screening (outreach). Nurses believe that all children in the camps are covered,
• Exclusion and inclusion: “we all are trained. It is highly unlikely that we make the same mistakes by three individuals. But there are minor problems.”
• Screening criteria: MUAC, Oedema and z scores are admission criteria. They are used equally.{the responder has a very good understanding of admission criteria};
• How do you refer to SC: Children with complication are referred to SC (for a week). There is a slip for making the referral and slip has identification. Moreover, there is a very good communication between the SC and OTP.
• **Defaulter**: There is no defaulter among beneficiaries in the camp. Defaulters are those who return to Somalia. The programme will try to convince the mothers not to go until the child is through with the treatment.
• Absents: If a child is absent the programme will send volunteers to bring them back and it is not a big challenge.

• Challenges:- double registration is very common and it creates extra load for nutrition workers;

• Challenges: water is not available at CNC level, especially for cleaning materials and rest room;

• Challenges: Sometimes OTP workers are required to cover extra works i.e. when other colleagues go to R and R they are expected to cover their work and this creates extra work load;

• Supervision and follow up: there is a daily supervision and follow up. Supervisors provide technical support and logistical support.

• Absentees and follow up: If there is absentee OTP nurse will contact the zone leader and they will call the careers to come to the treatment.

• Regularity: There is a regular schedule of the programme

Fig. 15:-Flow of patients (from the walls of one of the CNCs)

Results of Mind Mapping exercise and data ranking:
The distribution of prior coverage estimate is determined through a beta distribution of the belief of perceived coverage estimates. This is done by using the Bayes SQUEAC calculator to plot the mode and the lowest and highest coverage threshold points. The value and the $\beta$ value are set to confirm the beliefs outlined in the prior building exercise. The current SQUEAC exercise arrived at prior estimate of 77% (C.I. = 75% - 78%).
Based on the findings from the mind mapping exercise data were summarized and weight was assigned to each. The following table summarizes the findings:

<table>
<thead>
<tr>
<th>Positives factors</th>
<th>Values</th>
<th>Negative factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of care</td>
<td>5</td>
<td>Sharing and selling that causes high LOS which result in classifying many children as non responders</td>
</tr>
<tr>
<td>Understanding of services</td>
<td>5</td>
<td>Mobility of refugees from camp to camp</td>
</tr>
<tr>
<td>Programme performance indicators</td>
<td>1</td>
<td>Lack of recognition from CM (no Identification Card that will give them recognition as volunteers)</td>
</tr>
<tr>
<td>Strong CM network</td>
<td>5</td>
<td>Due to internal power dynamics refugees from big towns do not want to be seen as careless towards their children and prefer not to go to the programme</td>
</tr>
<tr>
<td>Decentralization of services and almost zero distance</td>
<td>5</td>
<td>Culturally Inappropriate food (e.g. Wheat is unknown traditionally by the refugees)</td>
</tr>
<tr>
<td>Regular schedule</td>
<td>5</td>
<td>HC is too far and its opportunity cost for mothers is too high</td>
</tr>
<tr>
<td>Continuous supply of routine drugs and foods</td>
<td>5</td>
<td>Sometimes late detection</td>
</tr>
<tr>
<td>Understanding of malnutrition</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Adequate skilled and trained staff</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Health seeking behavior</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Integration between sub components of the CMAM program</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Early detection of cases</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Good infrastructure</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>55</td>
<td>12</td>
</tr>
<tr>
<td>Added to minimum coverage (20%)</td>
<td>75</td>
<td>78</td>
</tr>
<tr>
<td>Subtracted from maximum coverage (90%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha</td>
<td>16.8</td>
<td></td>
</tr>
<tr>
<td>Beta</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>
Stage 2: Building the Likelihood

Wide area survey

Sample size calculation
To generate the likelihood a wide area survey was conducted. The wide area survey used a spatially stratified random sampling (strata being CNCs) to generate a coverage level for the whole programme area. The findings of the survey are presented below:

<table>
<thead>
<tr>
<th>Type of cases</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of current (SAM) cases</td>
<td>23</td>
</tr>
<tr>
<td>Number of current (SAM) cases attending the programme</td>
<td>11</td>
</tr>
<tr>
<td>Number of current (SAM) cases not attending the programme</td>
<td>12</td>
</tr>
<tr>
<td>Number of recovering cases Attending the programme</td>
<td>33</td>
</tr>
</tbody>
</table>
Using the findings of the wide area survey point and period coverage survey estimates were generated:

**Period coverage**

\[
\text{Period coverage} = \frac{\text{Number of current (SAM) cases and recovering cases attending the programme}}{\text{Number of current (SAM) cases and recovering cases attending the programme} + \frac{\text{Number of current (SAM) cases not attending the programme}}{\text{Number of current (SAM) cases not attending the programme}}} \times 100
\]

\[
\text{Period coverage} = \frac{44}{44 + 11} \times 100
\]

\[
\text{Period coverage} = \frac{44}{55} \times 100
\]

\[
\text{Period coverage} = 80\%
\]

**Point coverage**

\[
\text{Point coverage} = \frac{\text{Number of current (SAM) cases attending the programme}}{\text{Number of current SAM cases}}
\]

\[
\text{Point Coverage} = \frac{11}{23} \times 100
\]

\[
\text{Point Coverage} = 47.8\%
\]

Since the program has good case-finding and recruitment the coverage level used as likelihood is period coverage (80%).

The wide area survey has further generated barriers to access and means of referral methods. During the survey two structured instruments were designed and used. The findings are summarized below:
To assess the impact of distance on service uptake the distance to the various CNCs from the surveyed zones were asked. The mean time taken to reach the CNCs is 20 minutes. All mothers perceive the distance to CNCs as near.

**STAGE THREE: GENERATION OF THE POSTERIOR**

Using the priori (77%) and the likelihood (80%) Bayes SQUEAC generated the final coverage level for the Dolo Nutrition Intervention. The posterior or the final coverage value is **78.5% (C.I. 95%: 68.3%-86.5%).**
CONCLUSION AND RECOMMENDATION

- The coverage estimate for Dolo camps is **78.5% (C.I. 95%: 68.3%-86.5%).** Program coverage is high and with little retuning of the program it is possible to achieve even higher coverage to meet or exceed Sphere minimum standards. This is because most of uncovered children are already in the program but they are in the wrong program. Stepping of community mobilization activities both at community and CNC level (Kobe camps), allowing community health promoters to do a continuous case finding at community level (especially Kobe) and assessing oedema at CNC level during first stage screening can help the program achieve better coverage and efficacy.

- The programme captures cases well before they are deteriorated and this is indicated by a steady decrease in admissions since IMC take over the programme. Further, the median MUAC on admission of 12.6cm shows that the programme admits children into its OTP program indicating a high treatment seeking behavior from the community side and an effective community mobilization and quality of service from the program side. The programme efficacy is such that there are few cases that deteriorated into SAM. Therefore the programme should continue to deliver quality services and treat children.

- The programme combines weight-for-height and MUAC as admission criteria in order not to miss any SAM child. Screening concentrates on MUAC and WHZ and little emphasis is given for assessing children for oedema (which is clearly emphasized on the intervention guideline). Therefore it is of little coincidence that all of the children who were found by the wide area survey as edematous and uncovered cases. However, of the 11 SAM cases who were found uncovered by the program 8 of them are in SFP and three are not covered by any program at all. Therefore, the programme should give equal weight for edema assessments for those children who are already in the programme.

- The Length of stay in the program is very high. Increased length of stay for outpatient programs implies increased Default as mothers could be exhausted both by the length of stay as well as by not seeing improvement in their children condition. The believed cause of extended Length of stay is sharing and selling of plumpy’nut. This is confirmed by different sources and methods. This resulted in increased number of the categories of program performance indicators of discharged as non-responder for cases that have been in the program for a long time without being cured and are discharged using a maximum length of stay rule (usually 8 weeks). Discussions show that households are selling plumpy’nut to buy foods which are culturally acceptable to the communities i.e. Spaghetti, flour and rice. This is causing non response and affecting the program.
➤ Awareness about malnutrition and its causes is very high in the camps. Nonetheless, adherence to protocol for treatment of SAM is sub-optimal.

➤ Both the sharing and selling of PPN seem to affect the program and a sustainable solution is required to address this issue.

➤ SQUEAC investigation revealed that there is a very high treatment seeking behavior which is favorable to the program’s success.

➤ There is a very good perception about the program. During the survey mothers repeatedly say ‘IMC is mother of Kobe’.

➤ At all levels (both program staff and community) repeatedly said GFD is not appropriate for the community (cultural issues). They prefer to have flours, rice and Spaghetti
CNEX 1:- QUESTIONNAIRES USED DURING WIDE AREA COVERAGE SURVEY

CASE-FINDING PROCEDURE

Ask the leader to provide you with a guide/informant to show you houses with oedematous, thin and sick children and children in the program (Specifically, ask for HEW, CHW’s, TBAs and or a woman who knows all the mothers of U5s in the zones).

Ask the guide to take you to houses with oedematous, thin and sick children and children in the program.

Go to the first household identified by the guide or the leader.

When you arrive at an identified household, introduce yourselves, the program, and explain why you are there and what you will be doing. Then start assessing the child.

Is the child between **6-59 months of age?** To confirm the age ask for vaccination card and calculate the age in months (if no card use calendar of events to calculate the age of the child)

---

No

Thank the career and ask the mother of this child if she knows of any children that might be oedematous, thin or sick, or in the program. Then move on.

---

Yes

Check Oedema, take MUAC

The child has bilateral oedema or MUAC < 11.5 cm?

If yes, is he in the OTP programme?

If not, is he in the OTP programme? (not a case)
<table>
<thead>
<tr>
<th>No (for cases not in the programme)</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill the form then fill up the questionnaire for children who are not in the program and refer the child to the appropriate programme.</td>
<td>Fill the form</td>
</tr>
<tr>
<td>Thank the mother, and ask her if she knows of any children that might be oedematous, thin or sick, or in the program. Then move on.</td>
<td></td>
</tr>
</tbody>
</table>

**Remember**

1) After you have assessed the children in the selected household, always ask the mother if she knows of any children that might be oedematous, thin or sick, or in the program. Then move on to the selected household.

2) Always ask if any child from the village is currently in hospital or at a health centre. If so, get the name of the child and mother and make sure you measure him / her in the health facility.

3) If a mother with oedematous, thin and sick child is away from the village, go where she is and measure the child.

4) If a mother with a child in a program is away from the village, take the name and age of the child, verify in the OTP register.
For mothers/carers of children CURRENTLY enrolled in the OTP/SC programme

Name of refugee camp _____________ Name of sub camp _____________ Number of CNC_____________

Name or number of Zone _____________ Team No _____________

Name of Child _____________________

1. Is this the first time your child has been in the programme? If yes, skip to Q5 ___

2. If no: record the number of times the child was in the programme previously [    ]

3. Try to establish why the child has returned
   a. returned defaulter □
   b. relapsed into severe malnutrition □

4. What was the reason for a or b above?
   __________________________________________________________________________
   __________________________________________________________________________

5. Have any of your other children been enrolled in the programme? If yes: record the number__________ [if no: put 0]

6. What made you decide to attend? (free listing)
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________

45
For the carers of children (Severe cases) who are NOT in the programme

Name of refugee camp _____________ Name of sub camp ___________ Name or number of CNC ___________ Name or number of zone _____________

Name of Child ________________ Childe registration number

Team No __________

1. DO YOU THINK YOUR CHILD IS MALNOURISHED?
   □ YES □ NO

2. ARE YOU AWARE OF THE EXISTENCE OF A PROGRAMME WHICH CAN HELP MALNOURISHED CHILDREN?
   □ YES □ NO (→ stop!)
   If yes, what is the programme’s name? ________________________________

3. WHY IS YOUR CHILD CURRENTLY NOT ENROLLED IN THE PROGRAMME?
   □ Too far (How long does it take to walk? .......hours)
   □ No time / too busy. What is the parent doing instead? ____________________
   □ Mother is sick
   □ The mother cannot carry more than one child
   □ The mother feels ashamed or shy about coming
   □ Security problems
   □ There is no one else who can take care of the other siblings
   □ The amount of RUTF was too little to justify the journey
   □ The child has been rejected by the programme already. When? ______ (approx.)
   □ Other parents’ children have been rejected
☐ My husband refused

☐ I thought it was necessary to be enrolled at the hospital first

☐ I do not think the programme can help my child (prefer traditional healer, etc.)

☐ Other reasons (specify):

________________________________________________________________________

4. WAS YOUR CHILD PREVIOUSLY ADMITTED TO THE PROGRAMME?
   ☐ YES                  ☐ NO (→ stop!)

If yes, why is he/she not enrolled any more?

☐ Defaulted (when?........ why?.....)

☐ Condition improved and discharged by the programme  (when?........)

☐ Discharged because he/she was not recovering  (when?........)

☐ Other:_____________________________________________________________________

(Thank the carer)
ANNEX 2:- GUIDES USED FOR DEVELOPMENT OF PRIORI

SQUEAC -Qualitative work – Topics for discussion during Mornei SQEAC coverage survey

Lay people

The discussion should flow naturally and leads/interesting points should be followed/explored as they come up. The question list should not be rigidly adhered to. This is just a guide as to the kind of topics which are important and the type of questions which could be asked. The direction the discussion takes will depend on what is said by the participants. It is always important to probe and ask follow up questions.

UNDERSTANDING OF MALNUTRITION

1. What are the common health problems that children experience here?
2. Which are the most frequent? Rank.
3. Are any more frequent at certain times of the year? When? Why?
4. Which are the most serious? Rank. Why?

If malnutrition mentioned ask:

5. What symptoms do these children have?
6. What terms do you commonly use to describe this condition?
7. Which children get this condition? Why?

HEALTH SEEKING BEHAVIOUR

8. What do you do when your child has this (insert name of most common illnesses) problem?
   a. Probe fully for different illnesses

If clinic/hospital mentioned:

9. Which? How far is it? Why do you go there?
10. Is there any alternative/anything else you might do/anyone you might ask for advice nearer home?

11. What factors determine which treatment / approach you use for a particular illness?
   Probe on:
   a. Cost
b. Access

c. Father permission

d. Habit/familiarity

*If malnutrition not already mentioned ask/show pictures:*

12. Have you seen children like this (those who have lost weight/become very thin or whose feet/legs/hands have started to swell?

13. What do you call this condition?

14. When do you see this condition?

15. Which children get this condition? Why?

16. What do you do when your children get this condition? Why?

**AWARENESS OF CMAM SERVICE**

17. Do you know of a place where this condition can be treated?

18. How did you hear about it?
   a. Who told you?
   b. When?
   c. What do you know about it?

19. What are children given for this condition?
   *If people think the RUTF is a food ask:*
     a. What sort of food is it?
     b. What do you call it?
     c. Who can eat it?
     d. What foods do you give your children to make them healthy/strong?

20. Do you know children receiving this treatment?

21. Do you know children who have this problem but who are not going for this treatment? Why?

**PERCEPTIONS OF CMAM**

22. What are people saying about this service?

23. What do you think of this service?
   *If people say it is good ask:*
     a. *What is good about it?*

24. How are children identified for treatment?
   a. Have you seen anyone doing this in your community?
   *If people know the volunteer/have seen the MUAC ask:*

25. Do you know of children who have been to the clinic and have not been given the treatment?
   a. If yes, why not?
   b. What were they told?
c. How did they feel?

26. Do you know of any children who have stopped going for treatment?
   a. Why is this?
   b. What would encourage them to return?

*If carers of beneficiaries are in the group ask separately as a case study:*

27. Tell me about your experience of the service?
28. What have you said to other people about it?

*If carers of defaulters are in the group ask separately as a case study:*

29. Why did you stop going?
   a. After how many weeks?
   b. What have you said to other people?
   c. How is your child’s health now?
   d. What would encourage you to take your child back to the clinic?

30. What messages do you want us to pass to the people organising the CMAM service?
Village/religious leaders and key community figures

KNOWLEDGE OF CMAM

1. Are you aware of any nutrition service at your local clinic?
2. Who told you about it?
3. When did you hear about it?
4. What do you know about it?
   a. Target children?
   b. Admission criteria?
   c. Treatment given?
   d. Free treatment?
   e. OTP day?
   f. Identification of children?

ROLE / SENSITISATION

5. Have you told others about the service? How? When?
   a. Usual channels/message dissemination?

BARRIERS

6. Are you aware of any children who need treatment but are unable to access services?
   a. What stops them coming? (distance/family/beliefs/other)
   b. How could we reach these children/encourage them to attend?

KNOWLEDGE OF CASES

7. Do you know any children receiving treatment?
   a. What can you tell me about them?
8. Do you know any children who have defaulted/stopped coming?
   a. Why is that?
   b. How can we encourage them to return for treatment?
   c. What do other key community figures think of it?
   d. If I wanted to find all malnourished children with the same problem in your community
      i. what would be a better question to ask
      ii. what questions should I avoid asking
      iii. who do you think would be best to identify such children your settlement
      iv. What do people in this area say/think of families with such children?
         (Probe if there is any stigma of malnutrition in the area/settlement?)
COMMUNICATIONS

9. Do you know who the volunteer is for this service?
   a. When did you last see them?
   b. What do they do? (frequency and organisation of activities)

10. Have you had any feedback from the volunteer/clinic staff/MoH officials about the service?
    a. Do you know what the results are?

PERCEPTIONS OF CMAM

11. What are people saying about CMAM?
12. What do you think of the service?

IMPROVEMENTS

13. How can we improve the service?
14. Do you have any messages for those running the service?
CMAM INVOLVEMENT AND CHALLENGES

1. How long have you been working on CMAM?
   a. Are all staff in the clinic involved/trained on CMAM?

2. Who trained you on CMAM?
   a. Have you had refresher training?
   b. Is there any additional training you feel you need?

3. What contact/support have you had with the focal people/Ministry to help you in your job?

4. What difficulties, if any, do you have on the CMAM day?
   a. High number of patients
   b. Time
   c. Completing paperwork accurately and keeping up to date

CALENDAR

5. What are the main childhood diseases you see in the clinic?
   a. Which is the most common? Rank.
   b. What time of year do they occur?

6. What do you think are the causes of malnutrition here?

REFERRAL

7. How do children usually come to the clinic for CMAM?
   a. Referred by volunteer
   b. Heard about it from other beneficiary
   c. Heard about it from other person in the village
   d. Heard about it at the clinic
   e. Heard via the radio/town crier etc.
   f. Other source
   g. Rank in order

REFERRAL AND FOLLOW UP

8. Do children who are referred by the volunteer come with a referral slip/paper?
   a. What do you do with the referral slips?

9. Does the volunteer check that children they have referred actually present at the clinic?
   a. Do you report back to volunteers on the number of children you have seen that are referred by them?

10. Have you had any wrong referrals from the volunteer?
    a. How many?
    b. What was the problem?
    c. What did you do?
    d. Did you report back to the volunteer?
11. How do you refer patients to the stabilisation centre?
   a. Do you give them a slip?
   b. How do you know if they have arrived at the SC?
   c. Do you know what happens to them?
   d. When patients are referred back do they come with any paperwork?

REJECTION

12. How many healthy children have presented at the CMAM clinic?
   a. How many every week?
   b. Why do you think these mothers come with healthy children?

13. What do you say to mothers of healthy children?
   a. What words do you use?
   b. What explanation do you give?
   c. How do mothers react?

DEFAULTING

14. How many children are absent for more than 1 week during the course of treatment?
    a. Why do you think this is?

15. How many children default?
    a. Why do you think this is?
    b. Is there a pattern

16. What do you do when a child has not turned up for treatment? Probe for:
    a. Absentees
    b. Defaulters

17. Do you think husbands of mothers whose children are malnourished would stop/have stopped them from taking the child to the OTP site?

18. How could we encourage children to return for treatment?

19. What barriers prevent mothers from bringing their children to the OTP?

20. If I wanted to find children with the same problem in your community
    a. what would be what be a better question to ask
    b. what questions should I avoid asking
    c. who do you think would be best to identify such children your settlement

21. Is there any stigma associated with malnutrition in this area?

COMMUNICATIONS

22. How often do you see the volunteers?

23. How do you communicate with the volunteers?

24. Do you ask volunteers to follow up on absentees / defaulters?
    a. Why/why not?
    b. How do they report back?
    c. Have any children returned?

IMPROVEMENTS

25. What improvements could be made to CMAM?
a. More information/training
b. 2\textsuperscript{nd} day for CMAM
c. Contact with Ministry staff/focal people

26. What messages do you want us to pass to the people organising CMAM?
Volunteers

ROLE

1. How long have you been a volunteer?
2. What are your main activities?
3. How often do you do these activities?
4. What are you covering for case finding?
   a. How long does it take you?
5. How do you decide which children to measure?

EXPLANATION

6. What do you tell the mother when you identify a case?
   a. Do any mothers refuse to go to the clinic? Why?
7. What do you say about the new treatment?
8. What name do you call the treatment?
   a. What do the mothers call it?
   b. If I wanted to find children with the same problem in your community
      i. what would be a better question to ask?
      ii. what questions should I avoid asking
      iii. who do you think would be best to identify such children your settlement
9. Is there any stigma associated with malnutrition in this area/settlement?

REFERRAL AND FOLLOW UP

10. Do you give the mother a referral slip/paper when you refer the child to the clinic?
    a. Why/why not?
    b. How do you know if the child actually went to the clinic?
11. Are you aware of any children who have stopped coming?
    a. Why is that?
    b. How can we encourage them to return?
    c. Do you think husbands of mothers whose children are malnourished would stop
        them from taking the child to the OTP site?
12. Are you ever asked to follow up on cases who are absent/have defaulted?
    a. How does the nurse communicate with you?
    b. How do you report back?

COMMUNICATIONS

13. How often are you in contact with clinic staff?
14. Have clinic staff told you how many children are being treated/how many have been
    cured/how many have defaulted?
15. Have you had any further contact with children you have referred?
    a. Do you know how many were cured?
    b. Do you know if any defaulted? Why?
16. What have mothers said to you about CMAM?
   a. What are people saying/thinking about CMAM?
17. Have you talked with village / religious leaders or other people about CMAM since it started?

IMPROVEMENTS

18. How do you think CMAM could be improved?
19. What would help you in your job as a volunteer?
   a. Do you enjoy being a volunteer?
   b. What difficulties, if any, do you have doing your job as a volunteer?
20. Is there anything else you want to say/any messages for those running the service?
BENEFICIARIES

UNDERSTANDING OF MALNUTRITION
1. When did you first notice that your child was unwell?
   a. What was wrong with him?
   b. What symptoms did he have?
   c. What did you do to help the child get better?
   d. If malnutrition is not mentioned- What do you think causes malnutrition?

OUTREACH
2. How did you first hear about the service?
   a. Who told you?
   b. Have you heard about it from any other source since?
   c. Who is telling people about it in your settlement?
3. What did you hear about it?
4. What made you come?

TIME
5. How long has your child been attending the clinic?
6. How long do you think is the treatment for?

EXPLANATION FROM NURSE
7. What did the clinic staff tell you about your child’s condition?
8. What were you told about the treatment?
9. What do the staff call the treatment?
   a. What do you call the treatment?
   b. What are some of the negative things being said about this treatment/programme in the community

OTHER CASES/CASE REFERRAL
10. Do you know of other children who have the same problem but are not attending the clinic?
    a. If yes, why not?
11. Have you told anyone else to bring their child to the clinic?
    a. Why/why not?
    b. If I wanted to find children with the same problem in your community
       i. what would be what be a better question to ask
       ii. what questions should I avoid asking
       iii. who do you think would be best to identify such children your settlement
12. Is there any stigma associated with malnutrition in your settlement?

DISTANCE
13. How far is it from your home to the clinic?
    a. How do you get here? Walk/transport?
    b. How long does it take?
    c. Determine the farthest distance travelled
14. Do you have any other reason to come to this clinic/this place? e.g. how far is their market
STANDARD OF SERVICE

15. What do you think of the service?
   a. What are the strengths/good things?
   b. What are the weaknesses?
   c. What could be improved?

16. How long do you usually wait before the nurse sees you?

17. How much time do you spend with the nurse?
   a. How does the staff treat you?
   b. Have you ever been scolded? Why?

18. How do you normally give RUTF to the children?
   a. Can you explain what the OTP staff tells on how you should give the RUTF to the child?
   b. How many times and sachets in a day
   c. Have there been any shortages the OTP site on any week? (Probe for the exact dates)
   d. Have you ever not received the full amount / or received something else instead?

ABSENCE/DEFAULTING

19. How easy is it for you to come every week?
   a. What makes it difficult for you to come/what stops you from coming sometimes?

20. Do you think husbands of mothers whose children are malnourished would stop/have stopped them from taking the child to the OTP site?

21. Do you know of any children who have stopped coming?
   a. Why is that?
   b. How can we encourage these children to return and continue the treatment?

PERCEPTION OF CMAM/FEEDBACK

22. What are people saying about the service in your settlement?

23. Have you any messages you want us to give to the people running the service?

24.