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TRENDS OF COMMUNITY-BASED MANAGEMENT OF ACUTE MALNUTRITION (CMAM) PERFORMANCE IN NEPAL

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ABSTRACT

Background: Nearly 1 million child deaths occur due to Severe Acute Malnutrition (SAM) annually in South Asia and Sub-Saharan Africa. Hence, CMAM Program in Nepal was started in 2009 to increase the access to treatment for acutely malnourished children 6-59 months of age by providing appropriate nutrition services in the communities residing in 11 districts. The current study aims to analyze the trends of CMAM Performance indicators (program admission, discharge categories, recovery and non-recovery) in 11 priority districts.

Methods: Secondary quantitative data were analyzed to see the prevalence of SAM across 11 districts. District-wise and year-wise comparison of discharge categories and the average monthly trends in admission were also studied.

Results: Out of a total 30,562 admissions in all 11 districts, the highest number of admissions was 6,451 in Kanchanpur district. Trend analysis showed that the highest number of admissions occurred during April after vitamin A campaign in March. All SPHERE Minimum Standards for CMAM program outcomes exceeded in all districts with overall recovery rate of 85.4%, death rate of 0.4% and default rate of 10%, with the exception of Dhanusha and Sarlahi districts.

Conclusions: Despite differences in accessibility to health facilities and duration of the programs by district, the overall CMAM performance indicators were achieved beyond the target level set in the national guidelines for all districts. The high quality of services rendered by the health workers in Outpatient Therapeutic Program (OTP) centers and Stabilization Centers (SCs) in health posts have reduced the number of SAM cases in all 11 districts.
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ACRONYMS:

ACF       Action Contre la Faim
CMAM      Community Management of Acute Malnutrition
DHS       Demographic and Health Survey
FCHV      Female Community Health Workers
GoN       Government of Nepal
HMIS      Health Monitoring Information System
HW        Health Worker
IMAM      Integrated Management of Acute Malnutrition
IYCF      Infant and Young Child Feeding
MAM       Moderate Acute Malnutrition
MoHP      Ministry of Health and Population
MSNP      Multi-sectoral Nutrition Plan of Action
MUAC      Middle Upper Arm Circumference
NEKSAP    Nepal Khadya Suraksha Anugaman Pranali
OTP       Outpatient Therapeutic Program
RUTF      Ready to Use Therapeutic Food
SAM       Severe Acute Malnutrition
SC        Stabilization Center
TOT       Training of Trainers
UN        United Nations
UNICEF    United Nations Children’s Fund
VDC       Village Development Committee
WASH      Water, Sanitation and Hygiene
WHO       World Health Organization
WFP       World Food Program
WFH       Weight for Height
EXECUTIVE SUMMARY:

The Ministry of Health and Population (MoHP) of the Government of Nepal (GoN), and the UNICEF piloted the Community-based Management of Acute Malnutrition (CMAM) program in five districts (Bardiya, Mugu, Achham, Jajarkot, Kanchanpur) of Nepal in 2009. The main objective of CMAM is to increase access to treatment for acute malnutrition in children 6-59 months of age by “strengthening and capacity support for facility-based support and ensuring linkages and referral between community and facility based services.”1 In 2012, The CMAM program was scaled up to Integrated Management of Severe Acute Malnutrition (IMAM) that also included infants under six months of age. Currently CMAM-IMAM program operates in 11 districts. They are Bardiya, Mugu, Achham, Jajarkot, Kanchanpur, Jumla, Kapilbastu, Sarlahi, Dhanusha, Okhaldhunga and Saptari.

The main aim of this paper is to:

- Analyze the trends of CMAM Performance Indicators in 11 priority districts.
- Focus on the management of SAM (Severe Acute Malnutrition) and OTP component of community based SAM treatment.
- Emphasize on CMAM performance indicators- program admission, discharge categories, recovery and non-recovery.

Data were obtained from secondary sources, databases from health facilities databases, field visits to CMAM districts, and interviews with stakeholders. Quantitative data were analyzed to determine target vs achievement in CMAM Performance indicators. Due to varying level of maturity in different districts, reference period for each district was different.

Analysis has shown comparison of SAM across 11 districts, average monthly trends in admission and district-wise and year-wise comparison of discharge categories. The findings from the monthly trends indicate that extra efforts are required during summer months as the prevalence of SAM cases is higher during these months. It also demands for integration of CMAM with other child health and development sectors like WASH and education because lack of hygiene and access to care were important causes of infections, diarrhea and impaired growth.

There were a total 30,562 admissions in all 11 districts. Out of 11 districts, the highest admission was in Kanchanpur district which at 6,451. Average monthly trend of admission showed that the highest number of admissions occurred during April after vitamin A campaign in March. The prevalence of SAM was correlated with increased number of OTPs. Even though there were 165 OTPs in total, due to lack of availability of RUTF and transport problems made RUTF supply was not sufficient for all the beneficiaries.

Unlike other priority districts, Mugu had the lowest number of OTPs due to remoteness and transportation accessibility. It needed additional attention by the MoHP and other nutrition stakeholders in order to establish more OTPs to prevent acute malnutrition by community mobilization activities for boosting up admissions and adequate incentives to Female Community Health Volunteers (FCHVs) and Health Workers (HWs) for community sensitization.
In general, more girl children compared to boy children were admitted but the exact reason was not known. There was no specific strategy to identify higher admission of girls than boys in policy documents, monitoring and evaluation report and assessments.

All SPHERE Minimum standards for IMAM program outcomes exceeded in all districts with recovery rate of 85.4%, death rate of 0.4% and default rate of 10% with the exception in Dhanusha and Sarlahi districts. These two districts had low recovery rate and high default rate. Low recovery rate may be due to burden of other infectious diseases and high default rate may be due to migration to India. Both of these districts were located in the border between Nepal and India. Caretakers of admitted children migrated to the neighboring country (India) in search of better job and settlement.

Lack of access to care and sanitation contributed to child malnutrition, so synergistic approach should be encouraged among various sectors to strengthen the key sector programs and treatment of SAM. It is therefore recommended to have a common understanding of the myriad causes of acute malnutrition between different nutrition stakeholders.

It is necessary to address the seasonal trends and events in priority districts, for instance, massive screening of SAM and MAM cases before the peak admission months and intense community mobilization before the agricultural (planting/ harvesting) and festival season. It is also essential to enhance the quality of services provided by the OTPs in health facilities. Training FCHVS and HWs was an important factor because they were the backbone in community services to increase the CMAM program admission in the districts. It is recommended that the MoHP should take a lead in collaboration with UNICEF and other stakeholders to increase the effectiveness of training and revising the guidelines as per the need.

For longer-term sustainability and cost efficiency, locally produced RUTF should be enhanced to scale up CMAM in priority districts with support from national health system through joint assessment and planning.
1. INTRODUCTION

Globally, Severe Acute Malnutrition (SAM) remains a major killer of children under five years of age. About 20 million children under five years of age suffer from SAM (majority of cases are in South-Asia and Sub-Saharan Africa) and nearly 1 million child deaths occur due to SAM annually. The cause of death among children with SAM can be either direct or indirect (children having common illnesses like diarrhea, pneumonia).

UNICEF is a leading organization that supports the scaled-up implementation of the Community-based Management of Acute Malnutrition (CMAM) approach to increase access to SAM treatment. The number of SAM cases receiving treatment has tremendously increased in the last decade due to decentralized outpatient models of care. Recently, community based treatment of SAM cases in outpatients have dramatically decreased case fatality rates and increased the number of children receiving care. Ready-to-use Therapeutic Food (RUTF) is provided for SAM children with no medical complications accompanied by counselling.

CMAM program increases access to services, promote early presentation and compliance, and increase coverage and recovery rates. Therefore, CMAM is a cost-effective nutrition intervention in the management of acute malnutrition.

CMAM is a priority agenda of the Government of Nepal. The MoHP and UNICEF piloted CMAM in 5 districts in 2009; it is now implemented in 11 districts. In 2012, the MoHP decided to scale up IMAM for infants less than six months of age by initiating six additional districts of Nepal in collaboration with ACF and UNICEF. By 2017, the government and UNICEF plan to scale up Integrated Management of Acute Malnutrition (IMAM) in 35 districts by strengthening community outreach and integrating other nutrition-specific and sensitive interventions.

1.1 BACKGROUND
Due to increasing trend of SAM prevalence in the country, CMAM was introduced and recommended for national scaling up by SUN initiative and health sector evidence review (See Annex 1). The national prevalence of SAM has increased in Nepal from 11% in 2001 to 13% in 2006, as seen from wasting statistics in Figure 1. By 2015, the prevalence decreased to 5%.

![Graph showing prevalence of wasting in Nepal](image1.png)

**Figure 1:** Prevalence of Wasting in Nepal as of 2011 (Source: Nepal Demographic and Health Survey 2011)

At the regional level, SAM prevalence was the highest in the Central Development Region (CDR) at 11.6% in 2011 (See Figure 2).

![Map showing prevalence of wasting in CDR](image2.png)

**Figure 2:** Map showing prevalence of wasting in CDR (Source: Nepal Demographic and Health Survey 2011)

Reducing the number of SAM cases was thus essential in the vulnerable areas. Despite the fact that Nepal is on the verge of achieving MDG by 2015, it is difficult to explain the reasons for high prevalence...
of SAM cases. It is noted that food insecurity, sanitation and hygiene are still significant problems in different geographical areas in the country.

Figure 3: 11 IMAM districts in orange: Bardiya, Mugu, Achham, Jajarkot, Kanchanpur, Jumla, Kapilbastu, Sarlahi, Dhanusha, Okhaldhunga and Saptari

IMAM services are delivered through 165 OTPs (SAM without medical complications) and 13 SCs (SAM with medical complications). At the district level, District Health Offices (DHOs) are the major players (see Annex 2); they supervise Female Community Health Volunteers (FCHVs) and other Health Workers (HWS), who promote health and dietary behavior and empower communities.

For assessment of nutritional status of children 6-59 months of age, FCHVs screen children through MUAC tape and provide nutrition education and counselling to the child caretakers through women groups and community mobilization.

(Source: UNICEF)

1.2 GOALS, PRINCIPLES AND COMPONENTS OF CMAM

1.2.1 GOALS
The primary objective of CMAM program was to evaluate the feasibility of CMAM program and to increase the access to treatment for acutely malnourished children in different districts and ecological zones in Nepal by providing appropriate nutrition services in the community.

1.2.2 PRINCIPLES

- Maximum access and coverage
- Timeliness
- Appropriate medical and nutrition care
- Care for as long as needed

1.2.3 COMPONENTS: (See Annex 3)

- Identification and referral of acutely malnourished children by FCHVs and HWs at the community level and health facility respectively; assessment by MUAC tape, and weight for height Z-score are used to screen children 6-59 months.
- Management of SAM children with medical complications in SCs/facility based care such as in hospitals.
- Management of SAM children without medical complications in OTPS in the community by providing RUTF, medicines and nutrition counselling to caretakers such as IYCF (breastfeeding counselling for children 0-6 months, complementary feeding counselling for children 6-24 months) and also counselling about hygiene and sanitation.
- Management of MAM children in the community by providing nutrition counselling to caretakers.

2. AIMS AND OBJECTIVES OF THE STUDY
This paper analyses the trends of CMAM performance indicators from eleven districts during the period 2009-2014: Bardiya, Mugu, Achham, Jajarkot, Kanchanpur, Jumla, Kapilbastu, Sarlahi, Dhanusha, Okhaldhunga and Saptari. Emphasis is placed upon OTP (Outpatient Therapeutic Program) and SC (Stabilizing Center) components of SAM treatment. The core component of CMAM performance indicators are: admission, recovery, defaulter and death. The aim is to compare and analyze the data by month, year and district, and make recommendations. Specific objectives of the paper include:

- To perform analytical assessment of the CMAM progress
- To identify key successes, good practices and gaps that need to be addressed
- To compare CMAM performance indicators with SPHERE minimum standards
- To evaluate yearly CMAM performance indicators like admission, recovery, non-recovery, default and death
- To generate evidence-based lessons and specific recommendations from this paper to expand the CMAM coverage in Nepal and for further analysis
- To study seasonal trends in OTP admission and identify the highest and lowest admission months

3. METHODOLOGIES

3.1 Data Collection Methods and Sources of Data

This study used both qualitative and quantitative data collection methods. The primary qualitative methods at national, district and VDC levels consisted of focus group discussions, consultative meetings, workshops, in-depth individual interviews with key informants and direct observations of the CMAM program. The quantitative data methods consisted of data reported by health facilities. Focus group discussion and interview guidelines were designed according to the TOR by UNICEF. Qualitative statistics were generated during field visits in the selected IMAM districts. Data were triangulated to ensure validity of conclusion by reviewing qualitative and quantitative data from the baseline survey reports, CMAM policy and program documents.

<table>
<thead>
<tr>
<th>Nature of data</th>
<th>Primary</th>
<th>Sources of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Health facility</td>
<td>Baseline survey</td>
</tr>
<tr>
<td></td>
<td>Routine monitoring data e.g. length of stay</td>
<td></td>
</tr>
<tr>
<td>Quantitative</td>
<td>Focus Group discussion</td>
<td>CMAM Policy and Program, UNICEF’s strategic Plan, development partner’s documents</td>
</tr>
<tr>
<td></td>
<td>Direct observation</td>
<td>Baseline survey reports and grey literature as relevant</td>
</tr>
<tr>
<td></td>
<td>In-depth individual interviews</td>
<td>District Development Committee (DDC) reports</td>
</tr>
<tr>
<td></td>
<td>Consultative meetings, workshops</td>
<td>Consultative meetings and workshops</td>
</tr>
<tr>
<td>Qualitative</td>
<td>Triangulation</td>
<td>Blend of surveys, consultative meetings/workshops, community surveys and emerging out others</td>
</tr>
<tr>
<td></td>
<td>Review of qualitative and quantitative data from the baseline survey reports, CMAM policy and program documents and previous reports</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Methods of data collection and sources of data

15
3.2 Data Management, Analysis and Quality Assurance

The data collection process was strengthened through discussion and finalization of questionnaires and checklists through extensive meetings among nutrition consultants nationally and globally, and feedback obtained from UNICEF. The discussion included tools and techniques for data collection, interview skills, qualitative data compilation and ethical concerns relating to interviewees. At the health facility level, health workers collected data on CMAM performance indicators, and at the district level, reporting of data was done by nutrition focal person as a part of CMAM recording system. In case of incongruous data, the follow-up of data from OTPs was done. This paper used data compiled by the health facilities from 11 districts and made available to UNICEF by the HMIS, MoHP data recording system.

Information on total admission, discharge, recovery, defaulter, death, non-recovered, discharge and total number of OTPs for 11 districts from 2009 to 2014 was included in the yearly dataset. Similarly, monthly dataset contained total discharge, recovery, default and death from January 2009 to December 2014.

The data was analyzed using Microsoft Excel 2013. Histogram was plotted to study the prevalence of SAM in the 11 districts. Number of OTPs, SCs and prevalence rate of SAM were visualized through a combination of charts. The average monthly trends of admission were created for each of the IMAM districts. A line graph was plotted to make comparisons among 11 districts in the monthly trends of admission (2009-2014).

Core CMAM Performance indicators (admission, recovery, defaulter, death and non-recovered) were used to study the yearly trends of discharge categories in all districts. Pie-charts were created to find the yearly trends in admission, recovery, defaulter, non-recovered and death. Then, the CMAM performance indicators were compared with SPHERE Minimum standards. Averages of all the performance indicators were created in pie-charts to make district-wise comparisons.

4. FINDINGS

4.1 Severe Acute Malnutrition (SAM) Prevalence
According to NDHS 2011, the prevalence rate of SAM among children under five in Nepal is 2.6. As shown in Figure 5: Prevalence rate of SAM among children 6-59 months in 11 IMAM districts, the prevalence of SAM in Mugu, Achham, Kanchanpur, Dhanusa, Kapilbastu, Sarlahi and Jumla districts is above the national average of 2.6%. The highest prevalence of SAM is seen in Kapilbastu district (5.1%).

Figure 6: Prevalence rate of SAM, total OTPs and SCs in the 11 districts (as of December, 2014)
Among 11 districts, Mugu has the lowest number of OTPs and only one SC. It was very difficult to establish more OTPs due to remoteness, inaccessibility and low population density.

4.2 CMAM PROGRAM INDICATORS

4.2.1 Program Admissions

General Trends:

Admission of a child was the initial phase for the treatment of SAM. 30,699 cases were admitted in 165 OTPs in 11 IMAM districts from 2009 to 2014. The highest admission took place during first few months after the start of the program due to FCHVs and HWs getting engaged in activities immediately after the training. There were no other programs that targeted SAM children, so IMAM program captured more SAM children at the beginning of the period, but as time passed, there was a reduction in the admission of SAM children in the second period. The number of admissions was higher initially in Bardiya and Achham than Mugu (Table 2).

<table>
<thead>
<tr>
<th>DISTRICT</th>
<th>2011 (Jan-Dec)</th>
<th>2012 (Jan-Dec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bardiya</td>
<td>827</td>
<td>806</td>
</tr>
<tr>
<td>Achham</td>
<td>749</td>
<td>495</td>
</tr>
<tr>
<td>Mugu</td>
<td>481</td>
<td>541</td>
</tr>
</tbody>
</table>

In all 11 districts, admissions were generally higher during March/April and July-August (summer and monsoon season). This is the period when diseases like diarrhea, malaria are most common. Children with other illnesses were taken to the health facility and if they were found to be malnourished, they were ultimately referred to OTP for management of SAM. As the number of sick children was more during summer months, the admissions were higher during this season as compared to other times in the year. This indicates that disease outbreaks were one of the factors responsible trends in admission of SAM children. The number of OTPs implemented in the particular district may be another determining factor, for example, Mugu had only 2 OTPs when the program was initiated in July/August 2009, then 4 OTPs were added in January/February 2010 and 1 OTPs were added in October/November in the same year.

Moreover, admissions were relatively high in July which is the lean season (hunger-gap season) in Nepal. At this time the food insecurity gets worse. This shows that there was an association between food insecurity and IMAM admissions. This was not the case in Bardiya where food insecurity was not common. Instead, other factors like lack of access to care, lack of good sanitation and hygiene contributed to increased number of admissions.

In general, the number of admissions was adversely affected by

- local and national festivals due to offices being closed during holidays
- local and nationwide strike (“bandhs”) which can occur at any time of the year
- Planting and harvesting seasons, when caretakers, FCHVs and HWs are involved in agricultural activities

**DISTRICT SPECIFIC MONTHLY TRENDS**

**BARDIYA**

![Average Monthly Admissions(2009-2014), Bardiya](image)

*Figure 7: Average monthly trend in admission in Bardiya (2009-2014)*

There were two peak admissions in Bardiya, one was in April and the other in June (Figure 7). The admission was high in June because of summer diseases like malaria, diarrhea and measles common during the same season. Admissions remained comparatively high in April because of the effect of Vitamin A campaign in March (vitamin A campaign occurs biannually in March and October in Nepal). Due to festival season in October, the admission decreased from October to November. Vitamin A campaign in October had no effect on IMAM admission because of major festival in Nepal (Dashain). In winter months (January and February), admission remained low.

![Monthly Trends in Admission, Bardiya for the years 2009-2014](image)

*Figure 8: Monthly trend of admission in Bardiya (2009-2012)*
Admission during January, February and March in 2009 was low because of the incomplete training of FCHVs and HWs (Figure 8). Initially, the training was completed in May and July, so the admissions were higher in June and August due to identification of SAM children and referral to OTPs by the recently trained FCHVs. Admissions were lower after the festival in October and during winter months (November, December, January and February).

MUGU

![Average Monthly Admission(2009-2014), Mugu](image)

Figure 9: Average Monthly trend of admission in Mugu (2009-2014)

Overall admission was high in the summer (April to July) when diseases are more prevalent (Figure 9). Mugu had same seasonal pattern as seen in Bardiya. Trend showed an upward pattern from March (due to Vitamin A campaign), peaked in May then sloped downward in June (due to harvest season). It slightly increased in July which was still considered to be hunger gap season then it tremendously decreased in in the following months (August and September) just before the festival season. There was a slight increase October due to Vitamin A campaign. As usual the admission was lower in the winter months. In winter lots of people migrate to Terai due to adverse climate (heavy snowfall). Therefore in Mugu during winter season very low OTP admissions were found.
After initiation of the program in 2009, admission during July was very high due to the effect of newly trained FCHVs and HWs (Figure 10). Admission decreased in the following months with the lowest admission in September then there was an upward trend after October which attributed to Vitamin A campaign in October.

2010 was different than other years; admission peaked in July (lean hunger-gap season) and October (Vitamin A campaign). The food insecurity situation was poor throughout the year when compared to other years. The diarrhea epidemic in 2009 explained the high admission in 2010 in Mugu.

ACHHAM

Admission was high during the summer months (March- June) when the summer diseases were common (Figure 11). There was a decreased trend from March to April in spite of Vitamin A campaign in March. Similarly, admission was the lowest before and during the festival season (September, October and November).
In 2010, admission during January was the lowest due to FCHVs and HWs training not being completed (Figure 12). The number of admissions increased from February after the training was completed, peaked in March, followed by a slight decline in April and then increased thereafter. Achham was highly food insecure in 2010, so the admissions were comparatively higher during that year than in 2011, 2012, 2013 and 2014.

JAJARKOT

There was an upward trend from March after Vitamin A campaign then decreased from May to June during harvest season (Figure 13). Admission peaked in July (hunger-gap season) and lowest in October (festival season). In August and September, the admissions were lower due to FCHVs involved in preparation for the festival.
In August 2010, the admission was low due to FCHVs and HWs training not being completed (Figure 14). There was a sharp increase in trend from August onwards because of recently trained FCHVs and HWs, then the admission decreased from September to October (festival season). Again, it increased from October to November due to mass Vitamin A campaign in October.

In 2014 the admission decreased from October onwards during winter season in spite of Vitamin A campaign in October.

KANCHANPUR

Admission is the highest during April due to Vitamin A campaign in March; then it started to decline in May/June due to harvest season (Figure 15). Again, it slightly increased in July (hunger gap season). During festival season in October, the admission was lower. The steep increase in admission during January to March occurred due to recently trained FCHVs and HWs.
At the initiation of the program during August 2010, the admission was low due to incomplete training of FCHVs and HWs (Figure 16). Admission peaked in September due to initiation of FCHVs mobilization in the district then the numbers declined from September onwards due to festival season.

In 2011, there was a steep increase in admission at the beginning of the year (January to March) due to recently trained FCHVs and HWs, but there was no increase in admission after March; that means the Vitamin A campaign had no effect in admission. Another crucial finding of 2011 was the lower admission during summer months.

**SAPTARI**
The trend was different in Saptari. The admission peaked in May in spite of harvest season. Admission declined after the harvest season and especially during the festivals in October. The admission then increased after October due to the effect of Vitamin A campaign.

![Monthly trends in admission, Saptari for the years 2013-2014](image)

*Figure 18: Monthly trend of admission in Saptari, 2013-2014*

At the beginning of the program in March 2013, the admission was low due to incomplete training of FCHVs and HWs, then the admission increased during summer months (May, June and July 2013).

In 2014, the admission peaked in May during summer months. The admission was low in October due to festival season and June due to harvest season.

JUMLA
At the beginning of the program, the admission was high due to identification of SAM children and referral to OTP by recently trained FCHVs and HWs. The admission was low before and during festival seasons and also during winter months.

At the beginning of the program in April 2013, the admission was high, then it declined slightly after April and again increased after June in spite of harvest season.
In 2014, the admission was very high in July due to recently trained FCHVs and HWs and community mobilization. It started to decline over August to November (just before and during festival season).

KAPILBASTU

Kapilbastu typically had high admissions during summer months and low admissions during winter months. Vitamin A campaign in October had no effect on admission; the admission didn’t increase after October. The admission was the lowest in November/December (during winter months).
At the beginning of the program in 2013, the admission was very low because of ongoing training of FCHVs and HWs, then the admission inclined upward.

In 2014, the admission peaked in August then it declined onwards due to festival season.

OKHALDHUNGA
The admission declined from August to October before and during festival season. After April, the admission inclined due to the effect of Vitamin A campaign in March.

![Monthly trends in admission, Okhaldhunga for the years 2013-2014](image)

Figure 24: Monthly trend in admission in Okhaldhunga, 2013-2014

In 2013, after the initiation of the program in February, there was a sharp increase in admission, then it declined in April and May. After the Vitamin A campaign, there was a steep increase in admission after May.

In 2014, the admission decreased in August, September and October before and during festival season.

### 4.2.2 IMAM ADMISSIONS FROM GENDER PERSPECTIVE (2009-2014)

<table>
<thead>
<tr>
<th>District</th>
<th>Female %</th>
<th>Male %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achham</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>Bardiya</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>Dhanusa</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td>Jajarkot</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>Jumla</td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td>Kanchanpur</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>Kapilbastu</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>Mugu</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>Okhaldhunga</td>
<td>61%</td>
<td>39%</td>
</tr>
<tr>
<td>Saptari</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>Sarlahi</td>
<td>60%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Table 3: Percentage of females admitted to OTP in 11 IMAM districts
The percentage of girls admitted to the OTP was higher than boys in all the districts except in Dhanusa. The overall percentage of girls was 57%. This indicates that poverty was a major factor in the prevalence of SAM and caretakers were not able to feed their girl children properly. Gender bias among boys and girls was common in impoverished areas is some of the districts.

4.2.3 PROGRAM DISCHARGE/EXIT

**General trends / Findings (2009-2014):**

<table>
<thead>
<tr>
<th>District</th>
<th>Recovery rate</th>
<th>Death rate</th>
<th>Defaulter rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achham</td>
<td>80.3%</td>
<td>0.8%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Bardiya</td>
<td>86.7%</td>
<td>0.2%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Dhanusa</td>
<td>52.6%</td>
<td>0.0%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Jajarkot</td>
<td>89.0%</td>
<td>0.7%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Jumla</td>
<td>91.3%</td>
<td>0.0%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Kanchanpur</td>
<td>85.5%</td>
<td>0.1%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Kapilbastu</td>
<td>91.6%</td>
<td>0.7%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Mugu</td>
<td>91.1%</td>
<td>0.8%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Okhaldhunga</td>
<td>85.4%</td>
<td>0.0%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Saptari</td>
<td>86.8%</td>
<td>0.1%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Sarlahi</td>
<td>70.4%</td>
<td>0.0%</td>
<td>28.4%</td>
</tr>
<tr>
<td>Programme outcome</td>
<td>85.5%</td>
<td>0.4%</td>
<td>9.8%</td>
</tr>
<tr>
<td>SPHERE Standard</td>
<td>75%</td>
<td>10%</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Table 4: Performance Indicators of OTPs by district*

The IMAM program has been successfully implemented in almost all districts (except Dhanusa and Sarlahi) to meet the SPHERE standards for management of SAM. Out of the total 29,551 discharged children (in year 2009-2014), 86% recovered, 0.4% died and 10% defaulted (Table 4).

Unlike other districts, Dhanusa (32.1%) and Sarlahi (28.4%) had high defaulter rate because the IMAM program had been implemented from 2013 and not from 2009. Due to late implementation of the program, FCHVs and HWs were inexperienced, communication between HWs and caretakers were poor and there was lack of awareness about the benefits of this program, all leading to high default rate in these districts. In addition, another major reason for high default rate in Terai districts was children and families migrating to India. Hence there was a gap between screening and admission to OTP without completing the program.

The death rates in Mugu (0.8%) and Jajarkot (0.7%) were high due to the greater prevalence of SAM cases and lack of follow-up and coordination between HWs and CMAM monitors resulting from late implementation of the CMAM program in these districts. This indicates that lack of follow-up and community mobilization was the weaknesses of the early phase of the program; it was difficult to convince the mothers and caretakers as per the national guidelines for follow-up visits until the baby was fully recovered. Also due to low number of OTPs operating during early phase of the program, it was hard to access the treatment services in the community.

The district-wise trends in discharge categories have been presented in pie charts below.
In Bardiya, the average recovery rate from 2009 to 2014 was 86% which is above the 75% SPHERE minimum standard. The default rate was 10% which is lower than the SPHERE standard <15%. The death rate was also significantly lower than the SPHERE minimum standard of 10%. This shows the implementation of CMAM program has been successful in the treatment of admitted SAM cases. In 2009, the recovery rate (70%) was slightly lower than the SPHERE minimum standard and the default rate (24%) was much higher than the SPHERE minimum standard. The default rate was high during the initiation of the program because the program recently started and many people were not aware of the program. Due to lack of follow-up by inexperienced FCHVs and social mobilization during early phase of 2009, the recovery rate was lower.

MUGU
On average, the recovery rate was 91% which was much higher than 75% minimum standard. The default rate and death rate were 5% and 1% which were lower than the standard 15% and 10% respectively. The IMAM Performance indicators were similar to those of Bardiya. Mugu also had the same issues as Bardiya in 2009 with high default rate and low recovery rate.

ACHHAM
In Achham, the average recovery rate from 2010 to 2014 was 80% which was above the SPHERE minimum standard of 75%. The average default rate and death rate were 8% and 1% which were lower than the SPHERE minimum standard of 15% and 10% respectively. The findings were similar to that of Bardiya and Mugu. In 2013 and 2014, the recovery rates were lower and the default rates were higher than the SPHERE minimum standard that probably indicates the decline in performance level. Thus, extra efforts were required to maintain the quality of service in this non-mature district.

JAJARKOT
On average, the recovery rate was 89% which was higher than 75% SPHERE minimum standard. Both default rate (8%) and death rate (1%) were lower than the SPHERE minimum standard of 15% and 10% respectively. At the beginning of the program in 2010, the default rate (20%) was higher than the SPHERE minimum standard. This was due to inexperience of FCHVs and FCHVs, who were also busy with the festival preparation.

KANCHANPUR
The four year average recovery rate was 86% which was higher than the 75% SPHERE minimum standard. The average death rate (0%) and default rate (11%) both were lower than the SPHERE minimum standard of 10% and 15%. In Kanchanpur, the default rate (16%) in 2011 was slightly higher than SPHERE minimum standard unlike in other years.

DHANUSA

In Dhanusa, the two year average recovery rate was 41% which was less than SPHERE minimum standard of 75%. The death rate was 0% which was below 10% of SPHERE minimum standard whereas the default rate was 25% which was more than 15%. In 2013 and 2014, the recovery rates were lower.
and the default rates were higher than the SPHERE minimum standard. This may be due to late implementation of the IMAM program in this district.

JUMLA

![Pie charts showing CMAM performance indicators for Jumla](image)

Figure 31: Key CMAM Performance Indicators, Jumla: (2013-2014), 2013, 2014

On average, the recovery rate was 75% which was exactly at the cut-off point of SPHERE minimum standard. The death rate (0%) and default rate (4%) were lower than the SPHERE minimum standard of 10% and 15% respectively.

KAPILBASTU

![Pie charts showing CMAM performance indicators for Kapilbastu](image)
In Kapilbastu, the two year average recovery rate was 71% which was less than SPHERE minimum standard of 75%. The death rate was 0% and default rate was 5%. Both death rate and default rate were lower than SPHERE minimum standard of 10% and 15%.

OKHALDHUNGA

Okaldhunga had average recovery rate of 73% which was less than SPHERE minimum standard of 75%. The death rate was 0% and the default rate was 9% which were both less than 10% and 15%.
The average recovery rate for 2 years was 71% which was less than 75% of SPHERE standard minimum. The death rate was almost 0% which was less than 10% of SPHERE standard minimum. Similarly, the default rate was 9% which was lower than 15% of SPHERE standard minimum. In 2014, the default rate (17%) was slightly higher than the SPHERE minimum standard due to lack of follow-up by FCHVs.

SARLAHI
In Sarlahi, the average recovery rate for 2 years was 49% which was significantly lower than 75% of SPHERE minimum standard. The death rate was almost 0% which was less than 10%. The average default rate was at the cut-off point of SPHERE minimum standard of 15%. Sarlahi had a very high default rate and low recovery rate in 2013 at the beginning of the program. This was due to lack of social mobilization and follow-up by FCHVs. Also, the general public was not very aware of this IMAM program in this district.

4.3 OVERALL IMAM PERFORMANCE IN 11 DISTRICTS

The overall CMAM performance indicators in the 11 districts from 2009 to 2014 suggest that the program was effective in treating a large number of admitted SAM cases. The overall CMAM recovery rate was 85% which was higher than the 75% SPHERE minimum standard. The overall default rate and death rates were 0.4% and 10% respectively which were both lower than the cut-off point of SPHERE minimum standard. From the above graph of CMAM Performance Indicators, it is clear that IMAM program was fruitful in the management of SAM children, as indicated by high recovery rate and low death rate and default rate.
5. RUTF SUPPLY, STORAGE AND ACCEPTABILITY ISSUES

According to WHO, the recommended amount of RUTF for child is 200 kcal/kg/day for phase 2 of the in-patient management of SAM. In Nepal, the RUTF is distributed by the MoHP and imported by UNICEF from India.

UNICEF procures and dispenses supplies to the Logistic Management Division (LMD) of the DoHS which transports the RUTF directly to the OTPs. UNICEF provides the transportation costs to the transport companies. The DHOs are responsible for delivering the RUTF to OTP sites using local transportation and each OTPs then record receipt and distribute the supplies. In hilly districts like Mugu and Jajarkot, there was difficulty in distributing RUTF on time due to irregularities in air and road services.

Sometimes DHOs faced a storage problem with the issue of crowding and rodents. Besides, RUTF cartons were dense and carried large weights, making storage and transportation difficult. It is necessary that MoHP aim for developing capacity for transport and storage of RUTF.

In general, the treatment with RUTF was effective for rapid weight gain for SAM children. There were some issues with digestion and palatability adaptation for the acceptance by children. One of the reasons for non-compliance with treatment was the distance to OTPs to collect RUTF. Regarding taste and side effects, the respondents mentioned that:

“The RUTF is very good, but sometimes there are complaints of diarrhea from mothers. They are advised to feed children with RUTF, along with breast feeding and good hygiene. Children like the RUTF. I came here once with a malnourished child, and he ate two sachets of Plumy-Nut during the appetite test. When they get used to it, they finally accept it”: FCHV, Achham.

“RUTF is good. Some children dislike it at the beginning because it is something new for them. After practicing feeding, they like it. It is acceptable and used to the maximum. It is useful for our children”: Caretaker, Bardiya.

Both boys and girls with SAM receive RUTF. But, in Mugu the distributed RUTF to SAM girls were misused because they shared the RUTF with non-SAM boys in the household. So the FCHVs and HWs were trained about counselling the mothers not to discriminate their girl child.
Overall, 600 cartons of RUTF out of 2400 cartons were dispensed to Kanchanpur district because there were more SAM cases admitted to OTPs in that district. In Dhanusa, the graph shows that no RUTF had been dispensed. It was probably because of unavailable data and Dhanusa was a new district in implementing the IMAM program (started in 2013).

6. LIMITATIONS

This study has few limitations. The study does not incorporate MAM cases due to less availability of reliable quantitative data related to MAM component. The data were compiled only from the HMIS and information on medication use and private clinics for malnutrition treatment was not included in this data analysis. District-wise comparisons were bounded by different levels of project management maturity in each district. However, comparisons were made in consideration to reference period for each district. The study was also restricted to OTP based management of SAM due to lack of data available from stabilization centers (in-patient treatment facility). It was beyond the scope of the study to determine all the basic factors affecting CMAM performance indicators for the seasonality trends. But, the major factors affecting CMAM Performance indicators have been analyzed. Due to the new IMAM program implemented in few districts, it was difficult to analyze the average monthly trends in those districts.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

“Districts were appropriately targeted among those in greatest need and based on a strategy to pilot the program in varying contexts: among different population densities and groups, and in the major types of geographical locations: terai, hill and mountain. As such, the design has provided numerous insights into challenges and advantages for expanding and scaling up the program country wide.” (See Annex 3)

The findings suggested that there were differences in terms of accessibility to health facilities and duration of the programs by districts. All these had effects on program outcomes. Despite these differences, the overall CMAM performance indicators were achieved beyond the target level as per
national guidelines. However, the limited number of OTPs and limited access to transportation from home to OTPs still need to be addressed in some of the districts like Mugu and Jumla. Due to remoteness and geographical structure, it causes delay in seeking health services, delay in reaching OTPs and delay in obtaining adequate and appropriate treatment. The poorer households in remote areas and disadvantaged groups need to have access to CMAM program services.

The high quality of services rendered by the community people in OTPs and SCs in health post has reduced the number of SAM cases in all 11 districts. Therefore, the CMAM program has gained sustainability because of integration of program services in the regular health services in the pre-existing health facilities.

The Scaling Up Nutrition framework emphasizes on scaling up of nutrition specific interventions through health sectors at the national level (See Annex 1). Furthermore, adopting integrated and multi-sectoral approach within the CMAM program will further strengthen the program. Additional support and counselling for Infant and Young Child Feeding (IYCF) (includes breast feeding and complementary feeding) practices and proper sanitation and hygiene in poorer community settings will further enhance the CMAM program.

The seasonal trend analysis of the program proved that most of the admissions occurred during summer months because of other diseases like malaria, diarrhea, measles etc. were prevalent in those districts. Also lack of access to sanitation and hygiene had a huge impact on child nutritional outcome. Mass Vitamin A campaigns resulted in high admission rate. Many SAM cases were identified and admitted in OTP during this campaign twice a year. The time of the season when FCHVs and HWs work also had an impact on admission rate. Analysis showed that during agricultural and festival seasons, the admissions were low due to busy schedule in the farms and social obligations. There were some factors that hindered the progress of SAM recovery and default. Migration was one of the reasons for non-recovery of SAM children. The combination of malnutrition and other chronic diseases like TB, Malaria, HIV were another reason for non-recovery. Poor acceptance of the taste of RUTF could be a reason for increased default rate but further investigations are required to fully understand the context.

### 7.2 RECOMMENDATION

- Scale up the IMAM program through capacity building linked with other health and development programs through the MoHP with technical support from UNICEF and implementing partners
- Strengthen the role of FCHVs and include training to improve counselling and community outreach through the provision of transport and incentives
- Increase the number of SCs and OTPs in health facilities offering SAM treatment in the existing IMAM districts
- Provide technical support and mobilize the resources to enhance IMAM program in the priority districts and also monitor funds to anticipate higher costs in the hills and the mountains by the MoHP in collaboration with UNICEF and other nutrition stakeholders
- Seek solutions by GoN and UNICEF to strengthen coordination among CMAM monitors and health workers across national borders to track migrant children who were admitted in OTPs in order to prevent defaulters, relapses and readmissions
• Develop operational guidelines by UNICEF on integration of CMAM/IMAM into national health system for monitoring and evaluation and planning process; the relevant ministries should take the lead
• Revise national guidelines by MoHP to ensure that the current gaps in practices (repeat screening and tracking the discharged children) are addressed
• Develop a strategy and mobilize resources for hard-to-reach children, migrant children and vulnerable groups in order to achieve optimum coverage for SAM Management
• Incorporate disaggregated data (gender, ethnicity, religion, class etc) in all CMAM surveys, assessments, planning, data collection and reporting so gender and equity-related issues can be analyzed
• Develop protocols and set program objectives and performance indicators for improving MAM management including counselling, home-based preparation of local supplementary food and child cash grants to disadvantaged population groups (eg. Dalits)
• Support local production of RUTF for sustainability and cost efficiency and also upgrade RUTF storage facilities to prevent damage from rodents and other damages

REFERENCES:
Annex 1

STEPS TOWARDS CMAM IN NEPAL

CMAM is recommended for national scale up by SUN initiative and health sector evidence review.

- Scale up in at least 35 districts with high prevalence of SAM: NSNP
- National scale up in additional 6 districts in 2012/13
- CMAM pilot evaluation in between 2011
- Implementation in 5 districts in between Mar 2009 to Sep 2010
- NToT training in Feb 2009
- National Pilot planning meeting in Jan 2009
- CMAM baseline survey in 5 districts in 2008
- Meeting on protocol & implementation framework in Mar 2008
- Approval of Emergency Nutrition Policy including CMAM piloting in Jan 2008
- National Feasibility study to manage acute malnutrition was conducted in Dec 2007
Annex 2
Source: Evaluation of Community Management of Acute Malnutrition (CMAM), Nepal Country Case Study
Annex 4

Definitions

**SAM (Severe acute malnutrition):** is defined by a very low weight for height (below -3z scores of the median WHO growth standards), by visible severe wasting, or by the presence of nutritional edema, or a mid-upper-arm circumference of less than 115 mm in children 6 months to 5 years old.

**MAM (Moderate acute malnutrition):** also known as wasting, is defined by a weight-for-height indicator between -3 and -2 z-scores (standard deviations) of the international standard or by a mid-upper arm circumference (MUAC) between 11 cm and 12.5 cm.

**MUAC Mid-Upper Arm Circumference (MUAC):** is the circumference of the left upper arm, measured at the mid-point between the tip of the shoulder and the tip of the elbow (olecranon process and the acromion). MUAC is used for the assessment of nutritional status of children under-five for SAM and MAM by FCHVs and HWs in Nepal.

**OTPs (Outpatient Therapeutic Programs):** Children with severe acute malnutrition (SAM) with appetite for Ready to Use Therapeutic Food (RUTF) and without complications are treated with ready to use therapeutic food (RUTF) and routine medications. Treatment is at home with regular visits to the health facility. The child comes to the health facility every week or two weeks for a medical checkup and to receive RUTF.

**SC (Stabilization Centers):** Children without appetite and with complications are treated in inpatient care until stabilized. Children may present at inpatient care without being transferred from OTP. Wherever possible these children are referred to OTP once they are stabilized. Where there is no OTP, children are treated in inpatient care using RUTF until they meet the discharge criteria.

**RUTF (Ready to Use Therapeutic Food):** Ready-to-Use Therapeutic Foods (RUTF) are high-energy, lipid-based spreads used in any cultural setting for the treatment of severe acute malnutrition (SAM). RUTF spreads are packaged in 92-gram sachets and subsequently in cases of 150 sachets. They have a shelf life of two years when stored at 80 degrees Fahrenheit and are designed to be used in any climactic setting. RUTF provides appropriate energy, protein, fat, vitamins and minerals to treat SAM in children six to fifty-nine months. The product delivers 520 to 550 kilocalories per 100 grams of product.

**FCHVs (Female Community Health Volunteers):** FCHVs were introduced in 1988, under the Public Health Division of the Ministry of Health (MOH), Government of Nepal. FCHVs have served as frontline local health resource persons who provide community-based health education and services in rural areas, with a special focus on maternal and child health and family planning. They are responsible for assessment of the nutrition status of children 6-59 months of age through MUAC tape.

**Community outreach:** The community is sensitized so that they are aware of malnutrition, how to identify and treat it. This stimulates understanding and participation. Malnourished children are identified using color coded mid-upper arm circumference (MUAC tapes) and simple techniques to identify nutritional edema. They are given a referral slip to the health facility. Some children will require follow up at home. Community health workers follow up with children who are absent, default or have other problems with their treatment and recovery.

**Recovery rate:** Number of children discharged/ Number of exits

**Defaulter rate:** Number of defaulters/ Number of exits

**Death rate:** Number of deaths in the program/ Number of exits

**Non-recovered rate:** Number of non-recovered children/ Number of exits