SQUEAC REPORT

Dadu District, Sindh Province, Pakistan

March 20 – April 10, 2013 (18 days)
First and foremost, it is important to thank European Union (EU) for funding this SQUEAC investigation in Dadu.

Secondly, Cecile Basquin the technical advisor, ACF HQ in New York was instrumental in setting the pace for of the Dadu SQUEAC implementation and her constructive inputs very useful. Fazal Shahid, the nutrition coordinator Pakistan, was also, steadfast in supporting implementation at all the stages of SQUEAC.

The teams of Joseph Njau, nutrition surveillance program manager and Mohammad Khan, the nutrition program manager in Dadu and their teams had a major contribution in planning and implementation of the SQUEAC. Their effort is well noted. ACF logistics and administration team in Dadu led by Brian Hansen is appreciated for their support.

It is important to acknowledge the community leaders, carers and other community members who offered information voluntarily. This information is the backbone of results findings reported in SQUEAC.

Last but not least, authors of documents used as source of reference in this reports are appreciated. Personal communication in the course of implementation with Melaku Begashaw has been most useful.
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACF</td>
<td>Action Contre la Faim</td>
</tr>
<tr>
<td>CBV</td>
<td>Community Based Volunteers</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence Interval</td>
</tr>
<tr>
<td>CMAM</td>
<td>Community Management of Acute Malnutrition</td>
</tr>
<tr>
<td>CM</td>
<td>Community Mobilizers</td>
</tr>
<tr>
<td>CMN</td>
<td>Coverage Monitoring Network</td>
</tr>
<tr>
<td>DNA</td>
<td>Did Not Attend</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>HEB</td>
<td>High Energy Biscuits</td>
</tr>
<tr>
<td>IYCF</td>
<td>Infant and Young Child Feeding</td>
</tr>
<tr>
<td>LOS</td>
<td>Length of Stay</td>
</tr>
<tr>
<td>LHWs</td>
<td>Lady Health Workers</td>
</tr>
<tr>
<td>MAM</td>
<td>Moderate Acute Malnutrition</td>
</tr>
<tr>
<td>MUAC</td>
<td>Middle Upper Arm Circumference</td>
</tr>
<tr>
<td>OTP</td>
<td>Outpatient Therapeutic Programme</td>
</tr>
<tr>
<td>SAM</td>
<td>Severe Acute Malnutrition</td>
</tr>
<tr>
<td>SC</td>
<td>Stabilization Centre</td>
</tr>
<tr>
<td>SQUEAC</td>
<td>Semi Quantitative Evaluation of Access and Coverage</td>
</tr>
<tr>
<td>TFP</td>
<td>Therapeutic Feeding Program</td>
</tr>
<tr>
<td>TBA</td>
<td>Traditional Birth Attendants</td>
</tr>
<tr>
<td>UC</td>
<td>Union Council</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
</tbody>
</table>
Table of Contents

.I. Acknowledgements ................................................................................................. 2
.II. Acronyms .................................................................................................................. 3
.III. Executive summary .................................................................................................. 6
.IV. Introduction .............................................................................................................. 9
.V. The SQUEAC approach ............................................................................................ 11
   V.1. Data sources and methods used: routine program data ...................................... 12
   V.2. Data sources and methods used: qualitative data .............................................. 13
   V.3. Validating and analyzing qualitative data ............................................................ 14
   V.4. Storing and organizing findings .......................................................................... 15
.VI. Stage 1: SQUEAC investigations ............................................................................ 16
   VI.1. Routine program data ....................................................................................... 16
   VI.1.1. Admission MUACs ....................................................................................... 16
   VI.1.2. Time to travel plots ...................................................................................... 17
   VI.1.3. Length of Stay (LoS) .................................................................................... 18
   VI.1.4. Active and passive case finding .................................................................... 18
   VI.1.5. Trend in admissions data Sept 2011 to March 2013 ...................................... 19
   VI.1.6. Exits over time-performance indicators ....................................................... 19
   VI.1.1. Defaulter program data ............................................................................... 20
   VI.2. Care interviews ................................................................................................ 22
   VI.2.1. Perception of malnutrition ........................................................................... 22
   VI.2.2. Referral mechanism ..................................................................................... 22
   VI.2.3. Distance to the site ...................................................................................... 23
   VI.2.4. Knowledge about program .......................................................................... 23
   VI.2.5. Knowledge and utilization of OTP supplies ................................................. 23
   VI.3. Health/OTP staff interviews ........................................................................... 23
   VI.3.1. Causes of default ....................................................................................... 24
   VI.3.2. Distance ........................................................................................................ 24
   VI.3.3. OTP/SFP supplies ....................................................................................... 25
   VI.3.4. Outreaches, Referral mechanism & routine screening ................................... 25
   VI.3.5. Defaulter tracing ......................................................................................... 26
   VI.3.6. Community perception on malnutrition and OTP program .......................... 26
   VI.3.7. Operational constraints ............................................................................. 27
   VI.3.8. Communities in-accessible to OTP .............................................................. 27
   VI.3.9. Average OTP beneficiaries ........................................................................... 28
   VI.4. Community ........................................................................................................ 28
   VI.4.1. Perception on malnutrition .......................................................................... 29
   VI.4.2. Pathways to care ......................................................................................... 30
   VI.4.3. Knowledge about SAM cases ..................................................................... 31
   VI.4.4. Knowledge about the program .................................................................... 31
   VI.4.5. Accessibility to the program ........................................................................ 33
   VI.5. Interviews with Basic health Unit (BHU) staff and lady health Workers (LHWs) .................................................................................................................. 34
   VI.5.1. Referral mechanism and Knowledge about the program ................................ 34
   VI.6. Interviews with local private doctors ................................................................. 36
   VI.7. Community Nutrition Volunteers (CNVs) ......................................................... 36
   VI.7.1. Perception on Malnutrition referral mechanism and knowledge about program .................................................................................................................. 36
   VI.7.2. Training of the CNVs on OTP ..................................................................... 38
   VI.8. Observations ...................................................................................................... 39
.VII. Stage 2: combining and confirming findings from routine program and qualitative data .... 39
List of figures
FIGURE 1: MAP SHOWING UCS WHERE NUTRITION PROGRAM IS IMPLEMENTED ...........................................9
FIGURE 2: ILLUSTRATION OF TRIANGULATION OF SQUEAC DATA. ....................................................15
FIGURE 3: WEEKS STAYED IN THE PROGRAM BEFORE DEFAULT ..........................................................20
FIGURE 4: TIME TO TRAVEL TO SITE VERSUS DEFAULTER NUMBER ...................................................20
FIGURE 5: OBSERVED DISTRIBUTION OF OTP CASES VERSUS TIME TO TRAVEL TO SITE ..................21
FIGURE 6: DISTRIBUTION OF VILLAGES AS TIME TO TRAVEL TO SITE INCREASES ..................................21
FIGURE 7: MIND MAP USED TO ORGANIZE INFORMATION IN DADU SQUEAC ...............................40
FIGURE 8: CONCEPT MAP OF DADU NUTRITION INTERVENTION PROGRAM .......................................41
FIGURE 9: BARRIERS TO COVERAGE FOUND IN SMALL ARE SURVEY .................................................43
FIGURE 10: REASONS TO DEFAULT GIVEN BY DEFAULTERS ..............................................................44
FIGURE 11: WEIGHING PROCEDURE FOR BARRIERS AND BOOSTERS ................................................48
FIGURE 12: ILLUSTRATION OF A DRAWN BELIEF HISTOGRAM ............................................................49
FIGURE 13: THE SURVEY PROCESS USING ACTIVE AND ADAPTIVE CASE FINDING ...............................53
FIGURE 14: ILLUSTRATION OF CONJUGATE ANALYSIS .......................................................................55
FIGURE 15: ESTIMATION OF COVERAGE USING BAYESSQUEAC CALCULATOR .......................................57
FIGURE 16: SAM CASES NOT ATTENDING OTP PROGRAM VERSUS PROPORTION OF SATELLITE SITES PER UC ......58

List of tables
TABLE 1: SUMMARY OF THE SQUEAC FINDINGS .......................................................................................7
TABLE 2: AVERAGE OTP BENEFICIARIES ..................................................................................................28
TABLE 3: SUMMARY OF THE VILLAGES VISITED IN THE COMMUNITY INTERVIEW ..................................29
TABLE 4: BARRIERS AND BOOSTERS ........................................................................................................45
TABLE 5: SOURCES AND METHODS OF DATA COLLECTION ......................................................................46
TABLE 6: SAM CASES WHO ARE IN OR OUT OF THE PROGRAM AND PROPORTION OF NON-COVERED WHO HAD
KNOWLEDGE OF THE PROGRAM ............................................................................................................57
TABLE 7: LOG-FRAME TO GUIDE PROGRAM REFORM .............................................................................60
III. Executive summary

Dadu is composed by four Talukas (Dadu, Johi, Mehar and Khairpur Nathan Shah) and 52 Union councils (UCs) with a population of 1.1 million people. The district is estimated at 7866 square kilometers.

ACF international supports the ministry of health (MoH) in Community Management of Acute Malnutrition (CMAM) in 22 UCs in Dadu district. ACF supported CMAM in Dadu for 22 months in 9 UCs initially as part of year 2010 emergency response funded by CIDA until May 2012, then by ECHO as part of PEFSA projects (I, II and III) until February 2013. Beginning March 2013, the CMAM program has scaled up to a total of 22 UCs which will be followed up with 8 more UCs to make a total of 30 UCs funded by European Union (EU). The EU fund supports an integrated program with Nutrition (CMAM), food security and livelihoods (FSL) and water sanitation and hygiene (WASH). The nutrition component has infant and young child feeding (IYCF) and nutrition education integrated into CMAM as part of the long term goals. The CMAM program has collaboration with MoH so that the nutrition services will eventually be fully integrated into existing health systems.

The CMAM program has Outpatient Therapeutic Program (OTP) sites in each 22 UCs, supplementary feeding program (SFP) run in tandem with OTP, and Stabilization centre (SC) in Mehar UC civil hospital. In OTP severely acutely malnourished (SAM) children without medical complication are treated while in SC the SAM children with medical complication are referred to be medically stabilized as well as began on nutrition therapy. They are then referred to OTP site near their community. Children that are discharged as cured from OTP may be enrolled in SFP program for the purposes of preventing them from relapsing to SAM condition.

The Semi Quantitative Evaluation of Access and Coverage (SQUEAC) investigation was undertaken in the 9 UCs where the CMAM program has been running continuously and there nutrition treatment services have evolved over time. The other 11 OTP sites would ideally be included in the second SQUEAC investigation once delivery of services in the OTP sites in these areas is well established. 7 OTP sites are established in the basic Health Unit (BHU) while 2 are within community structures of a school and a community centre.

The SQUEAC investigation purposed to establish various barriers and boosters to access and uptake of the program, measurement of program performance, and making of program reforms based on findings. Three major barriers were i) sharing of the Ready to Use Therapeutic Food (RUTF) as a “chocolate” and not recognized as medicine resulting to low compliance, ii) communication between OTP program staff and existing Community Nutrition Volunteer (CNV) not clear affecting program outreach activities iii) lack of proper integration of potential CNVs into the CMAM program affecting defaulter follow-up and active case finding negatively. Major boosters were i) community not only know about the CMAM program but values it greatly, ii) direct referrals of “weak” children who visit BHU for immunization (EPI) days and also opportunistic visit by carers seeking treatment of their sick children by BHU staff to the OTP screening centre. iii) Passive case finding is evident in direct admissions of SAM children into OTP.


\[3\] http://www.dadu.gos.pk/

\[4\] UCS-Pariya, Moundar, Kamal Khan, Mangwani, Bahawalpur, Bughio, Sindhi Buttra, Nao goth, and Torre.
The program coverage unveiled is:

**Period coverage = 50.3% (40.8%-59.8%)**

Coverage is approximately that of the minimum SPHERE standard (50%) for program implemented in rural areas.

Identified barriers should be addressed and the SQUEAC assessment repeated as appropriate.

### Table 1: Summary of the SQUEAC findings

<table>
<thead>
<tr>
<th>Method</th>
<th>Source</th>
<th>Topic</th>
<th>Summary findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative data</td>
<td>Routine data§</td>
<td>Admissions</td>
<td>Admission evolved over time. Program had continuity in different funding cycles.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cure, default</td>
<td>Performance indicators show: curd rate&gt;75%, defaulter rate &lt;15% and death rate of &lt;10%.</td>
</tr>
<tr>
<td>Semi structured interviews</td>
<td>Patient records</td>
<td>Admission MUACs</td>
<td>Most SAM captured early. Median MUAC of admission 109/110 mm</td>
</tr>
<tr>
<td>and in-depth (focused) discussions</td>
<td></td>
<td>Week of default in program</td>
<td>Children defaulted in early weeks within treatment in the program. Mainly due to abrupt closure of OTP mobile sites. Also migration due to labour,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of current cases</td>
<td>Current cases do not increase as time to travel to OTP site increases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with as time to travel to site increases</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of defaulter cases</td>
<td>Current defaulter cases increase as time to travel to OTP site increases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with as time to travel to site increases</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of villages</td>
<td>Number of villages does not increase as time to travel to site increases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>as time to travel to site</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Length of stay (LOS)</td>
<td>Program has acceptable LOS. Median LOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time to travel to site</td>
<td>Number of current cases mainly come within radius of one hour from OTP site.</td>
</tr>
<tr>
<td>Small area survey</td>
<td>Homogeneity of coverage</td>
<td>There is probable patch coverage.</td>
<td></td>
</tr>
<tr>
<td>Small studies</td>
<td>Reasons for defaulting</td>
<td>Lack of communication of OTP days/schedule. Abrupt closure of mobile site.</td>
<td></td>
</tr>
</tbody>
</table>

§ Period coverage gives overall accurate measure of this program because generally: there was evidence of early admission in the program (with median MUAC at admission at 110 mm; most of the beneficiaries were retained in the program satisfactorily until discharged cured with exception of cases where sharing of RUTF was reported. This includes children retained in the OTP at time of absence of SFP supplies; lastly, with exception of some cases most beneficiaries complied with treatment protocols ensuring they got efficacious treatment.

§ http://www.brixtonhealth.com/handbookSQUEAC/mainSQUEAC.pdf
sites and rejection of suspected multiple registered beneficiaries.

<table>
<thead>
<tr>
<th>Carer of active cases</th>
<th>Mode of travel</th>
<th>Carers reported wide use of motorized transport. Distance carer is willing to walk less than 3km.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi structured interview</td>
<td>SAM current cases</td>
<td>Wide area survey</td>
</tr>
<tr>
<td>Barriers to access and uptake</td>
<td>Main barrier is carer had no knowledge about the program</td>
<td></td>
</tr>
</tbody>
</table>
Dadu is composed by four Talukas (Dadu, Johi, Mehar and Khairpur Nathan Shah) and 52 Union councils (UCs)\(^7\) with a population of 1.1 million people\(^8\). The district is estimated at 7866 square kilometers.

**Figure 1: Map showing UCs where nutrition program is implemented\(^9\)**

ACF international supports the ministry of health (MoH) in Community Management of Acute Malnutrition (CMAM) in 22 UCs in Dadu district. ACF supported CMAM in Dadu for 22 months in 9 UCs\(^10\) initially as part of year 2010 emergency response funded by CIDA until May 2012, then by ECHO as part of PEFSA projects (I, II and III) until February 2013. Beginning March 2013, the CMAM program has scaled up to a total of 22 UCs\(^11\) which will be followed up with 8 more UCs to make a total of 30 UCs funded by European Union (EU). The EU fund supports an integrated program with Nutrition (CMAM), food security and livelihoods (FSL).

---

\(^7\) **Dadu Taluka**- Allahabad, Dadu I, Dadu II, Dadu III, Dadu IV, Khudabad, Mian Yar Mohammad, Moundar, Mukhdoom Sahib, Moradabad, Pairo Station, Pat, Phulji Station, Pipri, Sial.  
**Johi Taluka**- Bahawalpur, Chhini, Drigh Bala, Johi (Urban), Kamal Khan, Pat Gul Muhammad, Phulji, Sawaro, Tando Rahim Khan, Tore.  
**Khairpur Nathan Shah (KN Shah)**- Bughia, Burira, Sindhi Buttra, Chhore Qamber, Gozo, Kakar, Kandichucki, Khairpur Nathan, Mitho Babar, Pariya, Seeta Road, Thadeo.  
**Mehar**- Baledai, Bali Shah, Betto, Bothro, Faridabad, Gahi Maheser, Kazi Arif, Kolachi, Mangwani, Mehar, Nao Goth, Radhan, Saeedpur, Shah Punio, Tharirimohbat.  
[http://www.dadu.gos.pk/](http://www.dadu.gos.pk/)

\(^8\) 9 UCs were covered in SQUEAC investigations  
\(^9\) UCs-Pariya, Moundar, Kamal Khan, Mangwani, Bahawalpur, Bughio, Sindhi Buttra, Nao goth, and Torre.  
\(^10\) UCs-Pariya, Moundar, Kamal Khan, Mangwani, Bahawalpur, Bughio, Sindhi Buttra, Nao goth, and Torre, Drigh Bala, Pat Gul Mohammad, Sawro, Chhini, Kakar, Mitho Babar, Seeta Road, Thalho, Radhan
and water sanitation and hygiene (WASH). The nutrition component has infant and young child feeding (IYCF) and nutrition education integrated into CMAM as part of the long term goals. The CMAM program has collaboration with MoH so that the nutrition services will eventually be fully integrated into existing health systems.

The CMAM program has Outpatient Therapeutic Program (OTP) sites in each 22 UCs, supplementary feeding program (SFP) run in tandem with OTP, and Stabilization centre (SC) in Mehar UC civil hospital. In OTP severely acutely malnourished (SAM) children without medical complication are treated while in SC the SAM children with medical complication are referred to be medically stabilized as well as began on nutrition therapy. They are then referred to OTP site near their community. Children that are discharged as cured from OTP may be enrolled in SFP program for the purposes of preventing them from relapsing to SAM condition.

The SQUEAC investigation was undertaken in the 9 UCs where the CMAM program has been running continuously and there nutrition treatment services have evolved over time. The other 11 OTP sites would ideally be included in the second SQUEAC investigation once delivery of services in the OTP sites in these areas is well established. 7 OTP sites are established in the basic Health Unit (BHU) while 2 are within community structures of a school and a community centre.

Since Dadu CMAM program has been continuously implemented since 2010, the routine program data has been existent. As such admissions and exits over time have been plotted in the period between September 2011 and March 2013. 5064 admission had been realised in this period while 4155 of them (82%) had been treated and discharged cured\(^\text{12}\). For clear picture of program practices in terms of median MUAC at admission, time to travel plots and other routine data, the SQUEAC investigation relied on beneficiary information between July 2012 and March 2013.

It was important to conduct a SQUEAC investigation in order to measure the performance of the nutrition program in treatment of severe acute malnutrition and to provide information for decision making as the program scales up. The SQUEAC was implemented in the 9 UCs where ACF intervenes.

The survey was guided by the following objectives:

1. Establish barriers and boosters to CMAM program coverage and uptake by the community
2. Evaluation of spatial pattern of coverage.
3. Estimate overall program coverage for purpose of measuring its performance
4. Provide informed recommendation for improvement of CMAM program

The SQUEAC investigation was undertaken between 20\(^{th}\) March and 4\(^{th}\) April 2013.

\(^{12}\) ACF Nutrition Evolution Reports-Dadu, March 2013
SQUEAC approach is used which consist of a set of tools each of which is designed to identify and investigate coverage and factors influencing coverage. It uses *Semi-Quantitative* data which is a mixture of quantitative (numerical) and qualitative data as listed below:

- Routine monitoring data such as charts of trend of admissions, exits, recovery, as well as in-program data for defaulting are collected. Also, data that are already collected on beneficiary record cards such as admission MUACs and home villages of the program beneficiaries are included.
- Use of data from the nutritional anthropometric surveys to estimate SAM in villages.
- Use small studies, and small area surveys to confirm or deny hypothesis about program coverage that arise from analysis of program and qualitative data.
- Use Bayesian techniques to estimate overall program coverage with a small sample survey.
- Use of informal group discussions, case studies, simple structured interviews with carers, qualitative data collected using informal group discussions and interviews with carers, community elders, religious leaders, Traditional Birth Attendants (TBAs), Community Based Volunteers (CBVs), Lady Health Visitors/Workers (LHV/W) and private medical practioners.
- Calendar of events data obtained from the informal group discussions with variety of informants to inform the trends in seasons, labour demands, climate conditions, diseases and hunger gaps are done.

The process of SQUEAC can be described as investigative, iterative, innovative, interactive, intelligent, informal and in the community process\(^\text{13}\). Information collected is done continuously from various sources and methods using technique of triangulation by source and method and sampling to redundancy\(^\text{14}\). The SQUEAC method is broken down into a two stage screening test model thus:

**Stage 1:** Identified areas of low and high coverage as well as reasons for coverage failure using routine program data. Also, qualitative information was collected through informal group discussions and simple structured interviews. This was done mainly through visits to the OTP sites to get information from program staff, carers, CBVs and community members. The information obtained was analyzed into barriers, boosters and questions. The information obtained from the respondents was triangulated by source and method to validate the findings.

**Stage 2:** Confirmed the location of areas of high and low coverage and the reasons for coverage failure identified in stage 1 through using small studies, small area surveys and case studies. The barriers and boosters as well as reasons for coverage failure were identified. Barriers boosters developed in stage 1 were also weighed to determine their possible impact on program access and uptake. This was developed into belief of what the program coverage would likely be in the light of the available information. Prior probability is determined at this stage.

---


\(^\text{14}\) The term is used to refer to the process where information is sought repetitively using variety of methods till it yields consistent information exhaustively.
Stage 3: Bayesian techniques were used to estimate overall program coverage with a wide area survey using spatial sample survey\textsuperscript{15}. Statistical analysis was done using the BayesSQUEAC software.

The various SQUEAC tools used in the investigation are described below.

V.1. Data sources and methods used: routine program data

Number of admissions over time: is graphed with time on the $x$ axis and the number of admission on the $y$ axis. The admissions over time are subject to noises, season and trends. Therefore, Smoothing techniques used are the moving averages of median of 3 data sets for three months. This technique removes the noises which camouflage meaning or pattern that can be seen on the plot of admission over a period of time. The trends of admission over time are interpreted on the bases of the factors that would cause the admission to increase or decrease over the course of time. The calendar of events made for the diseases associated with SAM and that occur at specific times, food availability, labour demand by male and female carers is superimposed to the plot of admission trend to give a picture of potential effect they could have had on admissions in the course of the year. It is also, important that information about probable or expected incidence of SAM is available. This plot is useful but ignores the timeliness of admissions. This is described below.

Plot of admission MUACs: plotting admissions over time consider the timeliness of admissions in the sense that some children are admitted in time before development of medical complications and that children with nutritional oedema should already be in the program. Data of MUACs is tabulated by hand using tally sheet and plotted in a simple histogram. A plot of admission MUACs with high coverage is likely to have a larger number of admissions close to the program admission criteria (<115 mm in Pakistan CMAM protocol). Low admission MUACs indicates late admissions due to probably problems with case finding and recruitment and low program coverage.

There are two categories of the children who meet the admission criteria in the program; Children that meet the admission criteria but never get admitted into the program and children that are admitted into the program but only after met admission criteria for a considerable period of time. The former, either recover outside of the program or die. The latter, are late admissions and can be identified using beneficiary record card. Late admissions are direct coverage failures. They would have been non-covered SAM cases for a considerable period of time before admissions. The late admissions are associated with need for inpatient care, longer treatment, defaulting and poor treatment outcomes (e.g. relapse and death). These can lead to poor opinion of the program circulating in the host population, which may lead to more late presentation and admissions and a cycle of negative feedback (Myatt, Mark et al. 2012).

Length of stay (LOS): this is the duration of treatment episode. A tally plot with the categories of LOS is used to know the time taken from discharge to cure and is represented in simple histogram. The plot is restricted to planned discharges (discharged cured cases) Median duration of treatment episodes is calculated. Long treatment episodes may be due to late admission or failure to adhere to the CMAM treatment protocol by program staff and beneficiaries. Programs with long length of stay tend to be unpopular with beneficiaries and suffer from late treatment seeking and high levels of defaulting -both are failures of coverage. (Myatt, Mark et al. 2012). The data collected here is accumulated beginning July 2012.

Plot of defaulters within weeks in treatment: this is tally plot of defaulters to show distribution within various weeks they are in the program. It gives information as to the time most of the defaulting occurred. It includes the defaulters that have not been formally identified as such in program files and referred herein as hidden defaulters. The plot shows the children who should be in the program but are not in the program. It also indicates those that tend to default early in the treatment episodes (likely to be current cases), those that default later in the treatment episode (likely to be recovering cases) and those that default immediately prior to final proof-of-cure visit (likely to be recovered cases).

Time to travel plots: this is done for the active cases admissions and defaulters. It gives the distribution of the beneficiaries attending OTP site from different distances from home. It shows the number of attending cases that are close to the OTP site compared to those who attend coming from relatively far villages from the OTP site. The estimate of time to travel to site is based on minutes/hours the carer takes to arrive at the OTP site from home. The distance the mother is willing to travel to come to the OTP site is taken into consideration and also availability and the commonly used mode of transport by most carers. This plot is useful for checking the assumption regarding program site catchment area. As such it is useful to give probable limited spatial coverage considering the distance/time the carer takes to come to site. The time to travel to site is used to create an ‘expected’ distribution of time to travel that can be compared to the ‘observed’ distribution. The expected distribution usually plotting number of villages against distance/time to OTP site is approximate. The observed distribution plots the in-program cases against distance/time to travel to site. The expected distribution assumed that villages were similar in size and also, the incidence of SAM did not vary much over the program site’s intended catchment area. The discrepancies between the shapes of the expected and the observed are suggestive of problems in program coverage. Usually the shape the shape of the observed distribution should be spatially even when compared to expected (shapes available on figures 5 and 6 presented in stage 2 in this report).

V.2. Data sources and methods used: qualitative data

Routine program data provide useful information about the program coverage. It can identify whether distance is a factor influencing program attendance. However, some other information needs to be collected qualitatively such as poor opinions about the program reasons for defaulting from carers and so on. This information helps to identify barriers to access and uptake and also, requires different data collected using different approaches as explained below.

Semi structured interviews: entails using an interview guide. This comprises list of questions that should be asked and topics that should be covered during the interview. The interviewer does not have to stick strictly to the questions in the interview guide and may follow ‘leads’ and new topics as they arise in the course of interview. However, all questions and topics outlined in the interview guide should be covered in each interview. They are done to program staff, clinic staff at the Basic Health Unit (BHU), private medical practitioners, school teachers, TBAs, CBVs and carers of defaulters and in-program beneficiaries.

The two types of semi structured interviews used are:

*Focused interviews (in-depth interviews)*. This is used to intensely investigate a single topic for the purposes of complete understanding of different topics explored to understand factors affecting program access and uptake. Usually they are done towards the end of the data collection so as to resolve discrepancies in previously collected data.

*Case histories (case studies)*. They are used to gain an in-depth understanding in the information rich cases. For instance, the case histories of children who have gone through the treatment right from the stage of
referral to discharge in a program and a case of critical incident in the program who was admitted too late in the program and was discharged as non-responder. Both cases have potential of revealing processes that contribute to barriers or boosters of program access and uptake.

**Simple structured interviews:** they are structured to expose every informant to the same stimulus. The same questions are asked in the same order. They are mostly used on carers of defaulting or DNA cases. They are also used on carers of non-covered cases in small or wide area survey. Usually this questionnaire yields questions regarding ‘how’ and ‘why’ of the decision making of carers of non-covered cases and can be analyzed using simple quantitative techniques such as simple graph and simplified Lot Quality Assurance Sampling (LQAS).

**Informal group discussions (IGD):** the interviewer has an idea of the topics that are to be covered in the interview but has no strict wording of the questions to be asked. The discussion is informal and conversational. The informants are encouraged to express themselves in their own terms rather than those of the interviewer. The basic focus of IGD in SQUEAC is to discover reasons for non-attendance and defaulting. The informants usually either will not have a child attending the program. This means that the collected data could be limited to perceptions of the motivations of others rather than direct reports of personal motives. The data obtained here is useful for finding relevant questions and wordings for later semi structured and structured interviews with other informants and should always be triangulated with data collected using other methods. For instance, IGD have usually been used in making calendar of events that are compared to other information from other sources to give major events likely to impact program access and uptake by the beneficiaries in course of the year. They are mostly used on the carers of children attending program sites, groups of key informants such as community and religious leaders and lay informants such as mothers and fathers, program staff and CBVs.

**V.3. Validating and analyzing qualitative data**

Data is collected from as many sources as possible and then cross checked against each other, if the data from one source is confirmed by that from another source the data is considered useful. If the data from one source is not confirmed by data from other sources then more data is collected either from the same source or from new sources for confirmation in a process referred as triangulation. There are two types of triangulation:

**Triangulation by source:** refers to the data confirmed by more than one source. It is important for data to be confirmed by more than one type source, for instance the community leader and clinic staff. The type of sources may also be defined by demographic, socio-economic and spatial attributes of the informants. Lay informants such as mothers and fathers are sources of differing gender. Lay informants from different economic strata, different ethnic groups, different religious groups or widely separated locations are also different types of sources. (Myatt, Mark et al. 2012).

**Triangulation by method:** refers to data confirmed by more than one method. For instance semis structured interviews and informal group discussions.

Planning of SQUEAC is done to ensure triangulation by both source and method. Data from different sources and method are compared to each other. Discrepancies in the data are then used to inform decisions about whether to collect further data. Data from the qualitative sources and methods are also triangulated with routine program data, data from small studies and small area surveys. Usually this is done until the data is exhaustive. The data is collected from as many sources as possible until no new information is coming out. This is sampling to redundancy. Collection, validation and analysis of qualitative data are not separate
processes. Data are analyzed being collection and more data are collected to confirm or deny the findings using both triangulation and sampling to redundancy. The process is summarized below.

![Figure 2: Illustration of triangulation of SQUEAC data](image)

**V.4. Storing and organizing findings**

The broad sets of data from diverse sources and methods are managed in the following ways:

**Spreadsheets:** quantitative data such as the standard program indicators, admission over time, admission MUACs and time to travel are well stored this way. Since the SQUEAC data is simple it can be analyzed using paper data bases and spreadsheets and tally sheets. If one is competent in spreadsheet software, then data can be analyzed and stored easily. The data is presented graphically

**Concept mapping:** it is a graphical data analysis technique useful for representing relationships between findings. Concept maps show findings and connections (relationships) between findings.

---

Mind mapping: is a graphical way of storing and organizing data and ideas. A mind map organizes findings using tee structures organized around a central theme and summarizes the findings of a SQUEAC investigation. It is drawn as the investigation proceeds. Mind map accommodates all the anecdotal information used in validation of information through triangulation by source and method and sampling to redundancy.

In this report, figure 7 and 8 gives example of concept maps and mind map used in Dadu SQUEAC investigation.

**VI. Stage 1: SQUEAC investigations**

**VI.1. Routine program data**

Routine monitoring data from the program was analyzed to investigate spatial coverage. The following data analysis was done on data retrieved from OTP records in the program.

**VI.1.1. Admission MUACs**

The figure shows early admission into the program. The median MUAC of admission is 109/110mm.
VI.1.2. Time to travel plots

The beneficiaries coming to site increase as the time to travel to site increases showing more cases are coming to the program as program matured. However, decrease of OTP beneficiary attending happens rather abruptly beyond 1 hour of travel as time to travel to site increases. This was one indicator of probable patchy coverage due to distance.

The time to travel is mostly estimated by time it takes the motorized transport to arrive at the OTP site. Most carers who came from more than 3km from OTP site used local motorized transport mainly through riksha and motorcycles. Donkey cart were also used in large way. There were few carers who came to OTP site beyond an estimated 1 hour travel from the OTP site.
.VI.1.3. Length of Stay (LoS)

The median length of stay in the program is 11 weeks. The LOS for the OTP program is 56 days (8 weeks) according to CTC guideline and SPHERE standards. The 11 week stay of the children in the program before being discharged could be attributed to retention in OTP program due to lack of SFP stocks in entire months of December 2012 and January 2013. Few cases that stayed long were severe cases admitted in mainly in outreach programs.

.VI.1.4. Active and passive case finding
There are volunteers in the village who could be integrated as CNV and capitalize on opportunities of active case finding. The figure above depicts lost opportunities of timely identification of incident cases in the community.

VI.1.5. Trend in admissions data Sept 2011 to March 2013

![Chart showing trend in admissions data](chart1.png)

A dip in admissions at the beginning of year 2012. Admissions normalize as flood affected areas are well enveloped by CMAM emergency interventions in Daud. Drop in admissions also due to closure of sites and reduction in resources to address outreach between April and July 2012.

VI.1.6. Exits over time-performance indicators

![Chart showing exits over time](chart2.png)

- Reduction in the cured rate accompanied by rise in defaulter rate beginning April 2012.
- Closing of OTP mobile/satellite sites and reduction of number of staff affected OTP operation temporarily.
- Performance picked up again in September 2012.

The performance of the CMAM program has had continuity over time. The plot of the cured, defaulter and death rate has consistently showed that the OTP program met the SPHERE standards of cure rate of >75%, defaulter rate of <15% and death rate of <5%. The non-response rate had increased but not beyond 5% in the period the program had its lowest performance.

Compared with the trend in admissions data in plot (in figure VI.1.6) the shape of the curves are consistent.
.VI.1.1. Defaulter program data

Figure 3: weeks stayed in the program before default

There is probable default by beneficiaries mainly due to abrupt planning and closure of OTP mobile/satellite sites. The program staffs trace the defaulters but the challenge is to retain the SAM cases from far villages particularly those without reliable transport means. This figure 3 indicates probable patchy coverage.

Figure 4: time to travel to site versus defaulter number

Most of the defaulters had done shortly after admission (that is early within their weeks of admission). The major causes of defaults according to program staff and carer interview can be summarized as follows:
- Increase in distance from village to mobile sites way beyond the distance the carer would be willing to travel. This was done when functional mobile sites were closed due to program operational constraints.
- Lack of information on the change of schedule of program/particularly when the mobile sites were closed or when the schedule changed due to competing activities within the CMAM program
- Labour demand resulting to migration of carers who had to relocate to areas where casual works in crop fields were available.
- SFP pipeline break. Some beneficiaries were not able to come back to the OTP site when they were sent back without SFP supplies. As a result, the MAM cases lapsed into SAM.

**Figure 5: Observed distribution of OTP cases versus time to travel to site**

**Figure 6: distribution of villages as time to travel to site increases.**
From the routine data and other information collected through interviews done with carers there was evidence of patchy coverage in the sense that the areas that seemed to be within 60 minutes in travel time from the OTP site had more beneficiaries than areas that were more than 60 minutes from the OTP site. There are also some lost opportunities in the villages that are closer to the OTP site that had not been profiled to be in the catchment population. This is shown in the figure 5 and 6 above.

.VI.2. **Carer interviews**

Simple structured interviews mainly used. Case study was done on one carer and one CNV. Members of community interviewed are as follows:

**Carers with beneficiaries at the OTP site:** Female carers: OTP site: Essa Khan Thebo. 1 carer from Mero Kalhoro, OTP site: Bughio: 1 carer from Village Allah Dito Chandio and 2 carers from Sewo Chandio, Dhani Bux Bhughio.

**VI.2.1. Perception of malnutrition**

The Carer in Essa Khan Thebo OTP site referred malnutrition as "*dubro*, "*kamzor". These words describe a child who is weak and sickly looking. "*Dubro*" has swollen body signifying eodema while “*kamzor*” is weak and emaciated signifying wasting. As a local folk etiology, "*khangi*” the folk etiology is very weak child, wasted, and whose growth is severely affected. According to the mother who held her SAM child, she could not describe it as having symptoms of "*Khangi*” according to her understanding.

The information collected from the caretaker attending OTP site Bughio indicated that the mother had knowledge of malnutrition not in the terms of all the terms described above but as "*kamzor*" meaning the child is weak. Other 2 carers from Sewo Chandio know the term "*Khangi*". One of them had her child admitted at SC when it had SAM with complications before the child was referred to the Bughio OTP site. This carer did not know that her child 'Khangi' and thought her child was only sick. The child had no appetite and the reason it was admitted at Mehar SC. The other carer said she did not know about malnutrition. As much as they were not aware their children had "*Khangi*", they described the conditions and demonstrated they knew of the word "*Khangi*” and "*Kamzor*”. There was possibility of low priority given to the treatment of SAM in these communities going by their information. It could be that the children had deteriorated as the carers stayed with the children at home.

**VI.2.2. Referral mechanism**

The carer from Mero Kalhoro village has a child in the OTP program. Mother said that child was referred by a group of mothers who had children enrolled into the OTP program in their village. Thus the mother was referred by peers. The carer also, indicated that there was other child like hers in her village but was not in program. She suspected that the child was suffering from "*Khangi*”. She said that there were LHWs in her village but she had not seen them involved in any way with identification of malnutrition. She had also, not seen any CNV in her village.

The carer of the village Allah Dito Chandio, was referred by the BHU staff when she came for her child's immunization. Upon visiting the OTP site her child was screened and had SAM and was registered into the OTP. Since her visit was to the BHU the referral by the BHU staff ensured that she was covered in the program treatment. It is noteworthy that previously the mother's elder child had SAM and was treated at the same site and discharged cured.

The two carers from Sewo Chandio were referred by ACF staff who had done a routine outreach program in their village where they were identified after screening. They indicated that there were other SAM children in their village but were already enrolled in the OTP program. When all the carers were shown the MUAC tape and asked if they had seen it before, they indicated they had not. They also said that they had not seen any CNV or someone who screened for malnutrition in their village.
The carer from Dhani Bux Bughio indicated there were other children who were weak and would be eligible for admission at the OTP site. She mentioned that since this is a harvesting season, they could not prioritize coming to the OTP site over labour availability.

.VI.2.3. Distance to the site

The carer from Mero Kalhoro village indicated she used donkey cart which took her 30 minutes from her village to OTP site. Her perception of distance is that the OTP site was far but not very far, if she uses her donkey cart.

The carer from village Allah Dito Chandio also, used a donkey cart to the OTP site. She spent average of 10 minutes to arrive at the site. She said that her village was close to the OTP site (the village is where the OTP site is situated).

The two carers from Sewo Chandio used a public bus to arrive at the OTP site. The used it as a group and would be dropped at a distance 30 minutes from the site where they would again walk to the OTP site. These carers used this arrangement so that they could stick together during the travel. When the carers were asked what motivated them to sacrifice as they come from their village, they mentioned that the program is good for their children and their children will be eventually well. The however, requested that the program be brought near their village for them to attend easily especially in the coming harvest season where most of their time will be spent at the farms.

.VI.2.4. Knowledge about program

The carer from Essa Khan Thebo OTP site was aware about the program, information that she had obtained from other mothers who had helped her bring her child for SAM treatment. Together with the carers from villages Allah Dito Chandio, Sewo Chandio and Dhani Bux Bhughio, they had a positive opinion about the program.

One of the carers from Sewo Chandio could differentiate between different RUTF brands (Immunat and plumpy’nut) as used variously at the OTP sites as therapeutic foods for SAM children. She knew that children who fall within “red zone” of the “Patti” (MUAC tape) had severe malnutrition.

.VI.2.5. Knowledge and utilization of OTP supplies

The carer from Dhani Bux Bughio said that RUTF is a food. Sometimes she would give siblings of the SAM child ‘little’. This is besides receiving the high energy biscuits (HEB) which are meant for the SAM child’s siblings to prevent sharing RUTF.

The carers from Sewo Chandio recognized the RUTF as medicine and food. However, during the investigation it was discovered that one of the carer in Sewo had registered her child twice and therefore was counseled at the site that, on dangers of her SAM child receiving double doses of RUTF, which was her target. She apologized and promised not to repeat it.

The lady whose child was treated at Essa Khan Thebo OTP site said that the RUTF is food too and said "It restores the energy to my sick child".

.VI.3. Health/OTP staff interviews

Simple structured interviews were used on OTP staff and BHU staff. The program staff interviewed are in:

OTP sites: Essa Khan Thebo (interview with 1 OTP supervisor); Bughio (interview with 1 OTP nurse, supervisor and community mobilizer -CM), OTP satellite site of Taj Muhammad Zardari (interview with OTP CM for Naogoth OTP static site), OTP Dogar (interview with OTP nurse), OTP nurse in UC Torre, OTP satellite site, Moundar OTP site (interview with OTP nurse), Torre OTP site -satellite site-Taj Mohammad Doltani (interview with OTP nurse)
.VI.3.1. Causes of default

In general the OTP staff mentioned various factors associated with default as follows:

- Labour demand for the males in the fields affecting the balance of roles within the household. Thus, the males would not be in position to accompany the female to the OTP site, which happens mostly when the SAM child is brought to the OTP site. It is custom of males to accompany female when they go to a health facility which is considered far from home.

- Households’ migration resulting from labour demand in various areas in Dadu, in the crop harvesting season. Both carers, male and female migrate to get work. Locally they are referred as crop cutting season. Follow-up of defaulters by program staff in Bughio OTP site indicated that the reason carers defaulted was as a result of migration from UC Bughio to UC Johi.

- Distance from the OTP site to far villages such as Mero Kalhoro. There were 3 defaulters identified in this village. OTP satellite site of Taj Muhammad Zardari noted that villages of Ambi Magsi, Dodo Kalhoro, Chhato Shaikh, Qutab Chandio are considered as far villages. They have limited public transport options and are not able to attend when there are no vehicles available headed the OTP site direction

- In Bughio stock out of supplies during part of November and December 2012 for RUTF and in the month of December 2012 and January 2013 for SFP supplies caused defaults. The carers who came for the CMAM services were going back home without supplies. For this reason the interest of the carer in the program waned.

- Community cerebrations such as marriages: Mostly local people got married from outsiders like Larkana, Hyderabad, so at the time delivery or wedding of the relatives, the carer who could have come at the time leaves the location after estimated 1 or more month stay and it is at that times that the OTP beneficiary defaults and is not able to be tracked back into the program.

- Conflict within community causing insecurity: Example of the villages which were affected recently was Karimdad Chandio and Hasil Chandio. The OTP beneficiaries would not be able to come to the program site for a while and also, the team could not be able to follow-up on them in the village due to restriction caused by insecurity. 2 defaulters had not been reported because of this problem.

- Weather conditions cause default. The community especially in far villages from the OTP site could not come due to erratic weather conditions. No outreaches have been planned for those areas as yet. When it rains the area is also not accessible and the outreach team or community members would not be accessible to the program.

.VI.3.2. Distance

Interview done to OTP supervisor of Essa Khan Thebo and Bughio revealed that some of the OTP beneficiaries come from far villages and sometimes may not be able to attend OTP site as required. Some villages such as Mero Kalhoro, needed a satellite site which the supervisor stated they are in the progress of creating. The satellite site would be associated with the static site of Essa Khan Thebo.

At the already created satellite site of Taj Muhammad Zardari in UC Naogoth (where Naogoth OTP static site is located), there is limited public transport and the distance is quite long to be done by walk. This affects the regular attendance. This was considering the fact that carers would be carrying SAM child siblings to the OTP site. Often, it would be more than 1 hour walk which would be considered as very far for them.

At the BHU Dogar, the OTP nurse indicated that an estimated 50% of the beneficiaries come footing, while about 20%, use donkey cart and 20 % use motor cycle while 10% come by means of riksha (form of local motorized transport). The OTP staff said that they had opened a satellite site to cater for far villages of Longurauja and Pariya. The satellite site had not been there for long as they had only been operational from
the beginning of March 2013 and therefore impact of they had on the distance could not be properly
established at the time of investigation.

At BHU Moundar , where the OTP site is situated most of the carers came footing, quite a number by
motorbikes, others by donkey carts and some by riksha

At Torre, satellite site-Taj Mohammad Doltani, OTP nurse said that the road conditions are very bad and
villages are scattered far. Besides the OTP static site at Torre, the staffs have opened 2 satellite sites, one
which is Taj Mohammad Doltani and the other satellite site is Rajo Dello. Both sites began operating
beginning of March 2013.

It is established that manly the carers would use the motorized transport when it is available. Carers would
be willing to walk distances that take as much as 30 minutes. However, this can change depending on
climatic conditions.

. VI.3.3. OTP/SFP supplies

The supervisor for the OTP Bughio mentioned that; currently they had stock-out of Amoxicillin used as
routine drug in OTP treatment (according to OTP protocol). In the month of December 2012, the facility had
expired stocks of RUTF and therefore had stayed couple of days without it. It was also confirmed that SFP
supply pipeline break had been in the month of December 2012 and January 2013.

At the OTP site Essa Khan Thebo, the supervisor of OTP mentioned they had enough stock and have not had
supplies problem recently. However, in the month of December 2012, the facility had expired stocks of
RUTF; and at the time they stayed for short time before fresh RUTF supplies resumed. Some of the OTP
patients were sent to their homes without enough supplies to last them a week. This was restored soonest
through buffer stocks procured by the program. The SFP supply pipeline break was reported to have
happened for the month of December 2012 and January 2013 and as such some children had been retained
in OTP for longer to prevent relapse to SAM in absence of active SFP at the time.

At Nao Goth - OTP satellite Site called Taj Muhammad Zardari, the RUTF and SFP supplies were enough at
the time of the interview. However, there was SFP supply pipeline break in month of December 2012 and
January 2013, just as it had been reported for OTP Essa Khan Thebo. It affected the attendance of the OTP
in the sense that the Carers of the SFP beneficiaries passed information to all the carers regarding supplies
stock outs to both OTP and SFP beneficiaries' carers without distinction of the specific supplies that are
being referred to. This affected attendance in the OTP site.

. VI.3.4. Outreaches, Referral mechanism & routine screening

In general at all OTP sits visited, interview revealed that the system of identification and referral of the SAM
children was done on various ways:

Outreaches were done on specific days in villages which are far from the OTP site. The ACF staff has
sensitization and screening sessions for SAM children at these villages.

There are some active CNVs. At Bughio OTP site the CNV has been working with ACF for more than an year
(and is referred in this report as case study that shows importance of motivated CNV in boosting coverage
for program). He regularly screens at his village and comes to help at certain times at the OTP site. However,
there were no other CNVs who could be readily identified as screening for malnutrition actively at other
villages.

BHU staffs are important in referral of the weak children to the OTP site. In Liaison with the LHWs and BHU
staff, ACF gets children who visit the BHU for treatment of various ailments or immunization. These children
are generally assessed physically at the BHU and when suspected as SAM sent to the adjacent ‘OTP room’.
At UC Nao Goth OTP satellite site Taj Muhammad Zardari, the staff said they also got referrals from the
LHWs and sometimes BHU staff. There was evidence of close collaboration of the BHU staff and OTP staff in
Bahawalpur and Bughio OTP sites when planning and conducting outreaches. There is evidence of regular referral by the BHU staff in at least 5 BHUs which are adjacent to the OTP sites established within their compounds. Usually the children are actually screened at the OTP site. This was often effective; however, there some reports that some children who had been referred from BHU to the OTP site at Bughio were turned away due to failure to meet the criteria. (According to another interview with the carer mentioned in this report). Since the BHU staff were not using MUAC tapes in all the BHU visited, there was a chance of referring a child that could not be within the criteria used in OTP (MUAC<115mm).

At the time of SQUEAC investigation, the OTP site at Bughio had a future plan for OTP satellite site in the villages which are far from the OTP site. However, there was no site that had been set up then. At UC Nao Goth OTP satellite site Taj Muhammad Zardari, the staff also indicated of plan to set up other satellite sites in the villages, other than the 2 satellite sites that had been opened in March 2013 in the same UC. Also, interview conducted at the OTP site at Essa Khan Thebo, indicated plan to create satellite sites in the villages which are far from the OTP site. The staff also said there was ongoing routine screening on daily basis. They mentioned that they have CNVs who referred children to them and followed up defaulters. At Bahawalpurs OTP site there were few referral slips obtained from CNVs who had referred children from the field.

Observation revealed that the routine screening was done on every beneficiary who visited the OTP site. The interview revealed that all the children screened and referred from the village were screened again at the OTP site. This also happened at Nao Goth OTP satellite sites of Taj Muhammad Zardari and Taj Mohammad Doltani.

At BHU Dogar outreach is usually organized by CM and CNVs. During outreach screening for referral of the malnourished children is done. There is peer referral where some carers refer other carers. This is complemented by the BHU at Dogar which also, referred children they have assessed to OTP, however, as noted earlier the BHU staff do not have the MUAC tapes. The Dogar OTP static site has 2 outreaches, Loung Rahoja and Pariya which were established in month of March 2013. At Torre satellite site of Taj Mohammad Doltani, outreaches are organized into the villages that are not accessible to the static as well as the other satellite site. Outreach teams are made of CM and CNVs.

It is apparent that the CNVs are most active when they participate in the outreaches with the OTP staff. The OTP staff generally indicated that their main strategy is use of outreaches to reach the far villages as well as for defaulter follow-up. There is no clear communication on most of the CNVs pertaining continuous screening and defaulter tracing by them in the village.

**VI.3.5. Defaulter tracing**

Interview conducted with supervisor at Bughio OTP site they have engaged LHWs (Zafaraabad Dhani bux Bughio) CNVs and CMs who will do home visits. The staff noted that engagement of the LHW is important in widening case finding. At the same OTP site is one CNV who regularly follows up the defaulters (see case study of the CNV at Bughio OTP site).

At Essa Khan Thebo OTP site, the CNVs were used in defaulter tracing. This is followed by an outreach by the ACF OTP team which also does the same should the defaulter not come after CNV follow-up. This is similarly done at UC Nao Goth - OTP satellite Site, Taj Muhammad Zardari. CMs also visit the villages at particular times to link up with the CNV in defaulter tracing. This information is similar to that of OTP nurse at Dogar. The involvement of the CNVs in defaulter tracing is mainly during the outreaches done by the combined team of ACF CMs together with the CNVs.

Largely, most of the defaulter follow-up is done by the program staff as compared to the CNVs.

**VI.3.6. Community perception on malnutrition and OTP program**

**Perception about malnutrition**
Interview conducted with 1 OTP supervisor, OTP nurse, CM at Bughio showed malnutrition as "Kangi" meaning weak child and "kamzor" meaning emaciated child. The OTP supervisor said that the community would rather refer to their child as weak ("kamzor"), not necessarily using "kangi".

Perception about the program

The program staff felt that the community had good opinion about the program. Over all community comments that "this program is good for our children, and we appreciate your services".

As mentioned in challenges by the staff in the OTP program, it was also noted that some people in the community do not understand program modalities on targeting and treatment. This was notable in Nao Goth and Moundar and Kamal Khan. RUTF is regarded as chocolate and some people will demand it for their families. There have been some occasions that these persons have caused trouble to the program staff in the course of their duty saying that "they are not good people as they give the services to few people". At the time of investigation in Moundar one carer protested that the program gives some persons while ignoring others. Nevertheless, most persons in the community were amiable to the program and recommended it to continue.

It is noteworthy that at all sites quite a number of carers used donkey carts, motorbikes, riksha and public transport vehicles to access CMAM services. The communities were willing to pay some cost to bring their children to the CMAM site for treatment and therefore valued the program. This is also, confirmed by carers who responded in various interviews documented in this report.

.VI.3.7. Operational constraints

Some of the constraints mentioned by OTP staff are:

- The current OTP staff had been reshuffled across the 9 OTP sites. There were not mapping done to establish gaps in running of the existing OTP sites or staffing needs for areas that had satellite sites. Some staff who had running OTP or satellite sited were abruptly removed from the program in the months of July 2012, causing lack of supervision or even closure of satellite OTP sites. This resulted into beneficiaries who had been enrolled in the closed satellite sites unable to come to static sites. Other beneficiaries had not been informed of the change and they did not therefore, know the location of neither the static site nor the new schedule that they had to use for OTP follow-up. This was also, confirmed through interview with carers of defaulters interviewed in the villages. Few staff and vehicles translated to reduced OTP mobile sites and outreach days. Lack of female staff for outreaches is a constraint. Without adequate female staff in the program, they cannot be allowed into the villages nor can they access female carers. At one time there was only one female staff in team and could not be able to handle much given the volume of work then. This affected community mobilization and sensitization.

- The teams that could be assigned duties were few when some of the ACF staff who worked before ceased working for their teams in abrupt staff reduction due to program funding gap.

- Break down in OTP and SFP supplies. At the time of the SQUEAC investigation there was no amoxicillin which is part of OTP routine medication in at the OTP site. The program has, however procured buffer stock to mitigate RUTF stock-outs.

.VI.3.8. Communities in-accessible to OTP

Situation where communities were inaccessible to OTP services were mainly due to limited causes. Instances of this were:
At Nao Goth - OTP Site, the people from villages such as Ambi Magsi, Dodo Kalhoro, Chhato Shaikh Qutub Chandio, were not accessible mainly due to unavailability of public transport to facilitate their travel. Distant could be considered as main barrier to access and uptake of the program. This was confirmed by interviews with program staff in Dogar and Kamal Khan.

**VI.3.9. Average OTP beneficiaries**

**Table 2: Average OTP beneficiaries**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Location visited</th>
<th>Respondent/Method: Program staff (simple structured interview)</th>
<th>Findings: Average beneficiaries per day in OTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>21(^{st}) March 2013</td>
<td>Kamal Khan UC, Mehno Khoso satellite site,</td>
<td>Program staff (simple structured interview)</td>
<td>5 to 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moundar UC, Moundar OTP site</td>
<td>Program interview</td>
<td>5 to 6</td>
</tr>
<tr>
<td>26(^{th}) March 2013</td>
<td>Bahawalpur UC, Bahawalpur OTP site</td>
<td>Program staff (simple structured interview)</td>
<td>10 to 12</td>
</tr>
<tr>
<td></td>
<td>Bughio UC, Bughio OTP</td>
<td>Program staff (simple structured interview)</td>
<td>5 to 7</td>
</tr>
<tr>
<td></td>
<td>Essa Khan Thembo</td>
<td>Program interview</td>
<td>10</td>
</tr>
<tr>
<td>29(^{th}) March 2012</td>
<td>Naogoth UC, Taj Mohammad Zardari satellite site</td>
<td>Program staff (simple structured interview)</td>
<td>5 to 7</td>
</tr>
<tr>
<td>21(^{st}) March 2013</td>
<td>Torre UC, satellite site Mohammad Taj Doltani</td>
<td>Program staff (simple structured interview)</td>
<td>7 to 8</td>
</tr>
</tbody>
</table>

**VI.4. Community**

Simple structured interviews mainly used. Case study was done on one carer and one CNV. Members of community interviewed are as follows:

- Carers in the community
- Community leaders and religious leaders.
- Private Practitioners
- Community based volunteers (CBVs)

Summary of the scheduled interviews/investigations were undertaken in the period indicated in the table below:
### Table 3: summary of the villages visited in the community interview

<table>
<thead>
<tr>
<th>UC visited</th>
<th>Villages visited</th>
<th>Respondents</th>
<th>Remarks</th>
<th>Dates visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kamal Khan</td>
<td>Kamal Khan Lund</td>
<td>11 females, 3 male, 1 elder, 1 laborer, 4 students</td>
<td>Conflict with Meeran Solangi.</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; March 2013</td>
</tr>
<tr>
<td>Kamal Khan</td>
<td>Meeran Solangi</td>
<td>9 females, 5 carers to current beneficiaries, 8 male lay informants, 1 local medical, 1 medical practioners, 1 retired engineer</td>
<td>Conflict with Kamal Khan Lund</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; March 2013</td>
</tr>
<tr>
<td>UC Bughio</td>
<td>Faqir Muhammad Khokhar</td>
<td>1 female and 2 males.</td>
<td>6 km from OTP site</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; March 2012</td>
</tr>
<tr>
<td>UC Bughio</td>
<td>Chutto Bughio</td>
<td>4 females and 2 elders.</td>
<td>4 km from OTP site</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; March 2013</td>
</tr>
<tr>
<td>UC Bahawal Pur, UC Kamal Khan</td>
<td>Imam Bux Jatoi, Sukhio Channa</td>
<td>6 females. and 2 female lay informants and 2 community leaders.</td>
<td>6 Kms from OTP site.</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; March 2013:</td>
</tr>
<tr>
<td>UC Kamal Khan, Sahib Khan Solangi</td>
<td>3 females and 1 male respondent</td>
<td>6 Kms from OTP site.</td>
<td>23&lt;sup&gt;rd&lt;/sup&gt; March 2013:</td>
<td></td>
</tr>
<tr>
<td>UC Moundar, Mondar and Mureed Shahani,</td>
<td>1 TBA, 1 LHW, 1 religious leader (Imam), 1 CNV (acting) and 3 elders.</td>
<td>Average of 3 Kms from OTP site.</td>
<td>23&lt;sup&gt;rd&lt;/sup&gt; March 2013:</td>
<td></td>
</tr>
<tr>
<td>UC Bahawalpur Adam Panhwar and Ahmed Khan Baber,</td>
<td></td>
<td>Averagely 8 km from OTP site</td>
<td>23&lt;sup&gt;rd&lt;/sup&gt; March 2013.</td>
<td></td>
</tr>
<tr>
<td>UC Bahawalpur Haji Qamar Pahore</td>
<td></td>
<td>about 19 Kms from OTP site</td>
<td>23&lt;sup&gt;rd&lt;/sup&gt; March 2013</td>
<td></td>
</tr>
<tr>
<td>UC Dogar BHU Dogar</td>
<td>2 females and 2 males.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### VI.4.1. Perception on malnutrition

Generally the description for malnutrition was similar in the communities’ interviewed. These are:

Signs of emaciation or ‘kamzor’ describing weak and thin child often with protruding belly. Some caers said that the “child eats a lot and has no weight gain/growth”. Words also used are ‘Sukal’ and ‘Kangi’ describing severe forms where the child gets even weaker than would be Kamzor. This is a Mark of a child with no or limited growth as the age progresses.

*Sukal* also refers to a child which begins swelling and eventually becomes *Khangi*. 
Other variants definitions are that of a child weak child who do not gain weight and remain weak in long period of time (Kamzor). This condition may lead to stunting.

Most communities could not give any relationship of these conditions with disease. But they know that this condition predisposes child to high risk of mortality compared to other healthier children.

The interviews with the community members reveal that most of the occasions where the NGO team come to screen their children and refer them for OTP treatment they do not establish common understanding of severe malnutrition between community and the NGO. They would screen them and send them to the OTP site where they would be given "chocolate". As much as the word is attractive to the carers of the SAM children, it would make the SAM child who has been given RUTF highly likely to share it with the siblings. This is despite High Energy Biscuits (HEB) being provided for the siblings to discourage sharing of the RUTF.

In one village (Imam Bux Jatoi), besides lack of adequate food, the kamzor child is more susceptible to diseases.

VI.4.2. Pathways to care

Seeking medical or other care when the child falls sick is an indicator of available opportunities to cover SAM cases. Most of the respondents said that they visit Basic Health Units (BHU) first to get medical care for their sick children.

Some said that they go to the private medical clinics for treatment which are located within their village.

In one village (Kamal Khan Lund) the respondents said that most of the people in the community will go to private clinics, Johi Hospital which is not far from their village and also to Local BHU in Kamal Khan UC. Most of the carers tend to go to the private clinic, reason being lack of faith in the local BHU and Johi Hospital. However, it is expensive at the private clinics and the carer would often not take the child there when the resources are limited. It is notable that the community in Kamal Khan Lund conflict with that of Meeran Solangi village which is adjacent and therefore, the community in Kamal Khan Lund would not be able to access OTP services which are located in Meeran Solangi due to existing animosity.

Respondents' generally said that it is not uncommon to have carers who are taking their sick children to the traditional doctors and prayer shrines. In UC Kamal Khan, in village called Meeran Solangi respondents mentioned that community sought assistance for medical treatment at religious shrines, traditional practitioner (Hakeem) and to local available doctors (private practioner). When SAM has become severe-Kangi it is usually taken to the local shrines for ‘prayers’. As much as the community knows that there is an ACF OTP site, they continue to take their children with kangi elsewhere. Thus sensitization needs to be strengthened in this community as well as aligning community perception of malnutrition to that of the organization. (See recommendations)

Most of the Program OTP sites are located within the BHU premises with exception of Magwani and Kamal Khan OTP sites whose OTP sites are also not far from BHU sites within their UCs. The benefits of locating OTP sites within BHU sites were evident. In village Chutto Bughio, which is 4 kms from the OTP site, majority of the people go to the BHU for any kind of the treatment17. Since OTP site is within the boundary wall of the BHU, the malnourished children may directly attend the OTP for SAM treatment and may get referred from the BHU staff to the OTP site. This was also, the case with the village Faqeer Muhammad Khokhar in UC Bughio which is 6km away from the OTP site.

---

17 In-depth group discussions in the village
VI.4.3. Knowledge about SAM cases

In majority of the communities it was clear that they had some understanding of SAM through various nouns such as kamzor, sukal and khangi. Thus most of them were able to identify such cases if they thought they fitted the descriptions\(^{18}\).

In village Kamal Khan Lund in UC Kamal Khan, the respondents brought suspected cases of kamzor to the SQUEAC investigators at the time. MUAC measurement done on the two children revealed moderate acute malnutrition and severe acute malnutrition respectively. In village Chutto Bughio in UC Bughio, which is 4km away from the OTP site, the lay informants mentioned that they knew of some patients in their community which were very weak & thin and were getting supply of RUTF from ACF. This was also mentioned by the lay informants of Faqeer Muhammad Khokhar village in UC - Bughio which is 6km away from the OTP site. The other communities is interviewed in other UCs had no immediate knowledge of children who fitted SAM criteria according to local descriptions of malnutrition, but they knew of children who had been enrolled in OTP and SFP and got cured or were currently enrolled in either OTP or SFP program in their communities with exception of few villages.

It is worth noting that SAM descriptions in the community would mainly be used to spot a child who was visibly weak. Etiology of SAM may begin before the child would be positively identified as malnourished in the community beginning by being moderately acutely malnourished (MAM) cases and then becoming severely acutely malnourished (SAM) case. This is (usually) compounded by diseases associated with malnutrition such as diarrhea, RTIs and Malaria which children under five years are susceptible to. As such it is important that the community will take note of the child who becomes weak due to illness and will slip to malnutrition due to their compromised immunity. Use of MUAC tapes widely in the community through model mothers, private clinics, LHW will increase the sensitivity in identification of malnutrition early and would be aligned with international MUAC-based case-definition of identifying children less that 115 mm or with oedema. Children with low MUAC are at elevated risk of mortality\(^ {19}\). (See recommendations)

VI.4.4. Knowledge about the program

Summary of the visits done are in table 3 above. The schedule of the villages visited is also annexed to this report. Summary of the interviews revealed the following: held in these villages is as follows:


This is one of the villages that conflicted with adjacent village (Meeran Solangi). In the session with the lay informants and community leader, they had heard about the program when the team of ACF came to do sensitization, mobilization and screening for malnutrition in their village in the month of February 2013 (one month before the SQUEAC investigation).

The informants had seen the MUAC tape as used by the team that came; however, they do not know anyone in the village who used it (indicative that there was no active volunteer).

The informants mentioned that in the year 2010 and 2011 during floods in the village there was distribution of oil and WSB for SFP Pregnant and lactating women with malnutrition and also RUTF to SAM children for only limited time. Then no other program had been done in their village since.

\(^{18}\) Kamzor for weakness, thin or emaciated; sukal for swollen body and khangi for severe cases of malnutrition (possibly with medical complications)

\(^{19}\) WHO, UNICEF, WFP and UNHCR Consultation on the Programmatic Aspects of the Management of Moderate Acute malnutrition in Children under five years of age 24-26 February 2010, WHO, Geneva
The make carers revealed that they have heard about CMAM program through ACF teams Mobilization and sensitization but were not aware of the teams OTP site. They have seen MUAC Tape and plumpy’nut. They acknowledge that screening has been conducted by ACF teams in the village. They knew the names of the ACF staff (familiarity with ACF OTP team) by names although the staff did not come back again after this visit. It is noteworthy this is one of the conflicting communities.

In Kamal Khan Lund, CMAM was described as “very good program because most of the people who are poor and cannot afford enough food can be helped. It is also good for their children who get diseases every month”. It is similar to support they received during flood time. It is noteworthy that the community knew the benefit that the program would have on their children despite the fact they did not have access to an OTP site. They knew about the program previously when it ameliorated hunger in children during disaster in year 2011. They expressed optimism that ACF will bring program to their community. The community had good opinion about the program although they had not experienced its benefit recently.

At BHU Dogar the interviewed community member of 2 females and 2 males. They said that it is a good program for those who meets criteria, however, they asked program to look into ways of how other children could benefit so that it does not seem like some members of the community are “favored”. The program modalities need to be emphasized in this specific community.

27th March 2013. UC Kamal Khan. Meeran Solangi (Conflicting village to Kamal Lund). Interviews done to 9 females, 5 carers to current beneficiaries, 8 other male lay informants, one local medical practioner, 1 retired engineer participated in this session.

The informants heard about the program when an NGO team went to the village to do sensitization and screening. The program team established an OTP site which they referred the SAM children identified.

In the session key informants said that they have heard about program and also knew that the team comes biweekly in the "nearby village" to give plumpy’nut, HEB and tablets to weak children. The site was not well known to the respondents even though it was less than 200 meters from interview site.

27th March 2012. UC Bughio at village Faqir Muhammad Khokhar which is estimated at 6km away from the OTP site the informants included one carer, 2 males. They said that "Yes we know the NGO is providing ‘chocolate’ to weak children". They acknowledged that a team came to their village to identify the weak children. The informants however, did not recognize the MUAC tape. They know RUTF as "chocolate”. They whether they thought it is shared at the household and said that the weak/kamzor child share with the siblings since it is very "tasty". They did not think it much as medicine more than food.

7th March 2013-UC Bughio as village Chutto Bughio, 4 km away from OTP site. Interview was done with 4 females and 2 elders. The respondents said "yes we know about that program, and its going on in our area it is for the sake of weak/kamzor children and mothers". "And we came to know this when ACF team came here to check the weak children. They also regularly come and tell us they are looking for the weak children in community”.

The members mentioned that had seen MUAC tape when the team that comes to the look for children come to their village. "They are measuring our children with this tape (pati) and know whether our child is weak or healthy". On being shown sachet of RUTF, they acknowledge it as "chocolate that your NGO is giving to weak child and it’s good for the children and is tasty" when asked what they thought it is to the treated child, they thought it more as food but not as medicine. They however, know that when a weak child is given, it recovers.

27th March 2013: UC Bahawal Pur, village Imam Bux Jatoi, interview conducted with 6 females. They mentioned that the program is good for them because “children become healthy by taking the RUTF”.

23rd March 2013: UC Kamal Khan, village Sukhio Channa -6 Kms from OTP site. Interview done to 2 female lay informants and 2 community leaders. They acknowledged that the program was currently ongoing. The village first received a female and male visitor in their village. Then others came and have been giving
information on child care, feeding and good health. When these people come, “they give our children Chatto (referring to RUTF) and then go away. The community knows the plumpy’nut and on a light note one respondents said "I think these are only sweet (Chatta or Chocolate)” All of them were not able to point out importance of plumpy’nut. Further, to this it was clear that RUTF could be shared within the household as one of the informant said that if one child had been given, then siblings can get a "little". On being shown MUAC tape, they said that "Yes, we have seen this but we don't know how and why they are using this tape". All the same, they mentioned that the program was helpful to their children.

23rd March 2013: UC Kamala Khan, villages Sahib Khan Solangi, about 6 Kms from OTP site. They heard about the CMAM from NGO worker, however, they were not familiar with OTP site location and have a little knowledge about CMAM program. Among the 3 females and one male respondent, the NGO team had visited them and screened their children. They were not clear on the program benefits. On being shown the MUAC tape, the females said "No we have not seen MUAC tape because we sent our child with another individual (male) of HH for screening". Only one female participant had seen the MUAC tape. The identified the RUTF positively as the one given to the identified child. It is noteworthy that one person helped in community outreach done by ACF staff in the community but had not shared information about the program to them.

23rd March 2013: UC Moundar, villages Mondar and Mureed Shahani, average of 3 Kms from OTP site. Interview done on 1 TBA, 1 LHW, 1 religious leader (Imam), 1 CNV (acting) and 3 elders. One elder had heard about the CMAM program but the others had not heard about it. Imam had information about CMAM program given by ACF staff, and also knew of a child that had been cured through the program. The elders were not conversant with program modalities. The TBA has seen MUAC tape but did not know how to use it. The mother of the LHW and LHW aunt could identify MUAC tape well. The LHW knows how to take MUAC and identify malnutrition. She also refers malnourished children to OTP in Mondar, “where the beneficiaries also get RUTF and drugs” avers LHW. The LHW has been trained at the Moundar OTP site by program staff.

In the same village the father of the LHW is also acting as CNV. He said that he knew about the program how to use the MUAC tape and the use of RUTF.

23rd March 2013. UC Bahawalpur in village Adam Panhwar and Ahmed Khan Baber, averagely 8 km from OTP site. Informants mentioned they had knowledge of the program. They had been sensitized by the ACF staff when they occasionally went to their village. Two of the respondents are carers of former beneficiaries in OTP and had seen it at BHU Phulji. They had seen RUTF at the OTP site too.

At Ahmed Khan Baber, the respondents referred to the RUTF as ‘chocolate’ given to kamzor child identified in the village. The respondents identified the MUAC tape as one used by the teams on young children before being given the "chocolate". They knew of 5 children who had been helped in the program.

23rd March 2013. UC Bahawalpur, village Haji Qamar Pahore about 19 Kms from OTP site. Respondents mentioned that they knew about the program. They were sensitized by ACF staff when they had visited in their village. The respondents could also identify the MUAC tape and had seen the RUTF (when it was shown to them).

VI.4.5. Accessibility to the program

In a nutshell, most of the communities interviewed knew of the existent of the program. Some of the factors that affect accessibility are;

Distance to the OTP site is large for the communities without readily available means of transport to the site. For instance in village Ahmed Khan Babar, Bahawalpur UC all the communities had no barrier to attend the program if it were near them. This generally meant that accessibility was

---

[20] Results of In-depth group discussions in the communities
interpreted in terms of proximity. Information collected from carers indicated that carers would pay
to travel to OTP site. In instances where means of travel was not available, they postpone it to
another time.

- Community conflict making some communities not able to access OTP services in neighboring
  community. Example is a community-Jatoi that is not accessible to nutrition services at the OTP due
to conflict between Jamali and Jatoi. The OTP site is located near in a BHU which is built within
Jamali community. As such this conflict makes Jatoi inaccessible to CMAM (OTP) services.

.VI.5. Interviews with Basic health Unit (BHU) staff and lady health Workers (LHWs)

BHU workers are ministry of health employees giving medical services to the community through BHUs in
located each of the 9 UCs. The lady health workers are supervised through BHUs and work directly for the
ministry of health. Summary of the information they gave is as follows:

.VI.5.1. Referral mechanism and Knowledge about the program

BHU Bughia: 27th March 2013: UC Bughia:

Interview with female Medical Officer

She said that staff at the BHU work in liaison with OTP staff although the BHU have not fully understood the
schedule of the OTP attendance days which has been recently erratic. This could cause lost opportunities in
the sense that; The OTP site which is located within the BHU would lose out opportunity in getting referrals
by BHU staff when carers visit the EPI centre for vaccination of their children. This information was
confirmed by the OTP supervisor who mentioned that there are some days that the OTP site did not open
when all the CMAM staff were required to be at their ACF office in the month of February 2013.

Basically the BHU staff refers children to the OTP site on the basis of assessment. When asked about the use
of the MUAC tape the female doctor said "No I don't know about the MUAC or its criteria and also the
program staff has not explained how to use this MUAC tape". He continued that "I have referred some SAM
cases there but they were not enrolled into the program because of failure to meet their criteria". The
female doctor said that she did not understand well the criteria as she has not been told about it. She also
said she has seen the MUAC tape but she does not have one.

In separate interview with two carers who had attended OTP site, they said that they know of some carers in
their village (Allah Dito) who had been referred from the BHU, however, their children could not meet the
MUAC criteria and were sent away (see carer interview in V1.2)

Notably this would need to be addressed first by giving the BHU staff MUAC tapes and training them on how
to use it. This would prevent rejection of children at the OTP site due to failure to meet the admission
criteria which has potential of causing poor opinion of the program.

On being asked her opinion of the program, the female doctor said that she know the CMAM program and
what it does in treatment of malnutrition. She also knows children are given RUTF which is effective for
treatment of SAM children. However, she does not know the use of the MUAC as used in enrollment of
children at the OTP centre. She said "It is very nice to identify the malnourished child and treat them within
the community. So it is very good exercise. "

Interview with 2 LHWs:
The LHW working in the village Chutto Bughio in UC Bughio reporting in Bughio BHU. She had been trained on using MUAC by ACF 8 months before. However, her training could not have been thorough for she was not fully aware about admission criteria. She mentioned that “if the child comes in RED we will refer it to SC centre straight away”. She was also, hesitant when doing the MUAC measurement. She did it on the right arm rather than the left arm. She has knowledge of the OTP site in Bughio. She knows that RUTF is good for the weak child; however, it is referred to as ‘chocolate’ and not necessarily medicine. She said that malnutrition is not a disease condition. The LHW from Zahid Bughio does not know how to use MUAC nor criteria used in CMAM program. She has not worked with the program team nor shared schedules with them. She had not referred of SAM cases to the OTP site.

BHU Bahawalpur : 27/3/2013: in UC Bahawalpur;

Interview with doctor In-charge of the BHU

The doctor mentioned that during the consultation of the children, he refers suspected malnourished children based on physical assessment but not using MUAC tape. The doctor said that he did not have MUAC tape not did he know how it is used. The children that he referred to the OTP site are sometimes not enrolled into the OTP program when they are checked against the MUAC criterion that is used by the ACF staff. Nevertheless, he has seen some weak children get treated and get well at the OTP site and thinks highly of the program.

Interview conducted with 2 LHW at UC Bahawalpur in village Allahando Shaikh:

The village is 1 km away from OTP Site. LHW said that she had seen the MUAC tape but has not used it. She knows about the CMAM program and refers weak children to the OTP site. However, she had no knowledge about benefits of RUTF or modalities under which it is given. She had referred it as chocolate. She said she had witnessed the RUTF being shared in a household.

The other LHW said she knew about OTP at BHU Bahawalpur. However, she had no further knowledge about its operations nor worked together with the program to refer SAM cases within her area. She was not indoctrinated into the program.

BHU Naogoth: 29th March 2013: in UC Nao Goth;

Interview with medical officer

The male doctor mentioned that "We referred cases to the OTP site. When we feel that child is thin, anemic or weak, but OTP staff refuse them sometimes stating that the children do not meet our criteria". When the medical doctor was shown the MUAC tape and asked its use, he looked for one in his desk and showed it during the SQUEAC investigators. He however, admitted that although it had been given to him he does not know how to use it and did not actually use it. Upon probing he mentioned that he is not often at the BHU centre. The other BHU staff that holds fort for the doctor was not present at the time of the investigation and was not interviewed. The doctor did not have knowledge on whether the MUAC was used to screen at the BHU itself, but mentioned that this would be best if the BHU are trained on its use. He said that he had some knowledge that some children that had been referred to the OTP site had been sent away as they did not meet the criteria.

The male doctor mentioned that he knows the benefit of the program that ACF is supporting. He acknowledges the OTP site within the BHU boundary. He mentioned that the OTP staff visits them occasionally. The male doctor said that the community mobilizer and he know each other personally.

When the male doctor was asked on the BU perception about the program he said "- It is very good benefited program for the poor and remote area communities. Also, the community can access this treatment free of cost and within reach in their local area."
Moundar BHU

Interview with 2 LHWs

The 2 LHWs from UC Moundar in village Moundar and Murred Shahani had knowledge of the MUAC tape, knew how to screen malnourished but did not have a MUAC tapes provided to them. They referred children that they thought were weak to the OTP site. During their schedules they included talks to carers the signs to look for in malnutrition and send the children to Moundar OTP site. They also participated in ACF program outreaches when they occurred in the villages where they worked. The LHW from Zahid Bughio does not know how to use MUAC nor criteria used in CMAM program. She has not worked with the program team nor shared schedules with them. She had not referred of SAM cases to the OTP site.

The LHWs mentioned that most of the children are taken to the BHU, private clinics or district hospitals when taken ill. The proportion of the carers who would take their children to shrines or other places is considerably small.

VI.6. Interviews with local private doctors

In UC Kamal Khan, near OTP site at Meeran Solangi village centre is a local private practitioner. The local doctor is less than 500 metres from the OTP site. He mentioned that he is government employed but runs a private clinic on specific days. He knew about malnutrition and etiology, however, he did not have knowledge about the CMAM program nor what it can do in treatment of malnutrition.

He recognized malnutrition as weakness and acknowledged the term kamzor as used in the community to actually describe the onset of the acute malnutrition. He treated the malnourished children with systematic drugs such as the antibiotics for RTIs and oral salts for children with diarrhea and if they are very weak "sends them to the Johi Taluka General hospital". The advice that he gives his clients is that malnutrition is a condition that can be rectified through good eating habits as they continue to take drugs prescribed to them.

When asked that now that the SQUEAC investigators had enlightened him about the CMAM program, whether he could begin to send such children to the OTP, he was affirmative and since it is not far from his clinic, and he could begin doing so.

In this regard, recruitment of the private doctors/practitioner would widen the case finders and seal chances of lost opportunities (see recommendations).

VI.7. Community Nutrition Volunteers (CNVs)

VI.7.1. Perception on Malnutrition referral mechanism and knowledge about program

Bahawalpur OTP site: 2 CNVs: 27/3/2013:

The CNV from village Imam Bux Jatoi in Bahawalpur associated malnutrition with fever and diarrhea. The CNV said he had not referred any child to the OTP site. He did not know how use MUAC for making measurement, though he had seen it. The CNV at Ahmad Khan Babar village (23/3/2013) in Bahawalpur described malnourished child as "very weak". He knows the signs of kwashiorkor and also marasmus. He said that malnutrition can be identified early by use of MUAC tape. He knows how to use MUAC and has referred 'many children'. He had had his training from ACF staff in year 2011 and another one at the beginning of year 2012. His counterpart in the same village has not had training at all and had not referred any child. Thus one CNV can identify a 'khangi' child using MUAC while the other one who is relatively not knowledgeable on CMAM program cannot.

The CNV from village Imam Bux Jatoi village described the RUTF as chocolate and that it is good for weak children. The untrained CNV had knowledge that the RUTF is given in an OTP program for the weak children and mentioned that his community thinks so too. He said that "Weak child gets healthy from this program".
He had no knowledge of key message of the RUTF. (RUTF is medicine). As much as he was active, the CNV did not have appropriate messages to discourage sharing of the RUTF. However, in an interview with the trained CNV from village Ahmad Khan Babar, he said that "it is good program for my community members; women get education of breastfeeding and child health care too".

**Kamal Khan OTP site: 2CNVs: 27/3/2013:**

Two CNVs were interviewed in Sahib Khan Solangi in Kamal Khan. One of the CNV recognizes weak children as SAM children and mentions that this mostly happens in children between 1 and 36 months. When working in the community, "We call it weakness and looking sick in our language". Such "children are confirmed with MUAC" he says. One of them has a MUAC tape while the other does not have. Both said they rarely use it and had not screened children recently.

In another interview in Kamal Khan UC, village Sahib Khan Solangi, the CNV mentioned that "This program is good for only weak children and mothers". On the CNV added that "It’s chocolate and not the complete treatment of any disease. Peoples mainly visit the doctor, when sick. The chocolate can cause diarrhea". The other untrained CNV mentioned that he thinks that if is used at OTP site.

It is important to note that some of the CNV has been with the ACF for considerable period of time dating the year 2011. However, not all the CNVs that are currently with ACF are conversant with the screening for neither malnutrition nor mobilization activities. The last training reported was in year 2012 that was done mostly on the old CNVs.

As much as this level of information shows knowledge about the program, expressed in the views of the CNVs, more training on CNV is necessary so that they can use a standard set of messages in their communities.

There is evidence to show probable sharing of the RUTF in some communities where the key message of RUTF as medicine was not emphasized.

**Bughio OTP site: case study:**

<table>
<thead>
<tr>
<th>Volunteering for CMAM program in UC Bughio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union Council: Bughio</td>
</tr>
<tr>
<td>OTP site: Bughio BHU.</td>
</tr>
<tr>
<td>Community Nutrition Volunteer-Mr. Bilawal Bughio</td>
</tr>
</tbody>
</table>

Aged at about 52 years Mr. Bilawal Bughio is the resident of village Dhani Bux Bughio. At the time of the SQUEAC investigation he was attending to beneficiaries at Bughio OTP site. He mentioned that when he is at the OTP site, he spends the entire day at the ACF-OTP site Bughio where he volunteers his services and works together with the ACF OTP nurse and sometimes with the community mobilizer. Responsibilities assigned by the OTP nurse include screening the beneficiaries and also noting the new admissions, especially those referred by the BHU staff. He also, emphasizes on the nurses counseling by stressing on the key messages on use of the RUTF. There is also a lot of work at his home and he has way of balancing duties while volunteering on CMAM and fulfilling his duties at home. He said he has 3 sons and as much as he works in the CMAM program, he also contributes his time to assist them in his immense responsibilities at home especially work in the crop fields. "I have some agriculture field work, so I give my full attention to my personal work on Saturday and Sunday. On Monday to Friday I finish my work before 11am and came here to OTP site to help these ACF guys voluntarily and
I have done this since 2011” This way he is able to have more time for the OTP program beneficiaries without affecting his family negatively.

Bilawal story is unique in the fact that he joined ACF as a volunteer back in year 2011 when he was heard about the program. He was curious about information that there is a method to cure children from malnutrition (a disease he said was very common in his community and which resulted to death of children). "At that I was inspired from their attitude and goal to save the children from this death risk disease and make them come back to health again". The information given by the ACF team was also, exciting because they said that the program where the sick children would be admitted is offered free of cost. He asked the team what he could do so that his community is able to benefit. He was requested to help identify those children who had severe malnutrition in his community. He accepted immediately and said " I am with you if you need any kind of help from my side and I am ready for that”

He was trained on how to use the MUAC to identify SAM cases "who were very many at that time". Sooner he began to learn more at the OTP site on the screening and admission criteria. He also learnt that children can have SAM without complication and SAM with medical complication. The SAM children with medical complication needed to be attended very fast so and to be considered first. (He was referring to triage process). "From that point I would come daily to see whether the children I had screened in the community had come for treatment on the day I indicated to them. I have worked here up to this day and the benefit we get as a community is more than payment". At one time the CNV says that children of his relatives who had SAM were once treated at the Bughio OTP site and were completely cured. The children are strong now and they are testimony of what the "chocolate" (RUTF) can do. Chocolate is the term used on the RUTF in the community. Previously, he worked for the government as agricultural extension worker. He has utilized his contacts that he used in those days to sustain the word of mouth on the goodness of the program to those children who are weak and have "kamzor".

Other tasks that he also does at the OTP site are said by him as; “I am doing crowd controlling, supply distribution, follow ups and if someone from our community creates problem here for the team, like people are always demanding here for oil and Wheat Soya Blend (WSB) used in SFP program for PLW, then I also handle them by using my local contacts. Those who need information on the benefits of the program in the community also come to me and I facilitate them with any kind of help they required”.

He was asked by the SQUEAC investigators as to what has kept his motivation for more than 2 years he has been volunteering, especially throughout the week when the OTP is running. He said that for the time he has been at the program many children has been treated and therefore did not die and therefore, he sees his voluntarism as work to humanity. He is thankful for ACF for maintaining consistent treatment for long time and calls is "hospitality to the community". “ACF is providing benefit to our community and saving our future when children are made healthy again. It should be duty to all of us but not only mine, to facilitate to any kind humanitarian activity like ACF is doing here”.

VI.7.2. Training of the CNVs on OTP

Bahawalpur OTP site: 2 CNVs: 27/3/2013:

The CNV from village Imam Bux Jatoi is not trained. This was confirmed by observation when he was asked to use MUAC to measure children. His younger brother had been the CNV for the area and had benefited in getting training in year 2011. As such the current CNV neither knew about the MUAC tape nor how it is used. It was confirmed that ACF had not done any CNV training since early 2012, and the current CNV had not therefore, had training. Among the listed CNV by the program his name was not listed yet. However, the
CNV from village Ahmad Khan Babar has had three times training from ACF. He had been volunteering at ACF OTP program since mid 2011 and has served for relatively long time than most other CNVs.

Kamal Khan OTP site: 2CNVs: 27/3/2013:
In village Sahib Khan Solangi in Kamal Khan UC, one of the CNV has not had CMAM training in the previous 8 months.

In general, there are some CNV who have worked in the program for a considerable period and got acquainted with the OTP program procedures. These have contributed in the continuity of the program even at time of acute operational challenges of the program. On the other hand, there is evidence of poor integration/training of the CNV in the nutrition program with a number of CNVs selected to volunteer while others have not been identified yet they have an active role they are playing in the current program. (Confirmed by list of volunteers, observation and program staff information).

VI.8. Observations

- OTP sites in Bughio, Bahawalpur, Bughio, Naogoth, Torre, Sindhi Buttra, Pariya and Moundar are located within BHU health facility.
- Generally the process of triage, registration at OTP site is organized. Roles were distributed adequately and the CNV working at the few facilities visited were trained well to assist the OTP staff.
- There were no long waiting queues at the OTP sites.
- The OTP site in Kamal Khan is located win the public schools which is strategic for carers to be able to locate it.
- Buffer stocks were available to prevent sudden stock outs at the OTP sites.
- Interaction between the OTP staff and the carers was relaxed when OTP services were being offered.

VII. Stage 2: combining and confirming findings from routine program and qualitative data

The data collected from the routine program data and qualitative data, was combined to elicit the following information:

- Where coverage was likely to be satisfactory,
- Likely barriers and boosters to service access and uptake.

The information was organized into mind-map and then into concept map then used in formulation of a hypothesis. It is important to note that hypotheses about coverage should always be stated before undertaking small studies, small surveys and small area surveys. The information from Dadu survey was organized into the mind map and made into relationship in the figure 4 and 5 below.

---

21 Observations done by the SQUEAC investigation team when they visited the OTP sites. March 2013
Figure 7: mind map used to organize information in Dadu SQUEAC
Figure 8: Concept map of Dadu nutrition intervention program

Key
- Poorly incorporated into motivated program staff leads to increased evidence of community willing to incur cost to attend program
- Limited program staff resources
- Operational constraints
- Limited spatial coverage
- Narrow recruitment of case finders
- Poorly integrated CNVs
- BHU/LHW staff referrals
- Caregivers seek care at BHU in suspected kamzor
- Community knowledge about malnutrition
- Increases Outreach activities
- Community's knowledge of the program
- Increases
- Poorly integrated CNVs
- Community/religious leaders not indoctrinated into program
- HE foods oriented to OTP beneficiary siblings
- Narrow recruitment of case finders
- OTP protocol compliance
- OTP sites within close to BHU
- Encourages
- Does not link well with

SFP pipeline breaks
- Carers communicate stock-outs amongst themselves
- Declined carers to OTP
- Labour demands/seasonal family migrations
- Does not address
- Distance
- Low knowledge about catchment area
- Contributes to

Early admission of SAM
- Conflicts of communities’ insecurity
- Limited spatial coverage
- Leads to
- Low attendance to OTP
- Causes
- Reduces
- OTP sites within close to BHU
- Encourages
- OTP sites within close to BHU in suspected kamzor
- Community knowledge about malnutrition
- Increases Outreach activities
- Community's knowledge of the program
- Increases
- Poorly integrated CNVs
- Community/religious leaders not indoctrinated into program
- HE foods oriented to OTP beneficiary siblings
- Narrow recruitment of case finders
- OTP protocol compliance
- OTP sites within close to BHU
- Encourages
- Does not link well with

SFP pipeline breaks
- Carers communicate stock-outs amongst themselves
- Declined carers to OTP
- Labour demands/seasonal family migrations
- Does not address
- Distance
- Low knowledge about catchment area
- Contributes to

Early admission of SAM
- Conflicts of communities’ insecurity
- Limited spatial coverage
- Leads to
- Low attendance to OTP
- Causes
- Reduces
- OTP sites within close to BHU
- Encourages
- OTP sites within close to BHU in suspected kamzor
- Community knowledge about malnutrition
- Increases Outreach activities
- Community's knowledge of the program
- Increases
- Poorly integrated CNVs
- Community/religious leaders not indoctrinated into program
- HE foods oriented to OTP beneficiary siblings
- Narrow recruitment of case finders
- OTP protocol compliance
- OTP sites within close to BHU
- Encourages
- Does not link well with

SFP pipeline breaks
- Carers communicate stock-outs amongst themselves
- Declined carers to OTP
- Labour demands/seasonal family migrations
- Does not address
- Distance
- Low knowledge about catchment area
- Contributes to
The collected information was organized every time it was collected from the field and related with the other information that had been collected earlier. The information was analyzed to open the door for second stage of the SQUEAC investigation. The process is illustrated in figure 2 (Illustration of triangulation of SQUEAC data). The following steps were followed accordingly.

1. Decision on spatial coverage in the OTP implemented areas.
2. Formulation of barriers and boosters to program access and uptake and weighing them.
3. Making of the alpha prior.
4. Making mode prior shaping parameters.

.VII.1. Decision on spatial coverage in Dadu.

Various information collected and analyzed pointed to probable patchy coverage. This information was based on program data, and qualitative information from the field (such as distance).

Procedure for determining whether it is likely there is patchy coverage was:

- Small area survey in areas of probable high or low coverage
- Small studies to determine causes of defaulting on identified defaulter cases.

Small area survey hypothesis.

This information led to a decision to conduct raise question about patchy coverage in Dadu’s 9 UCs where the OTP program covered. To confirm this information, a hypothesis was made for it to be able to be tested to confirm whether there could be probable patchy coverage:

**Hypothesis:**

“Coverage is likely to be ≥ 50% in areas that are within the 60 minutes radius of the OTP site, while coverage is likely to be < 50% in areas that are more than 60 minutes from the OTP site.”

Focused in depth group discussion was used in small study on the current defaulters to establish the reasons for default.

Small study and small area survey findings

Villages were selected purposefully depending on whether they fall near (within 60 minutes radius) or far (outside the 60 minutes radius) as tabulated below:

<table>
<thead>
<tr>
<th>Union Council</th>
<th>Village visited</th>
<th>Distance</th>
<th>SAM in program</th>
<th>SAM not in program</th>
<th>Total</th>
<th>Traced and interviewed defaulters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gul Mohammad Rodnani, Pana Rodnani, Jam Khan Chandio</td>
<td>Far</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Mirza Chana, Khunda Bux Solangi, Wali Mali Khaiskheli</td>
<td>Near</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

23 Sampling to redundancy

24 The time estimate is the average time it would take a local rickshaw, or motorcycle to travel away from the OTP site.
The Active and adaptive case finding method (illustrated in [figure 13]) was used to take the teams to the SAM children. A short questionnaire (semi-structured questionnaire is annexed to this report) was administered to the carer if the child was not already covered in the program. The barriers to OTP service uptake found in the small area survey were also analyzed (as shown in [figure 9 below]).

The team’s findings were analyzed during the simplified LQAS: Thus,

The threshold value \( (d) \), the number of cases \( (n) \) and the proportion recommended for acceptable coverage in rural program \( (p) \) were used. The combination of \( n \) and \( d \) constituted the sampling plan.

The Sphere minimum standard for coverage of TFP (Therapeutic Feeding Program) in rural programs is 50%. The rule-of-thumb formula used to calculate values of \( d \) (decision rule) to classify whether coverage is above or below a standard of 50% is as follows:

\[
d = \frac{n}{2}
\]

Thus, according to the number of covered and non-covered cases found in the survey:

**Coverage in far villages:**

\[n = (2+6)^{25}\]

Therefore \( d \) is given by:

\[4 = \frac{8}{2}\]

Since the number of SAM children found in the program was ‘1’ which is less than 4 then the coverage in the far areas is likely < 50%.

**Coverage in near villages:**

\[n = (0+3)\]

Therefore \( d \) is given by:

\[1.5 = \frac{3}{2}\]

The value of 1.5 is rounded down to 1\(^{26}\).

Since ‘1’ is SAM case in the program, the coverage in the near area is likely to be ≥50%.

The findings confirmed the hypothesis as true.

Therefore the coverage is likely to be patchy.

**Figure 9: Barriers to coverage found in small area survey**

\(^{25}\) Sum of SAM children in far villages

11 children were identified in the small area survey. 4 of the carers to the non-covered cases in the villages considered to be far from OTP site were not actively screened. It is more likely that the incident cases are not identified and the children remain in the community without any referral to the program. There were cases that cited being turned down at the OTP site for the reason that they were not in the criteria (2). Others had been identified for admission but the OTP sites had closed abruptly. They were not given further information of where they would attend and therefore, remained in the community.

**Figure 10: Reasons to default given by defaulters**

.VII.2. **Form barriers and boosters to program access and uptake and weigh them.**
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Community had knowledge about CMAM program.</td>
<td>+3</td>
<td>+5</td>
<td>6, 4, 2, 4, 3, 4, 6, 11</td>
<td></td>
<td>RUTF recognized more as chocolate not medicine resulting to sharing with other not prescribed.</td>
<td>-3</td>
<td>-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Direct referrals from BHU staff, LHW, and community members.</td>
<td>+3</td>
<td>+5</td>
<td>4,4,6,2,9, 9,11</td>
<td></td>
<td>Communication between OTP site supervisor and CM / CNVs is not clear. CNV not well integrated. Thus CNV defaulter follow-up is non-existent.</td>
<td>-3</td>
<td>-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Passive case finding is evident.</td>
<td>+3</td>
<td>+5</td>
<td>1,4,6,7,2, 3,9,11</td>
<td></td>
<td>Some CNVs are not well integrated into program.</td>
<td>-3</td>
<td>-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Community had knowledge about malnutrition.</td>
<td>+3</td>
<td>+3</td>
<td>4,4,6,6,8</td>
<td>1</td>
<td>Disconnect between understanding malnutrition between OTP site staff and community.</td>
<td>-3</td>
<td>-2</td>
<td>7,6,8,4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>OTP sites located at health facility.</td>
<td>+3</td>
<td>+4</td>
<td>3,3,3,3</td>
<td>2</td>
<td>Narrow recruitment of case finders.</td>
<td>-3</td>
<td>-3</td>
<td>6,9,9,7</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Good opinion about the program. Eg carer would pay for transport cost to attend. Some community members informed their relatives about program.</td>
<td>+3</td>
<td>+4</td>
<td>2,6,7,8,4, 11</td>
<td>3</td>
<td>Migration temporary / Labour demand, causing long LOS and defaults.</td>
<td>-3</td>
<td>-3</td>
<td>2,4,3,1</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Strong community sensitization by CMAM staff.</td>
<td>+3</td>
<td>+3</td>
<td>6,4,5,3</td>
<td>4</td>
<td>Lack of communication of the OTP/Outreach schedule between community and OTP staff.</td>
<td>-3</td>
<td>-4</td>
<td>4,6,11</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Re-introduction of satellite site approach.</td>
<td>+3</td>
<td>+2</td>
<td>3,4,2</td>
<td>5</td>
<td>Lack of awareness about malnutrition, by section of communities.</td>
<td>-3</td>
<td>-2</td>
<td>4,6</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Some CNV well trained and motivated.</td>
<td>+3</td>
<td>+2</td>
<td>3,2,7</td>
<td>6</td>
<td>Un-familiar OTP site locations and treatment services not accessible in CMAM services.</td>
<td>-3</td>
<td>-3</td>
<td>3,8,6</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>High energy biscuits (HEB) for the siblings of SAM child, to discourage RUTF sharing.</td>
<td>+3</td>
<td>+3</td>
<td>4,2,6,11</td>
<td>7</td>
<td>Distance causing defaulters.</td>
<td>-3</td>
<td>-4</td>
<td>1,2</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>Familiarity between Program staff and community.</td>
<td>+3</td>
<td>+3</td>
<td>3,6,7,6</td>
<td>8</td>
<td>Break in SFP supplies pipeline in attaching OTP attendance.</td>
<td>-3</td>
<td>-2</td>
<td>1,2</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>Motivated / organized OTP site staff, despite working in limited resources.</td>
<td>+3</td>
<td>+3</td>
<td>3,2,6</td>
<td>9</td>
<td>Operational constraints affecting planning activities negatively</td>
<td>-3</td>
<td>-3</td>
<td>2,11,7</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>Some traditional Birth Attendant (TBA) and LHW are indoctrinated in the program.</td>
<td>+3</td>
<td>+3</td>
<td>2,6</td>
<td>10</td>
<td>Some BHU staff not referring children to OTP site.</td>
<td>-3</td>
<td>-1</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>14</td>
<td>Peer referrals by carers.</td>
<td>+3</td>
<td>+2</td>
<td>4,</td>
<td>11</td>
<td>Mobile /Satellite site closure</td>
<td>-3</td>
<td>-2</td>
<td>2,11,7</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Timely admission of the SAM cases in program.</td>
<td>+3</td>
<td>+3</td>
<td>1</td>
<td>12</td>
<td>Stock outs of routine medicine and RUTF in some sites</td>
<td>-3</td>
<td>-2</td>
<td>2,3</td>
<td>12</td>
</tr>
<tr>
<td>16</td>
<td>Male caretakers participating bringing children in program.</td>
<td>+3</td>
<td>+2</td>
<td>3</td>
<td>13</td>
<td>Conflicting communities and insecurity challenges resulting to poor attendance by communities near OTP site and hampering outreach.</td>
<td>-3</td>
<td>-4</td>
<td>7,2,2,2</td>
<td>6,8</td>
</tr>
<tr>
<td>17</td>
<td>OTP services continuity.</td>
<td>+3</td>
<td>+1</td>
<td>2</td>
<td>14</td>
<td>Program modalities not clear to the communities, causing misunderstanding.</td>
<td>-3</td>
<td>-2</td>
<td>3,1,4,8</td>
<td>,7</td>
</tr>
<tr>
<td>18</td>
<td>RUTF buffer stocks for OTP program</td>
<td>+3</td>
<td>+3</td>
<td>2,1,13</td>
<td>15</td>
<td>There was poor active case finding (day to day search as SAM occurs)</td>
<td>-3</td>
<td>-3</td>
<td>2, 1, 4, 6,11</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Sum</td>
<td>+51%</td>
<td>+56</td>
<td></td>
<td></td>
<td>Sum</td>
<td>-54</td>
<td>-55</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lowest value anchor</td>
<td>0%</td>
<td>0%</td>
<td></td>
<td>Upper value anchor</td>
<td>100%</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Totals</td>
<td>51%</td>
<td>53%</td>
<td></td>
<td>Total</td>
<td>46%</td>
<td>45%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Sources and methods of data collection

<table>
<thead>
<tr>
<th>S. No</th>
<th>Source</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data (Program data, referral slips, bin cards)</td>
<td>Data Retrieval</td>
</tr>
<tr>
<td>2</td>
<td>Program Staff</td>
<td>Simple Structured Interview</td>
</tr>
<tr>
<td>3</td>
<td>Observation</td>
<td>Observation Check list</td>
</tr>
<tr>
<td>4</td>
<td>Carer</td>
<td>Simple Structured Interview</td>
</tr>
<tr>
<td>5</td>
<td>Seasonal Calendar</td>
<td>In-depth group discussions</td>
</tr>
<tr>
<td>6</td>
<td>Community</td>
<td>In-depth group discussions</td>
</tr>
<tr>
<td>7</td>
<td>CNVs</td>
<td>Simple Structured Interview</td>
</tr>
<tr>
<td>8</td>
<td>Community elder and Imam</td>
<td>Simple Structured Interview</td>
</tr>
<tr>
<td>9</td>
<td>Basic Health Unit (BHU) staff and Lady Health Worker (LHW)</td>
<td>Simple Structured Interview</td>
</tr>
<tr>
<td>10</td>
<td>Private doctor</td>
<td>Simple Structured Interview</td>
</tr>
<tr>
<td>11</td>
<td>Small area survey</td>
<td>Semi structured interview</td>
</tr>
<tr>
<td>12</td>
<td>Wide area survey</td>
<td>Semi structured interview</td>
</tr>
<tr>
<td>13</td>
<td>Case Study</td>
<td>Simple Structured Interview</td>
</tr>
</tbody>
</table>
The following procedure was used to score the barriers and boosters:

- Arranged boosters and Barriers into 3 top boosters and 3 top barriers.
- Weighed boosters and barriers.
- Calculated the weighted into totals and estimated prior mode.
- Drew a belief histogram for the belief
- Calculated likelihood sample size for the wide area survey.

Thus: Barriers and boosters

<table>
<thead>
<tr>
<th>Total barriers</th>
<th>Total boosters</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

**Simple weighing barriers and boosters approach:**

The barriers and boosters are included in the table 4 above. Each barrier and booster was given an equal score of 3. Thus:

- Boosters total scores: 18 x 3 = 54
- Barriers total scores: 18 x 3 = 54

Therefore,

- Contribution of boosters to coverage
  \[ \text{Coverage} = 0 + 54 = 54\% \]
- Contribution of barriers to coverage
  \[ \text{Coverage} = 100 - 54 = 46\% \]

Therefore the mode prior (x) is average of the two thus

\[ x = \frac{54\% + 46\%}{2} \]

**Prior mode = 50\%**

**Weighted barriers and boosters approach**

This process involved the following steps:

1. Participants who were 10 in number were asked to identify three major barriers as well as booster in the program. They were then chosen depending on their perceived relative contribution to overall coverage. The 3 top barriers and boosters were given a maximum weight of 5 and are in the table 1 below,

2. For the remaining barriers and boosters, the participants of the SQUEAC investigation were asked to give weight (with minimum of 1 and maximum of 4) to each booster and barrier considering the weight of each as per contextual findings of the SQUEAC investigation in stage one.

The process identified the mode of the scores or weights given by the participants. There were 10 participants in the weighing exercise. The choice of the weights given is illustrated below:
The circled values were either the modal value of the preferred score of each barrier and booster. Where the modal value was more than one then the participants agreed on the most suitable score of the barrier or booster, basing their decision on contextual information analyzed earlier in the investigation.

VII.3. **Making of the alpha prior.**

The weights calculated above were summed up for the positive and negative factors. The sum of weights of barriers was subtracted from 100%. The sum of the boosters was added to 0%. The average of the two figures produced a mode of the **prior**, called **prior mode**. The total weights of barriers and boosters are shown in **table 4 above**.

Thus:

- The total weight of barriers=55%
- The total weight of boosters=56%

**Coverage=0%+56%=56%**

**Coverage=100%-55%=45%**

Therefore the average of the two

\[ \chi = \frac{56\% + 45\%}{2} \]

**Prior mode=50.5%**

The weighing of boosters and barriers appear to mitigate each other and shows a moderate level of coverage (about 50%). This is confirmed in the weighted and the un-weighted barriers and boosters respectively as demonstrated above.
VII.4. **Making mode prior shaping parameters: Belief histogram:**

The range of the prior was determined by drawing a histogram prior. The histogram was drawn on the flipchart paper and the following exercise was done:

1. A histogram was drawn with x axis and y axis. The x axis was labelled coverage and marked at intervals (decades) of 10% from 0% up to 100%. Y axis was labelled belief.

Figure 12: Illustration of a drawn belief histogram.

2. The prior mode was marked with a tall column.
3. The peak of the histogram was set at 50%, which was the most credible value consistent with the available data.
4. High unlikely values were identified by the participants. For instance starting down from 0%, they were asked whether they thought the coverage could be 0%, in which they said no. This was also done going upwards to 10%. This process was also done beginning 100% going down to 90%. The highly unlikely values were 0%, 10% and 20% beginning from 0%. The unlikely values were 100%, and 90% beginning from 100%. Horizontal lines were then put near the x-axis to blot out these values.
5. The participants were again asked to say where they believed the coverage could be. Working from 0% upwards, they gave their responses as 25%, 30%, 35%, 40%. Working downwards from 100%, the participants gave their responses as 80%, 70%, 65% and 55% respectively. At each step the available data was reviewed and debated.
6. The histogram was completed by making a smooth curve to mark the binomial distribution between the lower values (25%) and the upper value (80%). This process generated a prior range of 25% to 80%.

The $\alpha$ Prior and $\beta$ Prior shape parameters were calculated using 25% as the minimum probable value and 80% as maximum probable value for the prior respectively in the following formulas:

Thus:

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

$$
\sigma = \frac{\text{maximum} - \text{minimum}}{6}
$$
The percentages are expressed as proportions thus:

\[
\text{Proportion} = \frac{\text{Percentage}}{100}
\]

This translates to minimum of 0.25, maximum of 0.80 and prior mode of 0.50

Thus: calculating the values of \( \mu \) and \( \sigma \) are:

\[
\mu = \frac{0.25 + 4 \times 0.50 + 0.80}{6}
\]

\[
\mu = 0.511667
\]

\[
\sigma = \frac{0.80 - 0.25}{6}
\]

\[
\sigma = 0.09167
\]

Using values of \( \alpha \) and \( \beta \) then:

\[
\alpha \text{ prior} = 0.50 \times 0.50 \times 1 - 0.50 \times \frac{1}{0.09167^2} - 1
\]

\[
\alpha \text{ prior} = 14.7
\]

\[
\beta \text{ prior} = 1 - 0.50 \times 0.50 \times 1 - 0.50 \times \frac{1}{0.09167^2} - 1
\]

\[
\beta \text{ prior} = 14.0
\]

The prior shaping parameters are used in making a smooth curve in BayesSQUEAC calculator as shown in figure 11 in stage 3 of this report (wide area survey).

VIII. Stage 3: wide area survey to estimate overall program coverage

The program data and small area survey indicated high likelihood of patchy coverage in the program implementation areas of CMAM. This information notwithstanding, a wide area survey needed to be conducted. The reasons were as follows:

- This being the first SQUEAC in Dadu, it was imperative to conduct all the three stages so as to learn on the SQUEAC tools and
- Inform the program of additional barriers to program coverage and uptake that could not have been reported on in the first stage of SQUEAC where quantitative and qualitative program data was collected analyzed.

The tools that were used in this investigation gave information on barriers and boosters to access and uptake of the program. They are limited in the sense that they do not provide overall estimate of the program coverage.

In Bayesian statistics any relevant information is used in addition to survey data. This is useful in SQUEAC investigations because the analysis of the routine program data, the intelligent collection of the qualitative data and findings of the small studies and the small area survey has given great amount of information relevant to program coverage.

The advantages of the Bayesian approach are realised in this assessment when using Bayesian statistics in the sense that smaller survey sample sizes compared to other large scale surveys will be required and this will provide a framework for thinking about the overall SQUEAC data.

Three procedures are relevant in calculation of the wide area program coverage:
1. Prior information (which has been discussed in previous section)
2. New information (collected from likelihood survey)
3. Posterior determination (which combines the prior information and the new information to give the overall coverage estimate of the program)

.VIII.1. New information-Likelihood survey sample size calculation

Dummy survey was planned in the program area to do a census on all the current SAM children in the community. These are categorized into those covered in the program, those not covered in the program and the recovering cases in the program.

The entire population was stratified into a list of villages into the individual UCs and spatial sample calculated to be able to do a likelihood survey.

Thus;

The likelihood survey sample size was calculated based on the parameters\(^{27}\) in this formula:

\[
n (\text{likelihood})= n = \text{mode} \times 1 - \text{mode} \left(\frac{1}{\text{precision}/1.96} \right)^2 - \alpha \text{Prior} + \beta \text{prior} - 2
\]

Thus:

\[
n = 0.50 \times 1 - 0.50 \left(\frac{1}{0.109/1.96} \right)^2 - 147 + 14.0 - 2
\]

\[n \text{ likelihood}=54.090 \text{ rounded up to 55}\]

The likelihood sample size is 55 SAM cases

Spatial sampling technique

Complete list of the villages stratified per UC for all the 9 UCs for all the clinic catchment area was used as a sampling frame. Sampling was done in two stages:

Spatial sampling method;

To estimate the expected number of SAM children expected per village, the SAM estimate of 2.0% was used. (The nutrition survey report SAM reported rate of 3.2\(^{28}\) (2.0% to 5.1%)). The prevalence used here is the estimated prevalence of the program’s admitting case definition. This is not the weight for height estimate reported in SMART survey\(^{29}\). The number of villages \((n)\) that would need to be visited to get the calculated sample size was estimated using the following formula;

\[
n_{\text{villages}} = \frac{n}{\text{average village population}_{\text{all ages}} \times \frac{\text{percentage of population}_{6-59 \text{months}}}{100} \times \frac{\text{SAM prevalence}}{100}}
\]

\(^{27}\) The parameters same as used in the previous section

\(^{28}\) The SAM rate was derived from MUAC severe acute malnutrition. Conservative estimate of 2.6% which is the lower range of the SAM rate was used.

Thus;

\[ n_{\text{villages}} = \frac{458}{1176} \times \frac{146-59}{100} \times \frac{2.0}{100} \]

\[ n \text{ villages}=17 \text{ villages} \]

5 more villages were added in the sample to make 22 villages

Random sampling was done to choose 22 villages from a list of 458 villages\(^3\). This yielded reasonably even spatial sample from the entire program catchment area. That would be visited to get a minimum of 55 current SAM children. To estimate the expected number of children per village the nutrition survey report SAM reported rate of 3.2%\(^3\) was used.

**Within community sampling method**

This is an active and adaptive case finding method to find the SAM cases in the sampled village. The sampling is exhaustive. Sampling should not stop when the quota calculated is reached and should complete all the villages sampled.

In the field there was a unique challenge of villages that were bigger than initially estimated on the village list, while in some cases some villages had ceased existing and replaced by larger or smaller settlements in different names. Taking cognizance of the fact that the aim of within community sampling is to reach all the sampled communities within the possible spatial limits, all the small settlements around the sampled area (village) were included and current SAM cases exhaustively searched in the surrounding households. The team confirmed the naming of the villages and in most cases the older name would be identified by residents who would confirm recently expanded or shrunk villages. This was an advantage in the active and adaptive case finding in that this pragmatic approach covered the entire spatial space. Assumption is that when the program implements activities to increase coverage its focus is to cover all areas within the community as evenly as possible and his is the advantage that the approach provided. The Active and adaptive case finding technique is summarized in the figure 13 below:

---

\(^3\) UC and village data from Dadu Revenue Authority, 2013.

\(^3\) The SAM rate was derived from MUAC severe acute malnutrition. Conservative estimate of 2.0% which is the lower range of the SAM rate was used.
Figure 13: The survey process using active and adaptive case finding.

Visit the *Utaq* (reserved for visitors) first and seek permission to visit the village.
Request the village leader to provide a key informant of choice.
Ask the key informant the case finding question ‘can you show us child who is under-five years and has ‘*kamzor*’, was recently sick (with diarrhea or cough and fever) and is recovering, or is currently vulnerable to ‘*kamzor*’ due to being orphaned, poverty’
Go to the first house where a potential case may be found

Check the child is aged between 6 and 59 months
Explain the purpose of the survey to the parents and what you will do
Measure the MUAC of the child
Check for the Oedema sign

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

- **Current SAM case**
  - Is the child in OTP?
  - Ask to see sachet of RUTF and health card

- **Current SAM case not in the program**
  - Fill out the tally sheet
  - Apply questionnaire
  - Refer the child to CMAM program site
  - Thank the mother
  - Ask case finding question

- **Not a current SAM case**
  - Is the child in the OTP
  - Ask to see sachet of RUTF and health card

- **Current SAM case in the program**
  - Fill out the tally sheet
  - Thank the mother
  - Ask case finding question

- **Recovering SAM case**
  - Fill out the tally sheet
  - Thank the mother
  - Ask case finding question

Use additional sources or other key informants to inform and improve the search
Always ask parents of the SAM children identified whether they know of other cases
Continue until no new cases are indicated by any source or all leads point to previously identified cases
VIII.2. Posterior determination

In the analyses of the data obtained in the wide area survey two coverage estimators could be used;

- Point coverage using current cases only. It provides snapshot of the program performance and places strong emphasis on the coverage and timeliness of case finding and recruitment.
- Period coverage that uses data for both current and recovering cases. Includes children that are still in the program because they have not yet met the discharge criteria.

In this report the period coverage estimator due to the following reasons established from contextual information:

- The Dadu OTP program has early case finding and recruitment. This is evident from the admission MUAC plots and information available on the screening data that is reported monthly by the CMAM program. In all the 9 Union Councils the outreach activities that are carried out by the program staff target case finding, defaulter tracing and community mobilization. Peer referrals and also, self referrals are evident. Carers refer relatives to the program when their children become weak (folk term for weak child is “kamzor”). It is estimated that majority of admissions are done before late presentation in malnutrition. It is evident that the patient cohort consisted mainly of the uncomplicated incident cases that can be cured quickly and cheaply. According to the program data the cured rate is above 75% (minimum SPHERE standard).

- The median Length Of stay (LOS) is 11 weeks. It is recommended that SAM children are cured within 8 weeks of admissions to the OTP program. Usually the children are discharged cured from the OTP when they attain a MUAC of 115 mm and 15% weight gain. When the children have attained a MUAC of 125mm and 15% weight gain when they are discharged cured from OTP, they are sent back to the community. If the children have attained a MUAC of less than 125mm and have 15% weight gain, they are enrolled into the SFP program until they attain MUAC of 125mm. RUTF and SFP pipeline break are noted as barriers that have mainly contributed to long LOS than any other cause. It can be said that there is a relatively LOS in the OTP in Dadu CMAM program. By not having SFP stocks in the OTP site, the children who were eligible for enrollment into SFP were retained in the OTP. Use of buffer stocks procured by the program after the pipeline break of RUTF supplies sustained ensured children remained in the program as long as the care was needed. The relatively long length of stay ensured compliance to CMAM protocol and most children were discharged cured according to CMAM protocol. The defaulted rate remained below 15% of the exits, death rate was below 10% of exits and the number of children that were discharged cured was above 75%.

In a nutshell the program can be described to have acceptable case finding that ensures majority of admissions are uncomplicated incident cases which leads to good outcomes (above 75% cure rate and death rates of below 10%) and also good retention from admission to cure ensuring there are minimum defaulting (below 15%). This is described in the SQUEAC survey concept diagram shown in figure 8.

32 SPHERE minimum standard indicators for a rural Therapeutic Feeding Program (TFP)
.VIII.2.1. Coverage of the program before combining prior and likelihood

\[
\text{period coverage} = \frac{\text{Number of current and recovering cases attending the program}} {\left( \text{Number of current and recovering cases attending the program} + \text{number of current cases not attending the program} \right)}
\]

The parameters are presented in the table below:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total current cases</td>
<td>57</td>
</tr>
<tr>
<td>Current cases attending the program</td>
<td>19</td>
</tr>
<tr>
<td>Current cases not attending the program</td>
<td>38</td>
</tr>
<tr>
<td>Recovering cases attending the program</td>
<td>19</td>
</tr>
</tbody>
</table>

Therefore;

\[
\text{period coverage} = \frac{(19 + 19)}{(19 + 19 + 38)}
\]

Period coverage = 0.500 which is 50.0%

.VIII.2.2. Period coverage on BayesSQUEAC calculator (prior plus likelihood)

The period coverage simulated on the BayesSQUEAC calculator is illustrated in figure below:

**Conjugate analysis**

The prior information that was shaped by the parameters Alpha prior (14.7) and Beta prior (14.0) was combined with the likelihood survey data using a conjugate analysis. The survey data was summarized using numerator (38) and the denominator (76). The conjugate analysis of the alpha and beta prior shape parameters for prior and numerator and denominator of the likelihood estimator yielded posterior probability density:

Thus:

**Figure 14: Illustration of conjugate analysis**

The posterior probability density:

\[
\text{Posterior} = \text{Beta} \left( \alpha_{\text{Prior}} + \text{Numerator}, \beta_{\text{Prior}} + \text{denominator-numerator} \right)
\]
Thus:

\[ \text{Posterior} = \text{Beta} \left(14.7 + 38, 14.0 + 76 - 38\right) = \text{beta} \left(52.7, 52.0\right) \]

This gives the \( \alpha \) \text{ posterior} and \( \theta \) \text{ posteriori} shape parameter for the posterior.

To calculate the \( \alpha \) \text{ posterior} and \( \theta \) \text{ posterior} shape parameters the mode of the posterior is determined as follows:

Mode of the posterior:

\[
\text{mode} = \frac{\alpha \text{ posterior} - 1}{\alpha \text{ posterior} + \beta \text{ posterior} - 2}
\]

Thus:

\[
\text{mode} = \frac{52.7 - 1}{52.7 + 52.0 - 2}
\]

Therefore: mode = 0.503

The program coverage is therefore 50.3%

At 95% credible interval (CI) the lower and upper values of the posterior mode are:

\[
95\% \, CI = \text{mode} \pm 1.96 \times \frac{\alpha \text{ posterior} \times \beta \text{ posterior}}{(\alpha \text{ posterior} + \beta \text{ posterior})^2 \times \alpha \text{ posterior} + \beta \text{ posterior} + 1}
\]

Since the:

\( \alpha \text{ posterior} + \beta \text{ posterior} - 2 \geq 30 \)

\( 52.7 + 52.0 - 2 = 102.7 \) (which is \( \geq 30 \))

Then the 95% credible interval can be calculated for the posterior mode estimate.

Thus using proportions of values of mode (0.503),

\[
95\% \, CI = 0.503 \pm 1.96 \times \frac{52.7 \times 52.0}{(52.7 + 52.0)^2 \times 52.7 + 52.0 + 1}
\]

\[
=0.503 \pm (1.96 \times 0.048632)
\]

The upper and lower ranges are 0.598 and 0.408. This is 59.8% and 40.8%

Thus:

Period coverage is 50.3% (40.8% - 59.8%)
Deductions from the BayesSQUEAC calculator estimate

- The posterior estimate is accurate. It is narrower than prior. The likelihood survey has reduced the uncertainty.
- Prior is accurate and moderately strong, but has a wide credibility interval and therefore high uncertainty.
- There considerable overlap between prior and likelihood. Therefore prior and likelihood do not conflict.

Therefore:

**Period coverage = 50.3% (41.0%-59.8%)**

.VIII.2.1. Discussions of the wide area survey

The tabulated figure of the children obtained in a wide area survey (attending the program, not attending the program) was used to analyze probability of patchy coverage.

**Table 6: SAM cases who are in or out of the program and proportion of non-covered who had knowledge of the program**

<table>
<thead>
<tr>
<th>UC name</th>
<th>SAM in program</th>
<th>SAM out of program</th>
<th>% age SAM in program</th>
<th>% age who know program</th>
</tr>
</thead>
</table>

---

33 BayesSQUEAC Version 3.01 available at www.
<table>
<thead>
<tr>
<th>Village</th>
<th>SAM Cases</th>
<th>OTP Sites</th>
<th>Percentage not Attending</th>
<th>Percentage Satellite Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sindhi Butra</td>
<td>1</td>
<td>9</td>
<td>10.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Bughia</td>
<td>0</td>
<td>1</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Pariya</td>
<td>1</td>
<td>0</td>
<td>100.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Kamal Khan</td>
<td>7</td>
<td>11</td>
<td>38.9%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Naogoth</td>
<td>0</td>
<td>5</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Magwani</td>
<td>5</td>
<td>4</td>
<td>55.6%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Bahwal pur</td>
<td>2</td>
<td>9</td>
<td>18.2%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Torre</td>
<td>3</td>
<td>1</td>
<td>75.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Mondar</td>
<td>0</td>
<td>0</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

In the table for instance in UC Sindhi Buttra, Kamal Khan and Torre simplified LQAS will show that about 10%, 38.9%, and 75% of children were attending the OTP program. Simplified LQAS analysis may be interpreted as probable coverage of <50% for Sindhi Buttra and Kamal Khan and >50% for Torre UCs respectively. Among the non-covered cases, 50%, 100% and 100% of the carers knew about the program respectively. Most carers in Kamal Khan knew about CMAM program however, conflict between communities inhibited attendance as confirmed in the small area survey and in the contextual information obtained in stage 2 and 1 of SQUEAC investigations. This could explain why some of cases attended the program as compared to those who did not. This analysis is also a pointer to patchy spatial coverage in Dadu and this collaborates hypothesis test showing good coverage in areas closer to OTP sites as compared to the those that are far (see the hypothesis in small area survey report). This is also illustrated in the figure 16 below.

**Figure 16: SAM cases not attending OTP program versus proportion of satellite sites per UC**
SQUEAC investigations were done in 9 UCs in Dadu district unveiling the following results.

Three major barriers unveiled include i) low recognition of RUTF as medicine resulting to sharing with siblings of the SAM child leading to low compliance ii) lack of communication between OTP program staff and existing Community Nutrition Volunteer (CNV iii) lack of integration of potential CNVs into the CMAM program resulting to lost opportunities in utilizing them.

Major boosters were i) community has value for the CMAM program, ii) direct referrals of “weak” children who visit BHU for immunization or treatment of other ailments by BHU staff to the OTP screening centre. iii) Passive case finding is evident in direct admissions of SAM children into OTP

The coverage of the program services is probably patchy. Areas that are considered far from the OTP site in terms of travelling time are likely to have low coverage than areas that are close to the OTP site. There are lost opportunities in coverage in areas that are close to the OTP site pushing coverage of the program down.

The program had continuity that motivated the community to value the program. Self and peer referrals are evident. Carers would also incur cost in transport to travel to the OTP site indicating faith in the program.

The program has encountered serious operational challenges that have contributed significantly to the barriers to the program access and uptake. Measures have been put in place to address them.

The overall program coverage is 50.3% (41%-59.8%). It is approximate to the minimum recommended coverage of 50% by SPHERE standards.

**.IX.1.1. Recommendations**

Repeat audit of SQUEAC investigation should be done in 6 to 8 months. The program recommendations are summarized as actions with deliverables in the table 7 below.
<table>
<thead>
<tr>
<th>Main area of activity</th>
<th>Processes</th>
<th>Process indicators</th>
<th>Outcome indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community sensitization and mobilization</td>
<td>Map current CNV in catchment population for spatial representation</td>
<td>• List of CNV per village/group of villages per OTP catchment area</td>
<td>• Active screen finding reflecting increased admissions and noted as such on the admission registers/cards.</td>
</tr>
<tr>
<td></td>
<td>Recruit additional CNV for villages without.</td>
<td>• New recruited CNV identified and documented for planning in training and field work</td>
<td>• Increased compliance to treatment and reduction in RUTF sharing. Reducing length of stays (LOS).</td>
</tr>
<tr>
<td></td>
<td>Prepare trainings schedule to the current CNV with clear training plan.</td>
<td>• Standard training manual prepared and made available to program staff for use to train on key areas relevant to CNV.</td>
<td>• Continuity in recruitment and training CNV in event of turnover as program matures(number of CNV per area).</td>
</tr>
<tr>
<td></td>
<td>Prepare a weekly/monthly plan for outreaches</td>
<td>• Clear schedule of activities for each month plus action points of activities needing follow-up.</td>
<td>• Reduction in defaulters through effective defaulter tracing</td>
</tr>
<tr>
<td>CMAM broadcast</td>
<td>Plan strategic sensitization days in community</td>
<td>• List of specific sensitization work days for sensitization and strategic venue.</td>
<td>Increased community awareness on malnutrition resulting to early recruitment in the program.</td>
</tr>
<tr>
<td></td>
<td>Prepare key messages on program modalities.</td>
<td>• List of printed clear catchy messages for use in broadcasting CMAM messages in appropriateness of the audience for instance in religious gatherings, market places.</td>
<td>Increase in compliance to protocol by community and program staff and therefore reduced LOS</td>
</tr>
<tr>
<td></td>
<td>Prepare key message on program case definition for malnutrition</td>
<td>• List of key messages used to sensitize community on SAM case definition and align it with the communities’</td>
<td>Decrease in lost opportunities in active case finding and enrollment therefore increased admissions and decreased LOS</td>
</tr>
<tr>
<td>Recruitment of case finders</td>
<td>Identify religious leaders and</td>
<td>• List of potential religious leaders with potential for</td>
<td>Increase in early recruitments and decrease in</td>
</tr>
</tbody>
</table>

**Table 7: Log-frame to guide program reform**
| Establish OTP satellite/mobile sites | Community leaders by catchment population  
- Recruit model mothers as early case finders.  
- Indoctrinate into the program willing private doctors for direct referral from their clinics | Indoctrination in the program  
- Schedule of meeting/appointments with religious leaders.  
- List of mothers willing to be model mothers.  
- List of private doctors willing to directly cooperate with the program in referral. | LOS.  
Increased knowledge about the program in the community.  
Increased peer and self referrals.  
Short LOS |
| --- | --- | --- | --- |
| **Establish OTP satellite/mobile sites** | **Map areas without satellite sites**  
- Come up with time plan for opening of additional OTP sites in these areas | **Every month with a list of the new mobile sites with planned closing days for current mobile sites**  
**Schedule showing timeline for opening the mobile/satellite sites** | **Reduced distance to site**  
**Rate of defaulting.**  
**Early case finding.**  
**Short length of stay** |
| **Strengthen case referral mechanism** | **Prepare Weekly/monthly schedule to CNV activities and action points.**  
- Train BHU workers on MUAC use | **Referral chits/cloak tickets available for each CNV with knowledge on their use.**  
- Maintain file for filled up chits for follow-up of DNAs and defaulters and sustaining active case finding.  
- Documentation of reasons for defaulting | **DNA identified, followed up and rate of defaulter comes down**  
**Early case recruitment resulting to short LOS**  
**Reduced rejection at OTP site and therefore good opinion about the program**  
**Number of non respondents in the program reduce** |
| **Establish strategy to communicate program modalities** | **Identify individual community definition/understanding of malnutrition and opinion of the program** | **List of tailored key messages for community sensitization on program definition of malnutrition and operational modalities** | **Increased community understanding of the program**  
**Improved opinion about the program** |
| **Strengthen operational relationship between program staff and BHU staff** | - Establish monthly joint activity between EPI/LHWs and the program staff.  
- Provide MUAC to the BHU regular staff and train on its use  
- Participate in at least 2 ministry events that can enhance program coverage e.g. immunization days.  
- Work out modalities of inclusion of remaining OTPs into BHUs | - List of BHU activities for the month.  
- MUAC available and used by most BHU staff  
- Documentation of 2 events participated in the results.  
- Remaining OTP accommodated into BHUs | - Increased admissions in joint events.  
- Short LOS  
- Early recruitment of SAM cases.  
- Increased direct referrals from BHU |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Re align RUTF stock supply timelines with Donor to prevent stock outs.</strong></td>
<td>- Work joint schedule for request and delivery of supplies with donor agencies</td>
<td>- Updated month/quarterly stock request sheets shared</td>
<td>- Number of stock outs in the OTP sites.</td>
</tr>
</tbody>
</table>
| **Work an operational plan for outreaches per UC** | - Field plan for outreaches made for each OTP site team. | - List of the outreaches schedule | - Number of times each village has been visited quarterly or half yearly.  
- Number of villages count as the time to travel from site increases.  
- Rate of default. |
| **Establish system to eliminate rejection at site due to double registration** | - Prepare calendar of event for use in inclusion of SAM children particularly on borderline of 6 months.  
- Follow-up of beneficiary/home visits | - Establish active CNV at community level.  
- Revitalize the existing CNV to be able to follow-up on beneficiary | - Increased compliance resulting to short LOS |
## X. APPENDICES

### X.1. Villages sampled for SQUEAC assessment – Dadu

<table>
<thead>
<tr>
<th>No.</th>
<th>UC district</th>
<th>Village Name</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sindhi Butra</td>
<td>Miro Kalhoro</td>
<td>4018</td>
</tr>
<tr>
<td>2</td>
<td>Sindhi Butra</td>
<td>Qaim Ali Shah</td>
<td>1960</td>
</tr>
<tr>
<td>3</td>
<td>Sindhi Butra</td>
<td>Esso Khan Solangi</td>
<td>4851</td>
</tr>
<tr>
<td>4</td>
<td>Sindhi Butra</td>
<td>Kaman Halo</td>
<td>539</td>
</tr>
<tr>
<td>5</td>
<td>Bughia</td>
<td>Khaliq Dino</td>
<td>2107</td>
</tr>
<tr>
<td>6</td>
<td>Bughia</td>
<td>Mohammad Saleh</td>
<td>1421</td>
</tr>
<tr>
<td>7</td>
<td>Pariya</td>
<td>Kara Bhan</td>
<td>3577</td>
</tr>
<tr>
<td>8</td>
<td>Pariya</td>
<td>Ahmed Khan Laangah</td>
<td>3038</td>
</tr>
<tr>
<td>9</td>
<td>Kamal Khan</td>
<td>Tayab Chano</td>
<td>154</td>
</tr>
<tr>
<td>10</td>
<td>Kamal Khan</td>
<td>Dato Chano</td>
<td>217</td>
</tr>
<tr>
<td>11</td>
<td>Kamal Khan</td>
<td>Utar Khoso</td>
<td>147</td>
</tr>
<tr>
<td>12</td>
<td>Nao Goth</td>
<td>Baghar Village</td>
<td>637</td>
</tr>
<tr>
<td>13</td>
<td>Mangwani</td>
<td>Panhwar Village</td>
<td>1365</td>
</tr>
<tr>
<td>14</td>
<td>Mangwani</td>
<td>Muhan Village</td>
<td>1477</td>
</tr>
<tr>
<td>15</td>
<td>Mangwani</td>
<td>Kanir Ji Miani</td>
<td>2569</td>
</tr>
<tr>
<td>16</td>
<td>Mangwani</td>
<td>Machhi Village</td>
<td>1239</td>
</tr>
<tr>
<td>17</td>
<td>Mangwani</td>
<td>Qaayoom Bhutto</td>
<td>567</td>
</tr>
<tr>
<td>18</td>
<td>Mangwani</td>
<td>Jan Mohd. Janwari</td>
<td>1365</td>
</tr>
<tr>
<td>19</td>
<td>Mangwani</td>
<td>Mohd. Hassan Lakhair</td>
<td>16331</td>
</tr>
<tr>
<td>20</td>
<td>Bahawal Pur</td>
<td>Peer Jo goth</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Torre</td>
<td>Buxial Bangwan</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Torre</td>
<td>Miro Pat</td>
<td></td>
</tr>
</tbody>
</table>
### X.2. SQUEAC OTP coverage survey tally sheet

<table>
<thead>
<tr>
<th>Child Name (Child &amp; Family name)</th>
<th>Village</th>
<th>Age month</th>
<th>MUAC (cm)</th>
<th>Oedema (Y/N)</th>
<th>In OTP Y/N</th>
<th>Who Referred the child</th>
<th>Distance of OTP V.far/Far/near</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tally:** No. children visited during this survey

No. children Sev. maln. ____ No. children in OTP ____

No. children Mod. maln. ____

**Note:** If oedema is reported indicate whether +, ++ or +++
Q:1 Do you know CMAM staff in your area, If yes are they integrating?

Q:2 What do you think about CMAM Program?

Q:3 Do you refer malnourished children to CMAM Site?

Q:4 Do you know about MUAC,(if yes try to understand the SAM Criteria as described by BHU staff)?
**X.4. Community Questionnaire**

UC: _______________________ date _____________ Team Members______________________

Village: __________________________ Distance from the CMAM Site: ______________

Q:1 Have you heard about the CMAM program?

Q:2 Has anyone come to talk to you about the programme?

Q:3 Have you seen MUAC tape? (show a strip of the MUAC tape)

Q: 4 Have you seen RUTF ? (show sachets of RUTF in use in the program e.g plumpy nut)

Q:5 Do people go to the CMAM programme?

Q:6 What do you think about the program ?(keep on probing)

Q:5 Do the ACF staff refer malnourished children to you for medical Assistance?
.X.5. Program staff questionnaire guide

CMAM Site: _________________________    Union Council: _________________________
Interviewer Name/ Team#: __________________
Taluka: ____________________________
Date: _____/_____/2013    District: ____________________________

Question# 1 How many beneficiaries do you see on daily basis (average flow of admission)?

   a)OTP

   b)SFP

Question#2 How do OTP beneficiaries (SAM- children) reach here?

Question# 3 what is community impression about OTP program (that is part of this CMAM program)?

Question# 4 What are the main challenges that you think are related to OTP program?

Question# 5 What are the main challenges that you think are related to SFP program?

Question# 6 What are the main challenges that you think are related to SFP program for mothers?

Question# 7 How do you deal with OTP defaulters?

Question# 8 What are major diseases children suffer from?

Question# 9 Do you get malnourished children referred from other sources?

Question#10 Do you routinely assess malnutrition?

Question#11 Is stock out of SFP and OTP supplies a problem at Health Facility? If yes then how does this affects program services?

Question#12 Are there certain persons in the community who do not access CMAM services?

Guidance Notes: Specifically ask about high class/Sayyed family/nomads/minority ethnic group or any other specific population group if not coming to CMAM site due to stigma or any other reason please explain?
Questionnaire for the caregiver

CMAM Site: _____________________  Union Council: _____________________
Interviewer Name: __________________  Taluka: _____________________
Date: ____/____/2013  District: _____________________

*********************************************************************

Description of Questions: BOLD fonts define questions while ITALIC fonts declare guidance notes.

Question#1 How did this child get to be in this program?
Guidance notes: (Take history, Explore local terms used for SAM children, find out its treatment seeking behavior, program case findings and referrals methods).

Question#2 Do you know of any children in your village that are like your child and are not attending this program?  Yes  No
Guidance Notes: (Then ask about index child specific history from above, common SAM aetiologies like e.g recovered well after illness specific signs e.g thin arms, swollen feet, kwashiorkor signs etc, Treatment seeking behavior/pathways to care).
if YES please follow Part-A  if NO please follow Part-B
Part-A why do you think child is not attending this program?  (How do you know this, any other reasons, any other children, record name and home location of the informant for follow up).

Part-B: if there were children like your child that are not attending this program why do you think they would attend the program? (Explore of any other reason that stops peoples coming to health facility?)

Question#3 if I wanted to find children like your child and the children we have spoken about, how would I best describe them to other people? (discover local terms used to describe SAM in community e.g Kangi in sindhi and soori in Pashtu, sookha pan in Urdu, any other names used to describe sever malnourished children’s, are these the same things as malnutrition).

Question# 4 if I wanted to find a children like your child and the children we have spoken about who would best be able to help me to find them? (Ask directly about midwives, traditional birth attendants, traditional healer’s, LHW, Community volunteer’s, the people mentioned in history when exploring treatment seeking behaviors and the peoples use by the programs for case findings/ referrals, Ask “why” and “why not” e.g confirm as an example “that you saying that I should ask PERSON LHW Miss. Robina etc to take me to see children with severe malnutrition called kang in this community” is that right).

Q#5 where do you come from, how do you reach here?
Guidance Notes: Is CMAM sites nearby/ Far/or very far from your home, walk by feet, time to travel to site, if there is an need for transport how much does it cost?

 
**Community Nutrition Volunteer Questionnaire**

UC: _______________________ Date _____________ Team Number:_____________________
Village: _______________________ Distance from the CMAM Site: ___________________
CNV Name:_________________________ Name of Interviewer:_____________________

Q: 1 How long are you working with ACF?

Q: 2 How Many Times have you been trained by ACF?

Q: 3 How do you identify Malnourished child & what do you call in your language?

Q: 4 Have you ever referred malnourished child to CMAM site?

Q: 5 What do you think about the program?

Q: 6 Is Plumpy nuts a treatment or like a food/Chocolate distribution for the community?
X.8. For the carers of children (Severe cases) who are NOT in the programme

UC _____________  Name of village _____________  Team No _____________
Date______________  Day____________________
Name of Child _____________________

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)