



Review of current Community Management of Acute malnutrition (CMAM) practice and outcomes in 12 countries using the Minimum Reporting Package

Donors



Partners



Contents

| | |
|---|----|
| Introduction | 3 |
| Methods | 6 |
| Results | 7 |
| Current CMAM practice, as reported by implementing agencies | 9 |
| Admission and discharge criteria | 9 |
| Nutrition rehabilitation products..... | 11 |
| Programme performance | 12 |
| Numbers of admissions and discharges | 12 |
| Programme characteristics and performance | 15 |
| Outcomes: | 19 |
| Assessment of reporting systems and implementation of MRP guidelines..... | 24 |
| Defaulters: Reporting of Confirmed and Unconfirmed defaulters..... | 24 |
| Use of TSFP-follow up (FU) in 6-59m TSFP:..... | 24 |
| Summary conclusions and <i>recommendations</i> | 27 |
| Appendix 1: Examples of admission and discharge statistics of a selected OTP programmes and recommendations. | 32 |
| Appendix 2: Examples of admission and discharge statistics of a selected TSFP programme and recommendations. | 34 |
| Appendix 3: Detailed tables..... | 35 |

Introduction

Community Management of Acute Malnutrition (CMAM) programmes are the main strategy for the treatment of moderate and severe acute malnutrition (MAM and SAM) in emergency and non-emergency settings. The monitoring of CMAM programmes is the key to maintaining and improving their quality: monthly reporting of key programme indicators is used to monitor implementation, identify underperforming programmes sites, and provide adapted recommendations. Reviews of performance across programmes are necessary to understand current practice, evaluate progress, and identify areas where practice and policy need to improve. This review follows a previous review published in 2006, which focused on Targeted Supplementary Feeding Programme (TSFP) practice (see box 1). It includes new data from programmes implemented between 2011 and 2013 and reports data from Stabilisation Centres (SC) and Outpatient Therapeutic Programmes (OTPs) in addition to TSFPs.

This report presents:

- a review of current field practices in CMAM implementation across a selection of 25 programmes implemented by 5 agencies in 13 countries.
- a first evaluation of the implementation of MRP guidelines and software implementation based on the data reported.

All programmes included in this report implemented the Minimum Reporting Package (MRP) and its data collection tools, including its dedicated reporting software (current version available at www.cmamreport.com).

The monthly monitoring reported here focuses on the performance of programmes and sites in terms of the quality of treatment provided by programmes and treatment sites. It does not include other key components of CMAM, such as community mobilisation or coverage. For more information on measuring and reporting those, see Coverage Monitoring Network (<http://www.coverage-monitoring.org/>).

BOX 1: The 2008 SFP-review and the development of the Minimum Reporting Package.

In 2005/06, Save the Children and Emergency Nutrition Network (ENN) conducted a review of 82 emergency programmes implemented between 2001 and 2005, with the objective of describing the efficacy and effectiveness of emergency targeted supplementary feeding programmes (TSFPs)¹.

One of the main findings of the review was that many programmes lacked the capacity to report their own performance, due to problems with the definition of indicators, lack of standardisation of the definition and calculation of indicators and lack of appropriate reporting tools, amongst other problems.

Programme performance was assessed at programme and population levels. Programme statistics showed that, despite 69% of children recovering overall, less than 40% of the programmes attained acceptable recovery rates when 'non-response' was added to the calculation of programme performance indicators (i.e. the indicators for 'non-response' were often not included in reports, but was available from raw data). The main factor undermining the programme performance was found to be defaulting, which also showed more variation than other exit statistics both between and within TSFPs. Defaulting is most often associated with seasonal and secular trends, quality of programme management, programme perception by beneficiaries and/or lack of adaptation of the TSFP design to local circumstances. At population level, the data collected in the study by agencies on coverage and prevalence of malnutrition did not demonstrate any measurable impact.

In terms of programme characteristics, while several programmes highlighted community participation as an objective, only a small number were able to actively involve the community in decision-making and programme design. The reports submitted to the study showed that many programmes were implemented without prior assessment of the situation and that there was often no explanation of the reasons why a TSFP was appropriate or an investigation done into the baseline situation of the population in terms of food availability and access, morbidity patterns, caring practices and livelihood strategies. As a consequence, the set-up and protocols often followed standard recommendations, with no adaptation to the particular characteristics of the crisis or the population being assisted.

The SFP-review recommended the standardisation of minimum reporting requirements which should include the development of guidelines, updating of Sphere Standards, acceptance from donors to adopt these minimum standards and the development of appropriate tools, including software, to facilitate reporting. It also called for studies to explore the main reasons for defaulting, assess the outcome of defaulters and the impact of different programme characteristics on defaulting and non-response rates.

Following those recommendations, the 'Minimum Reporting Package' (MRP) was developed. The MRP aims to support standardised reporting for CMAM programmes and hence improve programme management decisions, accountability and learning about SAM and MAM treatment. Through standardization, the MRP aims to facilitate reporting; streamline training, supervision and set up of reporting systems and generate data for comparison of programme performance across different context for use by humanitarian agencies, donors and governments. The MRP was renamed to 'CMAM Report'. Up to date software and guidelines can be found at www.cmamreport.com

1. Measuring the Effectiveness of Supplementary Feeding Programmes in Emergencies, Navarro-Colorado, C. Mason, F. and Shoham, J. Humanitarian Practice Network Paper 63, September 2008. ODI.

Objectives

This report presents a review of CMAM field practice using data collected between 2011 and 2013 by partners that used 'CMAM Report' (at the time known as Minimum Reporting Package or MRP) either as their main reporting system for nutrition programmes or as a pilot. These agencies followed MRP guidelines and entered programme data into the MRP software. This review has similar objectives to the study conducted in 2005/6:

1. To describe the characteristics of CMAM programmes as they are implemented in emergency and non-emergency settings.
2. To describe the performance of CMAM programmes in terms of the rehabilitation of malnourished individuals enrolled in the programmes (programme performance).
3. To review the contextual factors that might influence programme performance.
4. To assess the quality of the implementation of the MRP and provide recommendations for its improvement and scale-up.

The report starts with a description of current field practice (i.e. according to field protocols used) in pages 9-11, followed by the results obtained in terms of admissions, discharges, and programme outcomes (i.e. according to statistics reported) in pages 12-23. Some programmes are presented in more detail in Appendices 2, as examples of how a limited number of graphs can be used to explore programme performance in detail. The complete data is presented in Appendix 3 by programme. Finally, a review of the usefulness of 'CMAM Report' indicators is presented in pages 24-26. Conclusions and recommendations are presented in pages 27-31.

Methods

Data for this report were provided by five agencies implementing CMAM nutrition programmes (TSFP, OTP or SC). Each organization was requested to provide available data from monthly reports from individual centres and programmes for the period January 2011 through December 2013. All data were sent to a central repository where they were checked for missing values and other irregularities using the compliance report and data validation report features of the MRP software. When data quality issues or missing information were identified, the agencies were approached by the authors to correct them by checking the raw data and/or paper reports. Data validation was completed by automatically checking the balance of patients at the end of each month in each site with the difference between admissions and discharges reported for that month and site. Programmes where these did not match, and for whom the agencies could not provide an explanation or data corrections, were excluded from the analysis (a difference of five patients or less was considered acceptable). Programmes that reported weekly or quarterly data were also excluded. A total of 6 programmes were not included in the review.

Only programmes that reported at least two months of consistent activity were included in this review to ensure that sufficient follow up time was ensured. Programmes with shorter follow up usually did not allow enough time to observe the full range of outcomes (i.e. a complete treatment in TSFP or OTP typically lasts at least one month, sometimes two).

The programmes included in this review were self-selected (i.e. those programmes implemented by agencies that decided to incorporate the use of the MRP – now 'CMAM Report' - to monitor their nutrition programmes). Although we believe they are representative of current field practice, they do not constitute a representative sample in the statistical sense. This is taken into account in the analysis, by prioritising descriptive statistics and limiting inference.

The analysis focuses on children aged 6-59 months, since this is the group most usually targeted by nutrition programmes. Data on other age groups are presented in appendices but not analysed in detail.

For the purposes of this review, a "programme" was defined in the same way that it was defined in the field. As a consequence, some of the programmes described have dozens of sites, while others only have one or two; similarly, some programmes covered only part of one district, while other programmes covered a full region in a large country. To address this, some of the analysis is presented by site, instead of by programme, so that equal-to-equal comparisons can be made.

Results

We present data from 25 programmes in 13 countries (Table 1)¹. This includes 10 SC, 24 OTP, and 18 TSFP. Nine TSFP programmes separated TSFP follow-up (FU) patients (i.e. patients discharged from OTP into TSFP) from direct TSFP admissions from the community. Table 2 presents a summary of the data included in this review by type of programme.

Table 1: Programme types and number of months reported by programme, 2011 - 2013.

| Code | Country | Programme type | | | | Months |
|---------------|--------------|----------------|-----|------|----|--------|
| | | SC | OTP | TSFP | FU | |
| Afg-1 | Afghanistan | | x | | | 4 |
| BF-1 | Burkina Faso | x | x | x | x | 24 |
| CAR-1 | CAR | | x | | | 5 |
| Chad-1 | Chad | | x | x | x | 13 |
| Eth-1 | Ethiopia | x | x | x | | 5 |
| Eth-2 | Ethiopia | | x | | | 2 |
| Eth-3 | Ethiopia | | | x | | 14 |
| Ind-1 | India | | x | x | | 21 |
| Ken-1 | Kenya | x | x | x | | 10 |
| Ken-2 | Kenya | x | x | x | | 13 |
| Ken-3 | Kenya | | x | x | | 13 |
| Mya-1 | Myanmar | | x | | | 5 |
| Nig-1 | Nigeria | x | x | | | 41 |
| Nig-2 | Nigeria | x | x | | | 2 |
| Rwd-1 | Rwanda | x | x | | | 12 |
| Som-1 | Somalia | | x | x | x | 13 |
| Som-2 | Somalia | | x | x | x | 4 |
| Som-3 | Somalia | | x | x | x | 8 |
| Som-4 | Somalia | | x | x | x | 14 |
| Sud-1 | Sudan | x | x | x | | 17 |
| Sud-2 | Sudan | x | x | x | x | 12 |
| Yem-1 | Yemen | x | x | x | | 12 |
| Yem-2 | Yemen | | x | x | | 9 |
| Yem-3 | Yemen | | x | x | x | 22 |
| Yem-4 | Yemen | | x | x | x | 12 |

¹ Each programme will be defined by its Code (leftmost column in Table 1) in subsequent graphs and tables.

Table 2. Summary of numbers and types of programmes included in the review, 2011 - 2013.

| | | OTP | | | Total | |
|------|-----|-------|-------|----|-------|----|
| | | Yes | | No | | |
| | | SC | No SC | | | |
| TSFP | Yes | | | | | |
| | | FU | 2 | 7 | 0 | 9 |
| | | No FU | 5 | 3 | 1 | 9 |
| | | No | 3 | 4 | 0 | 7 |
| | | Total | 10 | 14 | 1 | 25 |

Box 2: CMAM programme components.

Stabilisation centres (SC)

Stabilisation centres are care facilities providing inpatient care for children with SAM and medical complications, often working 24/24 hours, until their medical conditions are stabilised and the complications are resolved (usually four to seven days). After this, treatment usually continues in outpatient care until nutritional recovery is achieved.

Outpatient Therapeutic Programmes (OTP)

Outpatient therapeutic programmes treat children with SAM without medical complications and those who have recovered from complications in SC. OTPs provide routine medical treatment and nutrition rehabilitation with ready to use therapeutic food (RUTF). Children attend outpatient care at regular intervals (usually weekly or bi-weekly) until weight recovery is achieved (usually two months) or a defined duration of treatment has been reached.

Targeted Supplementary feeding programmes (TSFP)

Targeted supplementary feeding programmes treat children with MAM and no medical complications from the community, through the provision of routine medical treatment and nutrition rehabilitation with supplementary foods such as ready to use supplementary foods (RUSF), RUTF or fortified flour blends (FFB). Children attend outpatient care at regular intervals (usually once a fortnight or month) until weight recovery is achieved or a defined duration of treatment has been reached.

Supplementary feeding Follow-up for OTP discharges (FU)

Targeted supplementary feeding programmes often admit children who have been discharged from OTP for follow-up. This group represents a separate programme component, even if it is often managed as part of the TSFP. The children receive the same food rations as the children that were admitted to the TSFP with MAM, for a pre-defined time, as a means of preventing relapse into acute malnutrition. Children in this group have reached discharge criteria by the time they start to receive SFP, and therefore, the evaluation of their nutritional status and evolution needs to be reported separately from TSFP children from the community. Sometimes this separation is not done (i.e. and the consequences of this are explored in this report).

Current CMAM practice, as reported by implementing agencies

Most programmes included in the analysis followed standard protocols for community-based management of acute malnutrition. Where a programme differed from the protocol, this will be highlighted.

Admission and discharge criteria

Table 3. Number of programmes using each criteria, by programme type, 2011 – 2013.

| | | SC n=10 | | OTP n=24 | | TSFP n=18 | |
|-----------------------|------------------|------------|---------|-------------|----------|--------------|-----------|
| | | Admiss. | Disch.* | Admiss. | Disch.** | Admiss. | Disch.*** |
| Medical complications | present | 10 | - | - | - | - | - |
| | absent | - | 10 | 24 | 24 | 18 | 18 |
| Oedema | severe | 10 | - | - | - | - | - |
| | moderate | - | - | 24 | - | - | - |
| | absent | - | 10 | - | 24 | 18 | 17 |
| Anthropometry | WHZ + MUAC | 9 | 5 | 17 | 17 | 18 | 16 |
| | WHZ | 0 | 0 | 1 | 1 | 0 | 0 |
| | MUAC | 1 | 1 | 6 | 4 | 0 | 1 |
| Child eats RUTF | At least 75% | - | 2 | - | - | - | - |
| Weight Gain | 15% | - | - | - | 3 | - | 1 |
| | Not specified | - | - | - | 3 | - | - |

* Four SC programmes did not report any anthropometric criteria for discharge. **Two OTP programmes did not report discharge criteria. *** The TSFP programme discharging on weight gain did not use other anthropometry for this purpose.

According to the protocols reported, all SCs used presence of clinical complications and presence of severe oedema to identify complicated-SAM requiring inpatient admission. Most programmes identified SAM through either Middle Upper Arm Circumference (MUAC) or Weight for height Z-scores (WHZ), with one exception that used only MUAC. Discharge from SC required absence of complications and recovery of oedema in all programmes. Two programmes required, in addition, that the child eats at least 75% of the prescribed RUTF dose at each meal. For children staying in the SC until complete recovery, six programmes reported using anthropometry for discharge (five using MUAC and WHZ, and one using MUAC only).

OTPs admitted children with no complications and moderate oedema or absence of oedema. Seventeen OTP programmes admitted children that met either MUAC or WHZ criteria for SAM. Six programmes used MUAC as the only anthropometric criterion for admission and one used only WHZ. All OTP programmes that reported discharge criteria identified the children that recovered when they did not meet the anthropometric criteria that had been used for admission (and using the same threshold), as well as absence of oedema and medical complications. In addition to this, three OTP programmes reported using

a criterion of 15% weight gain for discharge and three other programmes reported using 'sustained weight gain' as a discharge criterion, but did not require a specific threshold.

Two programmes in Ethiopia continued using percentage of the median of the 'NCHS reference' for admission and discharge from OTP. All other programmes used WHO Growth Standards for this purpose. The threshold used for admission was homogeneous across these OTPs (i.e. < -3 Standards), but the discharge threshold varied a lot (Table 4). This variation is probably related to the availability of TSFP programmes for the follow up of patients or presence of other support programmes. All SCs used the same thresholds for anthropometry to define SAM than the OTPs to which they were associated.

Table 4: Anthropometric thresholds used for admission and discharge from OTP (number of programmes), 2011–2013.

| Criteria | Reference (units) | Admission | | Discharge | |
|---------------------------|---------------------------------|-----------|------|--------------|----|
| | | Threshold | n | Threshold | n |
| WHZ | WHO Growth Standards (Z-scores) | < -3 | 16 | > -3 | 7 |
| | | | | > -2 | 3 |
| | | | | > -1.5 | 2 |
| | | | | > -1 | 1 |
| | | | | not reported | 3 |
| NCHS Reference (% median) | < 70 | 2 | > 80 | 1 | |
| | | | > 85 | 1 | |
| MUAC | (mm) | < 115 | 22 | >= 115 | 22 |
| | | < 110 | 1 | >= 110 | 1 |

All TSFPs admitted children with MAM as defined either by WHZ or MUAC, in children with no oedema nor medical complications (Table 3). The usual thresholds used for admission to TSFP were MUAC between 115 and 124 mm and WHZ between -2.0 to -2.9 WHZ (WHO Standards). Only Eth-1 admitted patients with MUAC between 100 and 119 mm, and Weight-for-Height of between 70% and 79% of the median of the NCHS reference. As in OTP, the thresholds used for discharge from TSFP were diverse: 14 programmes used a threshold of 125 mm of MUAC or -2.0 Z-scores of WHZ to define recovery, but one programme set the recovery threshold at -1.5 and another one at -1.0 Z-scores. In addition, one programme in Ethiopia discharged patients when they had achieved a weight gain above 15% of baseline and one programme in Somalia used the discharge criteria for MUAC and no-bilateral pitting oedema, but not WHZ.

FU is a programme component addressed to children who were discharged from OTP and referred to TSFP for follow-up treatment. There were no other specific criteria for admission to this programme, other than being referred from the OTP. Discharge typically followed a fixed duration of treatment, usually 3 months, and was independent of nutritional or anthropometric evolution of the child.

A detailed list of admission and discharge criteria by programme is presented in Appendix 3.

Nutrition rehabilitation products

All programmes reported an inpatient SC protocol based on the use of F75 and F100, following international standards. At least three SC programmes used RUTF instead of or in parallel with F100 for children reaching rehabilitation phase.

Twenty-three OTP programmes distributed RUTF (i.e., Plumpy'nut® or Eezzee Paste®) in amounts adjusted to patient's weight, or for a fixed amount per day (i.e. in Somalia programmes). In addition to that, one OTP reported using Fortified Flour Blends (FFB) (i.e. Corn-Soya Blend or CSB), sugar and oil and another one reported using FFB (i.e. Hyderabad mix) and oil as part of treatment and family support.

Eleven TSFP programmes distributed Ready to Use Supplementary Food (RUSF) (i.e. Supplementary Plumpy®). One programme reported distributing additional FFB (i.e. CSB+). The usual amount of RUSF distributed was 92 g/d, equivalent to one sachet. Eight programmes distributed FBF (i.e. CSB+ or Hyderabad mix) with added oil as the main supplementary food. The amounts of FFB and oil varied slightly by programme and were not always accurately reported in terms of ration quantities and time frames. Other food items were distributed in some programmes as part of protection ration or other incentives to programme participation. Children in TSFP FU programmes received the same products as other children treated in the same TSFP programme.

Appendix 3 presents a list of the products distributed by each programme.

Programme performance

Numbers of admissions and discharges

Table 5. Number of sites and number of admissions (IN) and exits (OUT) of children aged 6–59 months by programme type, 2011–2013.

| Programme | SC | | | OTP | | | TFSP | | | TFSP-FU | | |
|--------------|-----------|-------------|-------------|------------|---------------|---------------|------------|--------------|--------------|------------|-------------|-------------|
| | sites | IN | OUT | sites | IN | OUT | sites | IN | OUT | sites | IN | OUT |
| Afg-1 | - | - | - | 20 | 1613 | 863 | - | - | - | - | - | - |
| BF-1 | 2 | 228 | 196 | 85 | 5161 | 4542 | 37 | 7295 | 3866 | 33 | 1354 | 1436 |
| CAR-1 | - | - | - | 11 | 404 | 200 | - | - | - | - | - | - |
| Chad-1 | - | - | - | 13 | 1468 | 1317 | 13 | 2372 | 2166 | 11 | 180 | 67 |
| Eth-1 | 2 | 41 | 39 | 52 | 1661 | 1147 | 68 | 6620 | 5397 | - | - | - |
| Eth-2 | - | - | - | 24 | 160 | 15 | - | - | - | - | - | - |
| Eth-3 | - | - | - | - | - | - | 1 | 1349 | 1902 | - | - | - |
| Ind-1 | - | - | - | 5 | 466 | 496 | 5 | 1281 | 1259 | - | - | - |
| Ken-1 | 2 | 41 | 44 | 27 | 819 | 734 | 28 | 1557 | 1355 | - | - | - |
| Ken-2 | 1 | 20 | 20 | 21 | 196 | 222 | 21 | 561 | 871 | - | - | - |
| Ken-3 | - | - | - | 14 | 190 | 95 | 19 | 787 | 528 | - | - | - |
| Mya-1 | - | - | - | 4 | 213 | 159 | - | - | - | - | - | - |
| Nig-1 | 6 | 5605 | 5414 | 50 | 77935 | 70855 | - | - | - | - | - | - |
| Nig-2 | 4 | 31 | 32 | 20 | 2250 | 3180 | - | - | - | - | - | - |
| Rwd-1 | 5 | 122 | 113 | 59 | 1612 | 1413 | - | - | - | - | - | - |
| Som-1 | - | - | - | 6 | 1904 | 4379 | 6 | 1342 | 2501 | 6 | 198 | 165 |
| Som-2 | - | - | - | 26 | 2205 | 2222 | 19 | 3640 | 2528 | 19 | 446 | 81 |
| Som-3 | - | - | - | 14 | 2966 | 3477 | 12 | 4029 | 2468 | 12 | 1204 | 558 |
| Som-4 | - | - | - | 2 | 1205 | 1124 | 3 | 2446 | 2897 | 3 | 421 | 333 |
| Sud-1 | 1 | 251 | 252 | 7 | 1627 | 1657 | 6 | 124 | 384 | - | - | - |
| Sud-2 | 2 | 222 | 222 | 15 | 3535 | 3416 | 14 | 1017 | 2034 | 1 | 17 | 11 |
| Yem-1 | 1 | 25 | 28 | 24 | 3613 | 3271 | 24 | 22543 | 16885 | - | - | - |
| Yem-2 | - | - | - | 15 | 4740 | 2747 | 15 | 11868 | 8895 | - | - | - |
| Yem-3 | - | - | - | 31 | 2797 | 2879 | 29 | 2390 | 1722 | 29 | 559 | 232 |
| Yem-4 | - | - | - | 30 | 3951 | 3318 | 30 | 2846 | 1881 | 30 | 778 | 415 |
| Total | 26 | 6586 | 6360 | 575 | 122691 | 111432 | 350 | 74067 | 59539 | 144 | 5157 | 3298 |

Table 5 presents the number of admissions (IN) and exits (OUT) for children aged 6-59 months, and the number of sites reported for each programme included in the review. There is great diversity in the period of time reported by the programmes (Table 1), ranging from some reporting only two months to others reporting up to 41 months, as well as in the number of sites included in each programme, which ranges from 1 to 85. The total number of admissions reported by each programme over the whole reporting period varied widely (Figure 1).

Figure 1. Total number of admissions among children aged 6 – 59 months reported by programme type, 2011–2013.

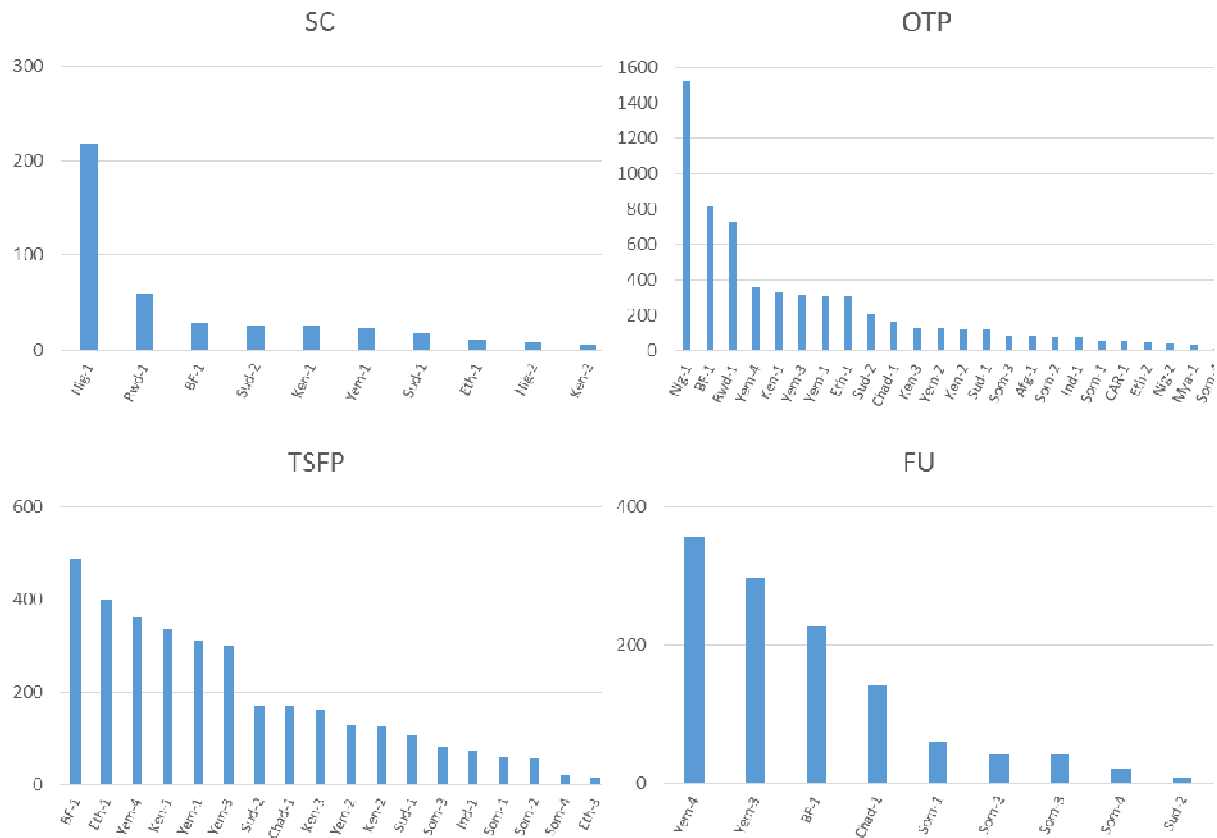
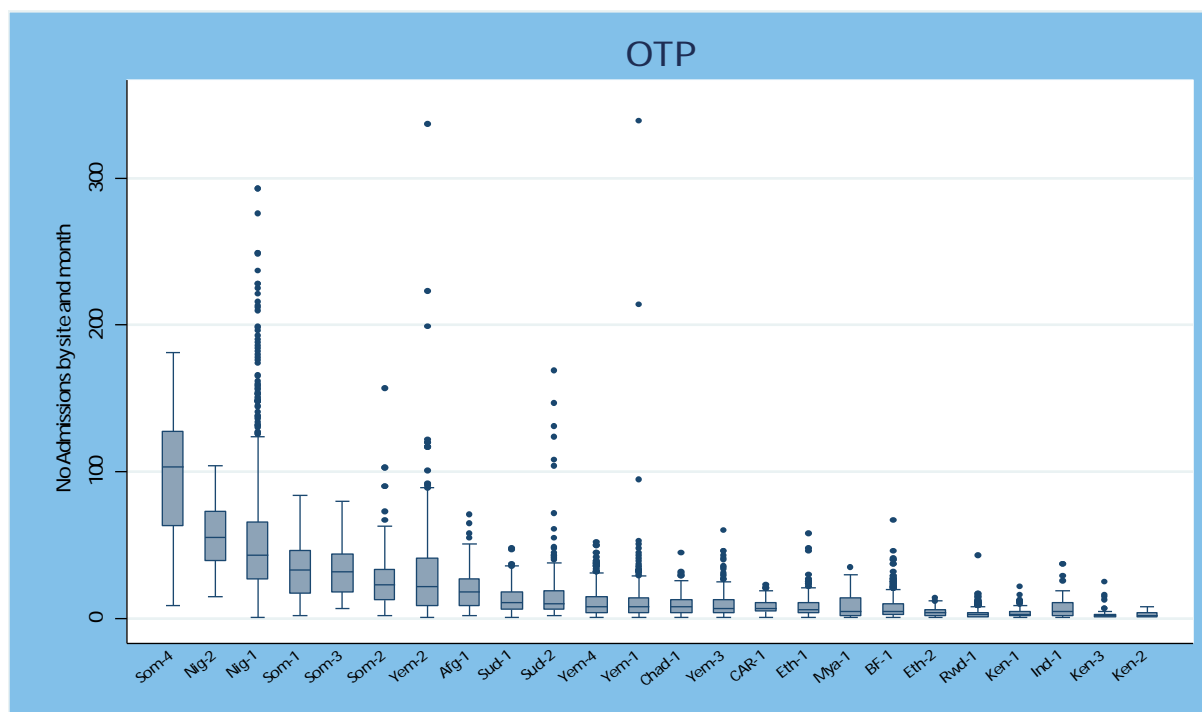


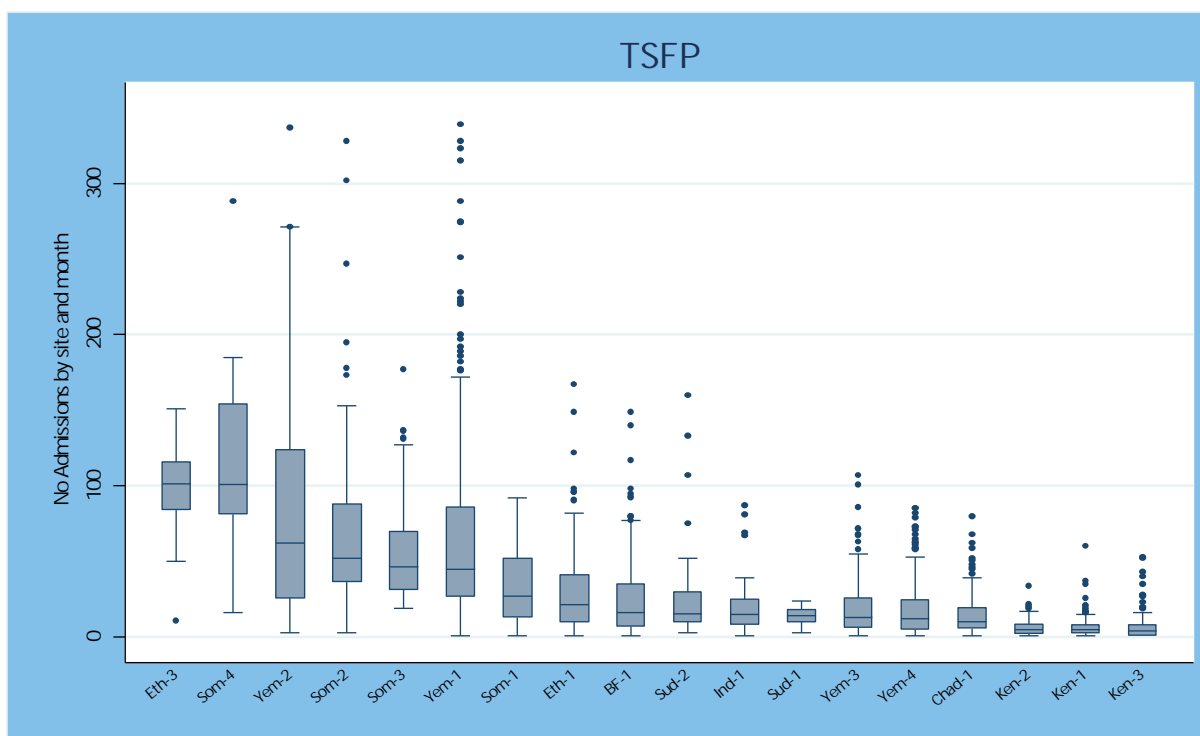
Table 6 presents the ranges of months and number of sites reported for each type of programme. It also presents the total number of admissions in each programme divided by the number of months reported, and by the number of sites in the programme, to obtain the average number of admissions per site and month. Even after this standardization process there were wide disparities in the size of programmes, as judged by large ranges in number of admissions per month and site (Table 6, Figure 2). There are disparities on the number of admissions per month and site between programmes, but also within programmes; the latter being related to fluctuations on the burden of malnutrition over time (e.g. seasonality), and presence of sites with different capacities in the same programme.

Table 6. Summary of months reported, number of sites and admissions per month and site in each programme, by programme type, 2011–2013.

| | SC n=10 | | OTP n=24 | | TSFP n=18 | | FU n=9 | |
|--|------------|--------|-------------|--------|--------------|--------|------------|--------|
| | range | median | range | median | range | median | range | median |
| Months reported | 2 - 41 | 12 | 2 - 41 | 12 | 4 - 24 | 13 | 4 - 24 | 13 |
| Number of sites | 1 - 6 | 2 | 2 - 85 | 20 | 1 - 68 | 17 | 1 - 33 | 12 |
| Programme average admissions per month and site | 1.5 - 22.8 | 4.0 | 0.3 - 79.5 | 8.6 | 1.2 - 96.4 | 13.1 | 0.9 - 12.5 | 2.2 |

Figure 2. Distribution of number of admissions per site and month by programme, OTP and TSFP, 2011-2013.





Programme characteristics and performance

Direct admissions: New admissions, readmission and relapse.

Box 3. Definition of relapse and readmission

Direct admissions are those in which the admission represents the first contact with the programme for treatment (i.e. it excludes transfers from other programmes). A **relapse** is defined as a beneficiary readmitted to the programme after having been successfully discharged as recovered within the last two months. A **readmission** is a beneficiary readmitted to the programme within two months of leaving it for a reason other than recovery (e.g. defaulting or non-response).

Most programmes differentiated new admissions from relapses and readmissions (Table 7). In SC, only two programmes reported readmissions and two reported admitting relapses. None admitted both. Fifteen OTP programmes reported all admission categories, with others reporting only new admissions (n=3), new admissions plus relapse (3), or new admissions plus readmissions (n=3). Twelve TSFP programmes reported all categories, with others reporting new admissions plus relapse (2) or new admissions plus readmissions (n=4).

Table 7. Number of programmes reporting new admissions, readmissions and relapse. 2011-2013.

| | SC | OTP | TSFP |
|-------------------------------|----|-----|------|
| Only New admissions | 6 | 3 | 0 |
| New admissions & Relapse | 2 | 3 | 2 |
| New admissions & Readmissions | 2 | 3 | 4 |
| All categories | 0 | 15 | 12 |

The median percentage of admissions that were classified as relapse was generally low, as was the percentage of admissions that were re-admissions (Table 8). The highest values registered were 10.0% of readmissions in one OTP programme and 9.9% in one TSFP.

Table 8. Summary of percentage of admissions that were classified as relapse or readmission in each programme, by programme type, 2011-2013.

| Programme percentage | SC | | | OTP | | | TSFP | | |
|----------------------|----|-----------|--------|-----|------------|--------|------|-----------|--------|
| | n | range | median | n | range | median | n | range | median |
| Relapse | 2 | 2.4 – 2.4 | 2.4 | 18 | 0.1 – 5.1 | 1.7 | 14 | 0.0 – 8.2 | 1.4 |
| Readmission | 2 | 0.4 – 5.3 | 2.8 | 18 | 0.2 – 10.0 | 0.9 | 16 | 0.0 – 9.9 | 1.4 |

These low levels of relapse or readmission were likely related to the difficulties of reliably and consistently identifying the children who should be classified as such, among children being admitted to a programme. This in turn may be related to the lack of reliable identifiers for individuals in most contexts where these programmes operated and poor identification systems in programmes (i.e. lack of a unique treatment number across programmes), as well as a lack of willingness from the caretaker to report that the child had already been admitted to a nutrition programme in the past.

Direct new admissions: oedema, MUAC and WHZ

Three SCs and seven OTPs did not report admissions of children with oedema. The median (range) of direct admissions with oedema (i.e. not including relapse, readmission or programme transfers) was 24.0% (5.6 – 63.4) for SC (n=7), and 1.4% (0.2 – 21) in OTP (n=17). Following protocols, TSFP programmes did not admit children with oedema. Table 9 presents the number and percentage of admissions based on presence of oedema for OTPs and SCs that reported it.

Some children met both MUAC and WHZ admission criteria to the programme. Despite advice to report these children as WHZ admissions in MRP user guidelines, it seemed that each programme was following a different policy, with some reporting them as MUAC entries and others reporting as WHZ admissions (i.e. there is no specific box for children admitted with both criteria in the current reporting forms). For this reason, the percentage of admissions that met each of these anthropometric criteria could not be estimated reliably. In the future, reporting systems should allow for a category of children meeting more than one admission criteria, so that the actual breakdown between MUAC and WHZ admissions can be calculated and used for programme management purposes.

Table 9. Number and percentage of oedema admissions in SC and OTP, by programme, 2011 – 2013.

| Prog | OTP | | | | SC | | | |
|--------|-------------|-------------|-------------|-------|-------------|-------------|-------------|-------|
| | Marasm n | Oedema n | Oedema % | Total | Marasm n | Oedema n | Oedema % | Total |
| Afg-1 | 1598 | 15 | 0.9% | 1613 | - | - | - | - |
| BF-1 | 4909 | 71 | 1.4% | 4980 | 165 | 63 | 27.6% | 228 |
| CAR-1 | 347 | 35 | 9.2% | 382 | - | - | - | - |
| Chad-1 | 1354 | 23 | 1.7% | 1377 | - | - | - | - |
| Eth-1 | 1647 | 3 | 0.2% | 1650 | 30 | 10 | 25.0% | 40 |
| Eth-2 | 155 | 4 | 2.5% | 159 | - | - | - | - |
| Ind-1 | 455 | 0 | 0.0% | 455 | - | - | - | - |
| Ken-1 | 714 | 3 | 0.4% | 717 | 40 | 0 | 0.0% | 40 |
| Ken-2 | 173 | 0 | 0.0% | 173 | 17 | 1 | 5.6% | 18 |
| Ken-3 | 178 | 0 | 0.0% | 178 | - | - | - | - |
| Mya-1 | 236 | 0 | 0.0% | 236 | - | - | - | - |
| Nig-1 | 71959 | 462 | 0.6% | 72421 | 1262 | 233 | 15.6% | 1495 |
| Nig-2 | 2223 | 0 | 0.0% | 2223 | 19 | 0 | 0.0% | 19 |
| Rwd-1 | 1155 | 308 | 21.1% | 1463 | 8 | 14 | 63.6% | 22 |
| Som-1 | 1823 | 3 | 0.2% | 1826 | - | - | - | - |
| Som-2 | 1919 | 31 | 1.6% | 1950 | - | - | - | - |
| Som-3 | 2699 | 38 | 1.4% | 2737 | - | - | - | - |
| Som-4 | 1160 | 16 | 1.4% | 1176 | - | - | - | - |
| Sud-1 | 1343 | 78 | 5.5% | 1421 | 183 | 58 | 24.1% | 241 |
| Sud-2 | 2986 | 96 | 3.1% | 3082 | 169 | 51 | 23.2% | 220 |
| Yem-1 | 3130 | 36 | 1.1% | 3166 | 25 | 0 | 0.0% | 25 |
| Yem-2 | 4303 | 17 | 0.4% | 4320 | - | - | - | - |
| Yem-3 | 2660 | 0 | 0.0% | 2660 | - | - | - | - |
| Yem-4 | 3653 | 0 | 0.0% | 3653 | - | - | - | - |

Other admission criteria

Only 1.2% of admissions to OTP were transfers of children who had completed treatment at the SC (median, range 0.1% – 10.2%, n = 21). On the other hand, 17.0% (median, range 0.9% – 77.0%, n = 6) of admissions to SC were reported as transfers from OTP (i.e. children who were found to have met criteria for SC at admission to OTP or after deterioration during treatment). The high number of transfers from OTP to SC in some centres was a consequence of the referral system in place: children with complicated-SAM were identified at the OTP, registered there, and then transferred to the SC the same day (i.e. before starting OTP treatment). While this was done for convenience of record keeping in OTPs, the unwanted consequence was that the child may be double counted (i.e. as admitted in OTP and in SC), and the monthly report from SC did not register the actual criteria for the admission of the patient (oedema, MUAC or WHZ) – only that he/she was a transfer from OTP. These ‘first-day’ referrals should be reported only on the programme that started treatment, or be reported separately as an independent category.

On average, 1.2% of admissions to TSFP (median, range 0.03% – 19.4%, n = 10) were “horizontal transfers”, transfers between TSFPs that were not related with the evolution of treatment, but for convenience of the patient (i.e. the new centre being closer from their residence). “Horizontal transfers” do not represent a discharge criteria, since the treatment is not discontinued, and are not included in the calculations of discharge rates. They are recorded in order to monitor the number of children in charge in the centres, for planning, logistical and management purposes.

Finally, a small number of admissions were classified as “other”. Children in this category usually did not fit any of the admission categories reported above². This included 7.3% of admissions to SC (median, range 4.9% – 9.7%) in the two SC programmes that reported them. In nine OTPs reporting this information, the median percentage of admissions reported as other was 0.5% (range 0.1% – 4.3%), and in four TSFPs, the median was 0.2% (range 0.1% – 0.7%).

² For example a non-malnourished twin or children admitted by mistake that are discovered only later and are re-recorded in “others” to make the statistics correct.

Outcomes:

Aggregated outcomes

In SC, 89.2% of all children reported were discharged successfully (Table 10), including 167 patients (2.7% of all exits) who remained at the inpatient facility until complete recovery and all those that were sent to OTP to complete recovery as outpatients. Defaulting from SC represented 4.7% of discharges, and deaths 5.2%. It should be assumed that many defaulters, non-respondents, and medical transfers may have had a final outcome of death, thereby making the actual death rate higher (i.e. between 5.2% and 10.7%).

Overall, 77.0% of all OTP discharges among children aged 6–59 months reported here were cured, while 9.4% were defaulters. Deaths represented 0.8% of discharges and medical transfers 0.1%. As in SC, some defaulters who were not followed up may have ultimately died. Aggregated outcomes in TSFPs included 30.7% defaulters, driving the recovery rate down to 68.1%.

Table 10. Aggregated outcomes of treatment by programme type.

| | SC | | OTP | | TSFP | |
|---------------------|--------------|------|----------------|------|---------------|------|
| | n | % | n | % | n | % |
| Recovered | 5,503 | 89.2 | 82,852 | 77.0 | 39,800 | 68.1 |
| Death | 319 | 5.2 | 893 | 0.8 | 19 | 0.0 |
| Defaulter | 291 | 4.7 | 10,116 | 9.4 | 17,975 | 30.7 |
| Non-response | 8 | 0.1 | 5,825 | 5.4 | 254 | 0.4 |
| Medical referral | 45 | 0.7 | 70 | 0.1 | 120 | 0.2 |
| Nutrition referral* | N/A | N/A | 7,833 | 7.3 | 295 | 0.5 |
| TOTAL | 6,166 | | 107,589 | | 58,463 | |

| Programme Type | Recovered (%) | Death (%) | Defaulter (%) | Non-response (%) | Medical referral (%) | Nutrition referral (%) |
|----------------|---------------|-----------|---------------|------------------|----------------------|------------------------|
| SC | 89.2 | 5.2 | 4.7 | 0.1 | 0.7 | N/A |
| OTP | 77.0 | 0.8 | 9.4 | 5.4 | 0.1 | 7.3 |
| TSFP | 68.1 | 0.0 | 30.7 | 0.4 | 0.2 | 0.5 |

* Nutrition referrals in OTP are to SC; nutrition referrals in TSFP are to OTP or SC.

Outcomes by programme

Outcomes were not homogeneous across programmes and countries. Table 11 and Figure 3 present the distribution of programme outcomes for each programme type. Detailed outcome statistics for the 25 programmes included in this report are available in Appendix 3.

All but one (n = 10, 90%) **SC programmes** achieved a recovery rate above 75%, a death rate below 10% and a defaulter rate below 15%, as recommended by Sphere Minimum Standards Key Indicators. The SC programme that did not meet the key indicators had only discharged 32 children and had a **death rate** of 12.5% (4 deaths). This programme had as well the highest **defaulting rate** (9.4%, 3 defaulters). The percentage outcomes for this SC programme are obviously affected by its small size.

Seven SC did not report **Non-response**; among the other 3, 'non response' was consistently below 1%. **Medical referral** was high in two SC programmes (11.1% and 5.9%, corresponding to 28 and 13 patients, respectively), but seven programmes did not report any outcomes as medical referrals. Two SC programmes reported 100% recovery.

Table 11. Distribution of programme outcomes, by programme type.

| Programme percentage | SC n=10 | | OTP n=24 | | TSFP n=18 | |
|---------------------------|------------|--------|-------------|--------|--------------|--------|
| | range | median | range | median | range | median |
| Recovered | 78.1 – 100 | 89.1 | 40.1 - 100 | 82.6 | 24.2 – 99.9 | 91.3 |
| Death | 0.0 – 12.5 | 5.9 | 0.0 – 2.1 | 0.4 | 0.0 – 0.2 | 0.0 |
| Defaulter | 0.0 – 9.4 | 1.9 | 0.0 – 58.5 | 9.2 | 0.0 – 75.7 | 8.5 |
| Non-response | 0.0 – 0.9 | 0.0 | 0.0 – 13.7 | 1.9 | 0.0 – 13.2 | 0.4 |
| Medical referral | 0.0 – 11.1 | 0.0 | 0.0 – 2.5 | 0.0 | 0.0 – 1.9 | 0.0 |
| Nutrition referral | NA | NA | 0.0 – 10.0 | 1.7 | 0.0 – 4.2 | 0.6 |

* Nutrition referrals in OTP are to SC; nutrition referrals in TSFP are to OTP or SC.

Sixteen (67.7%) of the 24 **OTP programmes** achieved a recovery rate above 75% and a defaulting rate below 15%, as recommended by Sphere Minimum Standards Key Indicators. All 24 programmes had a **death rate** below 10%; the highest death rate reported in OTP was 2.1%. The main driver of poor programme performance was defaulting. Seven of the 8 OTP programmes that did not achieve the minimum standards did so because of a high **defaulting rate**; the remaining one also reported a high non-response rate (defaulting rate 16.8%, non-response rate 13.7%). Five programmes had defaulting rates above 20%, and for one of them the defaulting rate was 58.3% (representing 1,907 children in that programme).

The only OTP programme that did not achieve a 75% recovery rate despite a low defaulting rate had a **nutrition referral rate** (OTP to SC or TSFP to OTP/SC) of 10.0%. This programme had the second highest non-response rate as well (7.3%). This large programme seemed to register children with complicated-SAM in the OTP, before referring them to SC the same day. These patients who were admitted and discharged in the same day were recorded as nutrition referral discharges, thereby mixing them in their reports with children who started treatment in OTP as non-complicated SAM and deteriorated during

treatment (i.e. the actual nutritional referrals). Had this practice not been followed, the actual recovery rate for this programme (assuming that all the nutrition referrals were complicated-SAM from admission) would have been 81.5%, instead of the 73.4% reported. Three other programmes that reported more than 5% of nutrition referrals may have been following the same policy.

In fact, this practice is currently recommended by multiple guidelines, since this allows the evaluation of OTP screening and referral of complicated cases to the SC. The example above suggests that these children should be recorded separately or at least not be considered as discharges when calculating programme statistics, so that the actual OTP performance can be estimated.

One programme in Ethiopia reported 100% recovery (i.e. under their protocol all patients are discharged and recorded as recovered regardless of evolution). However, this programme only reported 15 patients discharged and as a consequence, this unusual reporting has no influence on aggregate results presented in Table 10.

The interpretation of the OTP outcome statistics reported in this section needs to take into consideration that the discharge criteria were not homogeneous across programmes of the same type (see Table 3). However, the programme with the highest threshold for discharging recovered patients (-1 Z-score) only reported a 1% non-response rate, while the highest non-response rate (13.7%) was observed in a programme with the lowest discharge threshold (-3 Z-scores).

The 2011 Sphere Minimum Standards Key Indicators recommend that SC and OTP outcomes indicators are aggregated, in order to understand the whole picture of treatment of SAM. This was not possible with this data since it was not known if the SC and OTP had the same geographical coverage (i.e. it is not clear if the OTPs were referring to and receiving patients from the SCs reported).

Thirteen (72.2%) of the 18 **TSFP programmes** reported achieving a recovery rate above 75%, a death rate below 3% and a defaulting rate below 15%, as recommended by the 2011 Sphere Minimum Standards Key Indicators. Four of the five programmes that did not meet the minimum standards did so because of extremely high **defaulting rates** (75.5%, 54.6%, 20.5%, and 17.4%). The remaining TSFP that did not achieve high recovery rates had high **non-response rate** (13.2%) combined with somewhat high defaulting rate (10.7%). The rates of medical referral and death were very low in all TSFP programmes. Nutrition referral to OTP or SC was high in two programmes (4.2% and 3.6%).

The most frequent cause of failure to achieve good recovery rates in OTP and TSFP was **defaulting**. This indicator also showed more variation across programmes than any other (Table 11, Figure 3). Figure 4 presents a graphical exploration of the variability of defaulting rates across different **sites** in the same programme, for OTP and TSFP. The figure shows that the rates of defaulting varied widely sites in the same programmes, as revealed by the abundance of outliers (i.e. isolated dots), large distribution of adjacent values (i.e. solid line) and the large interquartile ranges (i.e. upper and lower limits of the boxes). This indicates that most defaulting in those programmes was concentrated in specific sites, rather than across the whole programme. The two Yemen programmes are an exception, since all sites seemed to present high defaulting rates.

Figure 3: Distribution of percentage of discharges in each programme, by programme type.

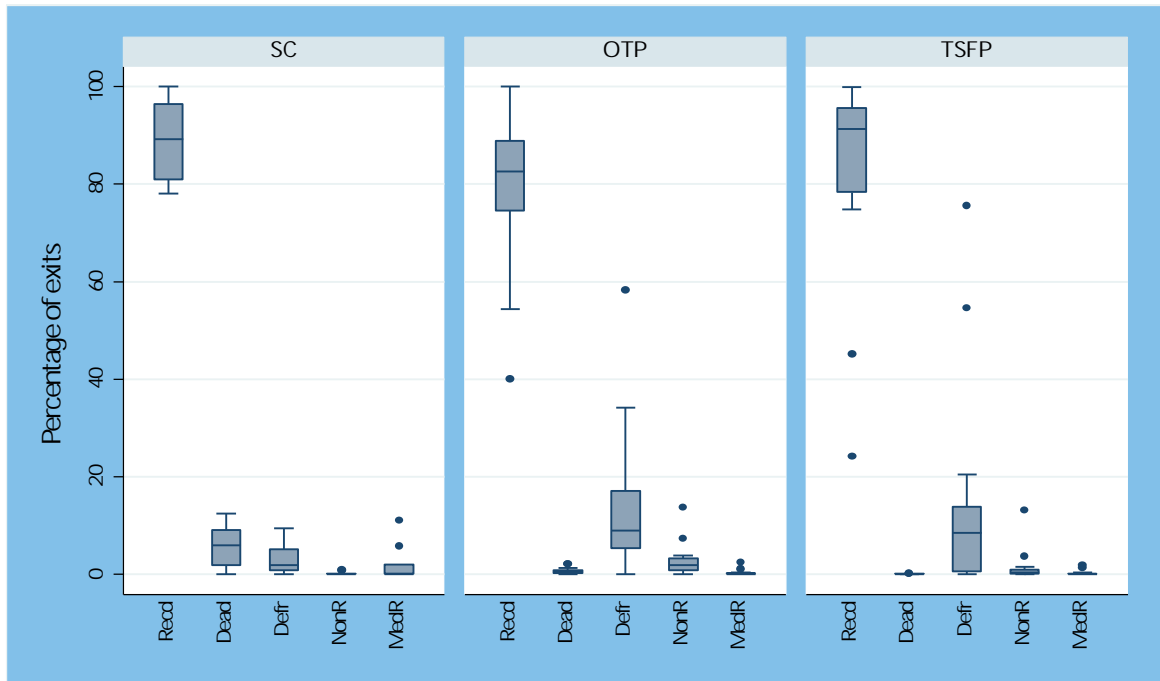
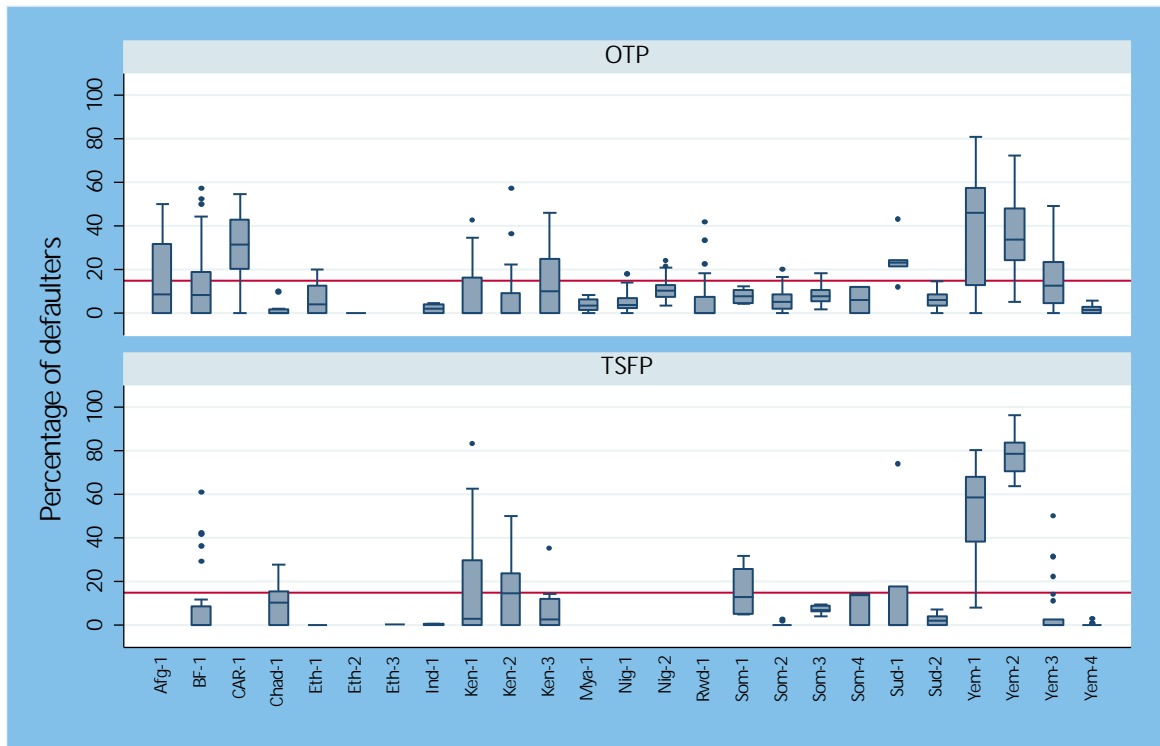
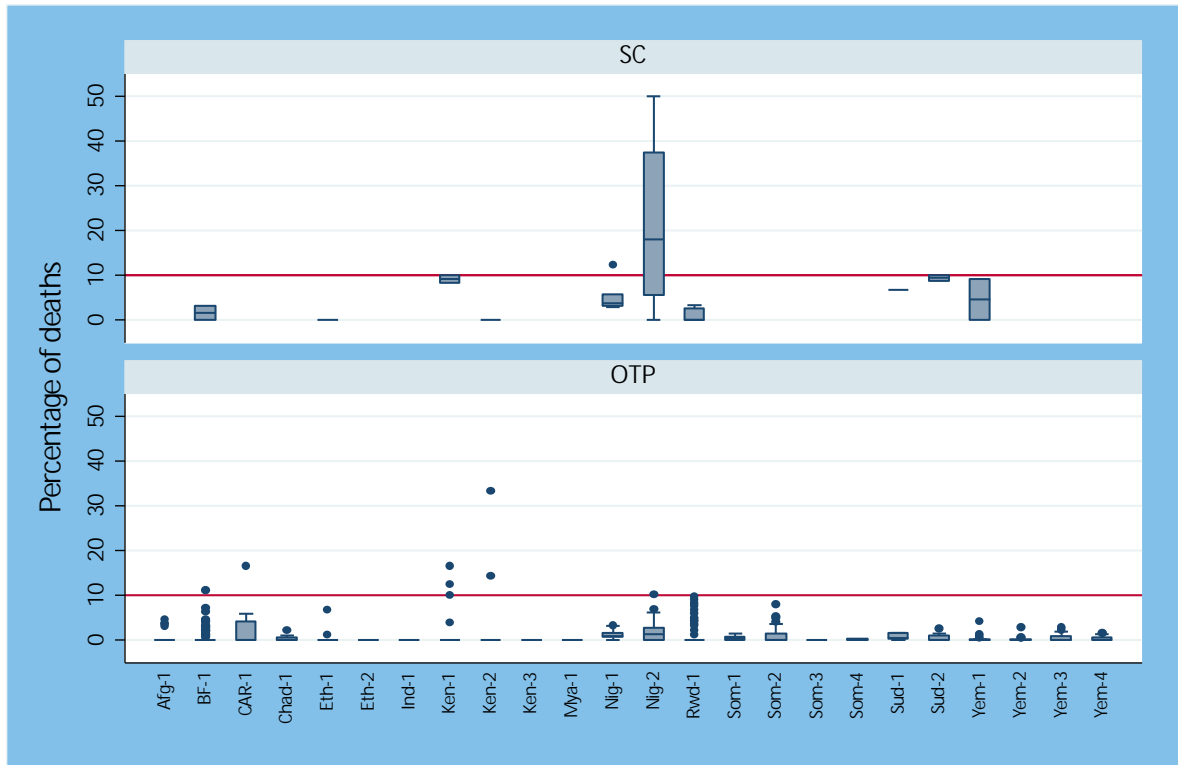


Figure 4: Distribution of percentage of defaulters by site and programme in OTP and TSFP.



Similar graphic analysis of mortality for SC and OTP programmes (Figure 5) shows that most mortality in **SC** happened in a single programme in Nigeria. That programme also presented a large variation in mortality rates across SC units. Other SC programmes had little or no variation in mortality due to the low number of sites reported per programme. In **OTP**, there was a clear difference between some programmes where mortality was consistently low across sites, and others where mortality was exceedingly high for some OTP sites, while not for others.

Figure 5: Distribution of percentage of deaths by site and programme in SC and OTP.



Assessment of reporting systems and implementation of MRP guidelines

Defaulters: Reporting of Confirmed and Unconfirmed defaulters

Box 4. Definition of Defaulter unconfirmed and confirmed.

Defaulter unconfirmed: Beneficiary who is absent for two consecutive weightings, and whose final outcome is not known (since no defaulter tracing was done).

Defaulter confirmed: Beneficiary who is absent for two consecutive weightings, and for whom a home visit has confirmed that the beneficiary is alive and is a “true” defaulter.

Programmes that do not implement home visits for defaulter tracing should report all defaulters as “defaulter unconfirmed”. If during the home visit the beneficiary is found to be dead, transferred for care or to be a “true defaulter”, the outcome needs to be reported in the report.

Extracted from Standardized Indicators and Categories for better CMAM reporting, downloadable at www.cmamreport.com

Nine (37.5%) of the 24 **OTP** programmes only reported one category of defaulting. Six of them reported only unconfirmed defaulters, as recommended (Box 4) when no home-visiting is implemented, and the other three reported exclusively confirmed defaulters. The latter were probably reporting in the wrong column of the report, since it was very unlikely that all defaulters were confirmed by a home visit. One (4.2%) of the 24 OTP programmes did not report any defaulting (Eth-2). Only one (4.2%) OTP **programmes** had all its sites reporting both categories of defaulting. Overall, only 82 (14.3%) of the 575 OTP **sites** included in the analysis reported both types of defaulting consistently.

All other 13 programmes (54.2%) had some sites reporting confirmed defaulters only, some sites reporting only unconfirmed defaulters, and some sites reporting both, probably reflecting an inconsistent policy on how to fill the forms for defaulting, rather than the actual status of defaulters and home visiting programme in the field.

In **TSFP**, two (11.1%) of the 18 **programmes** reported consistently the two categories of defaulting across all their sites. Overall, only 38 (10.6%) of the 350 TSFP **sites** included in the analysis reported both kind of defaulters consistently. Six (33.3%) TSFP programmes reported only one category of defaulting (i.e. five reported only unconfirmed, one reported only confirmed defaulters). One (5.6%) programme did not report any defaulting, following Ethiopian protocols. The remaining nine (50.0%) TSFP programmes had some sites reporting exclusively unconfirmed defaulters, other sites reporting only confirmed ones, some reporting both categories, or reporting no defaulters at all.

Use of TSFP-follow up (FU) in 6-59m TSFP:

Nine of the 18 TSFP programmes reported FU patients (i.e. patients that have recovered in OTP and are sent to TSFP for treatment follow up) (Table 12). In two of those programmes, the reporting periods for TSFP and FU were not coincidental, and their data will not be used for this analysis.

Overall, children discharged from TSFP after being admitted for FU represent 10.8% (median 10.4%, range 3.1% – 19.1%) of all TSFP children discharged from the programme. Of them, 92.7% (median 95.8%, range 82.9% – 100%) had completed the follow-up as per protocol (Table 12). The remaining children admitted as FU had either defaulted (104, or 5.6%), been referred for medical treatment (10, or 0.5%) or had an unspecified outcome (21, or 1.1%).

Table 12: TSFP and FU discharges, and FU discharges that completed follow-up.

| | Total discharges | | FU discharges | | Complete follow up | |
|---------------|------------------|-------------|---------------|-------------|--------------------|--|
| | N | n | % | n | % | |
| Chad-1 | 2193 | 67 | 3.1 | 67 | 100.0 | |
| Som-1 | 2608 | 165 | 6.3 | 158 | 95.8 | |
| Som-2 | 2583 | 81 | 3.1 | 79 | 97.5 | |
| Som-3 | 3026 | 558 | 18.4 | 514 | 92.1 | |
| Som-4 | 3215 | 333 | 10.4 | 276 | 82.9 | |
| Yem-3 | 1213 | 232 | 19.1 | 222 | 95.7 | |
| Yem-4 | 2284 | 415 | 18.2 | 400 | 96.4 | |
| TOTAL | 17122 | 1851 | 10.8 | 1716 | 92.7 | |

Seven TSFPs reported together the outcomes of children admitted directly to TSFP and children being referred after recovering in OTP (FU). Given that FU children are already anthropometrically recovered at the time of admission to the TSFP, including them in discharge statistics likely inflates the recovery rate in those programmes. We estimated the amount of change in recovery rates introduced by not disaggregating FU children from the calculation.

The number of FU discharges was estimated by subtracting 10.4% (i.e. the median number of discharges that were FU in programmes that reported them separately) from the reported TSFP discharges. Of them, 95.8% (i.e. median that completes FU) were assumed to have completed treatment and be reported as recovered. These figures were used to estimate the number of discharges that are real TSFP and the number of them that would be recovered. The new recovery rate is then compared to the reported TSFP recovery rate (Table 13).

As a result of this recalculation the recovery rate for each programme was reduced. The median reduction was 2.2%, but it extended from 0.1% to 8.3%. Not surprisingly, the programmes with lower recovery rates benefited the most from mixing FU patients on the discharge statistics of TSFP. The aggregated reduction in the data presented is 6%, but this is overly influenced by the two programmes in Yemen, that had very large numbers of patients and very low recovery rates.

Table 13: Estimation of actual number of TSFP discharges and TSFP cure rate, after adjusting for FU discharges.

| Programme | TSFP | FU | TSFP recovery rate % | | |
|--------------|---------------------|-----------------------|----------------------|-------------|-------------|
| | discharges reported | discharges estimated* | reported | estimated† | difference |
| Ind-1 | 1254 | 130 | 95.4 | 95.3 | -0.1 |
| Ken-1 | 1353 | 141 | 78.3 | 76.3 | -2.0 |
| Ken-2 | 829 | 86 | 77.6 | 75.4 | -2.2 |
| Ken-3 | 523 | 54 | 74.8 | 72.3 | -2.5 |
| Sud-1 | 271 | 28 | 90.8 | 90.2 | -0.6 |
| Yem-1 | 16881 | 1756 | 45.2 | 39.3 | -5.9 |
| Yem-2 | 8895 | 925 | 24.2 | 15.9 | -8.3 |
| Total | 30006 | 3121 | 44.4 | 38.4 | -6.0 |

* estimated as 10.4% of reported TSFP discharges. †estimated after subtracting 95.8% of estimated FU discharges from the reported recovered at TSFP

Summary conclusions and *recommendations*

This review follows 6 years after the publication of a previous review that focused on SFPs³. In the time since that report and in addition to the MRP initiative, there have been a number of positive steps towards improving the management of acute malnutrition, including:

- Guidance on CMAM programmes has been improved⁴
- CMAM has been scaled up in more than 60 countries, linked to the gradually emerging view that acute malnutrition is not just a problem of humanitarian crisis but an endemic problem
- The raise of the SUN initiative and resulting national costing exercises, which include addressing acute malnutrition
- The Coverage and Access for All series⁵, which highlighted that *met need* is still low and has encouraged the piloting of new service delivery models with emphasis on the community aspects of CMAM
- The implementation and scale up of new food commodities, such as RUSF, both in TSFPs in humanitarian and in development settings
- There is an increase in initiatives using information communication technology, such as mHealth applications to support community health workers in the diagnosis and referral of children with acute malnutrition
- Increased movements towards considering CMAM as a part of integrated community case management as well as health system strengthening
- The recognition that acute malnutrition (wasting) and stunting are strongly linked and that programmes to address these two conditions need to converge

The review presents a descriptive overview of current practice as implemented in a variety of field programmes. The characteristics of the data (i.e. service data collected for programme monitoring rather than for research purposes) and its level of aggregation limits its use for addressing specific research questions. However, a number of interesting observations and recommendations can be done based on this description of current practice. The main observations are summarized below by subject, *followed by recommendations in italics*:

Quality of data:

- Large amounts of data were contributed to this analysis but some of it could not be used due to poor quality. The use of the MRP software and guidelines resulted in major improvements in data quality and completeness, in comparison with previous reviews. However, despite these efforts to improve data quality, some problems remain at the data collection and reporting level. The

³ Measuring the Effectiveness of Supplementary Feeding Programmes in Emergencies, Navarro-Colorado, C. Mason, F. and Shoham, J. Humanitarian Practice Network Paper 63, September 2008.

⁴ WHO. Guideline: Updates on the management of severe acute malnutrition in infants and children. Geneva: World Health Organization; 2013.

⁵ <http://www.coverage-monitoring.org>

datasets are only as good as the raw data entered in the reports. For example, in too many instances, the numbers in charge for one month did not correspond to the number at the end of the previous month.

- *Additional supervision and support should be provided to ensure that data collection and reporting is robust at the nutrition site level, including the use of electronic data collection and quality checks integrated in CMAM Report and similar reporting tools.*
- *Audit tools to ensure that data on individuals and reports on nutrition sites are collected and reported correctly should be developed, tested and scaled up as standard management tool in nutrition programmes (e.g. audit tools developed by Save the Children).*

Types of programmes and interactions between programmes:

- Most programmes had OTPs, and most OTPs were coupled with TSFPs.
- Half of the OTPs were coupled with at least one SC, although geographic coverage of each was not reported. In some cases it was not clear whether the other OTPs had a referral SC managed by a different organisation that did not report. The OTPs that did not report SC data may have been referring to a SC managed by a different organisation or may have been working without the support of a referral system.
- *Mechanisms should be put in place to ensure that data from OTPs and their referring SCs can be collated and analysed together, even when they are not implemented by the same organisations.*
- *Further research should consider the consequences of running OTP programmes in the absence of SC referral in terms of programme outcomes. Recommendations on how to address complicated SAM cases in contexts where there is no SC referral need further development and testing.*

Admission and discharge criteria:

- Coexistence of MUAC and WHZ criteria for admission in all CMAM components, while not a problem in itself, seemed to be based mostly on national protocols or implementing agencies than other criteria.
- The lack of consensus over discharge criteria for OTP could reflect different programme setups, like the ability to continue OTP treatment at TSFPs, or adaptation to resource constraints.
- The use of old NCHS reference and outdated protocols in one country has been highlighted.
- At the time of the data collection, one programme was discharging on percentage weight gain, which has since been discouraged (WHO 2013).
- *Guidance and consensus should be developed on the appropriate thresholds for discharge from OTPs when MUAC or WHZ are used as indicators of recovery. The implications of discharging at -3 Z-scores vs. -1 Z-scores (for example) should be better understood in terms of programme appropriateness, relapse rates and integration of the OTP with other programme components, like TSFP.*
- *The use of NCHS reference for admission and discharge from programmes should be abandoned.*

Treatment protocols:

- Treatment protocols were very homogeneous in SC and OTP.
- In TSFP, there were two alternative products being used; often chosen for operational reasons. We were not able to detect a difference in programme performance based on the product used. This implies that other factors, different from the choice of food commodity, had a larger influence on programmes outcomes.
- *Future research should focus on the non-food determinants of programme success in emergency and non-emergency settings.*

Programme characteristics:

- There were huge disparities in what different organisations call a programme, for SCs, OTPs and TSFPs. This can extend from one site to hundreds of sites. The same disparities were seen as well at the site level. Some sites may be admitting only a handful of patients each month, while others admit hundreds and even thousands. These differences were found both between and within programmes.
- Although we did not detect major differences in performance in relation to programme size, it is conceivable to think that there may be a size beyond which a programme is too small to be cost-effective or too big to be manageable. Issues of whether the programme is integrated into a health service like a health centre may be a key variable to define this 'ideal' site size.
- *Managers should consider redistribution of resources in their programmes where great discrepancies size of sites are detected (i.e. by splitting one big site into two, or merging small sites).*
- *Programmes and protocols should take this into consideration when making recommendations, since small and large programmes are likely to have different dynamics and management needs.*
- *Research should consider defining what should be the 'ideal' size for programme sites in order to achieve economies of scale. These are likely to be different for sites integrated in national health structures and those run as stand-alone nutrition programmes in emergencies.*

Type of admissions:

- The reporting of re-admissions and relapses was inconsistent across and within programmes. This may not be necessarily due to different rates of relapsing and re-admission, but rather to the ability of health workers in programmes to correctly identify a child as a readmission or a relapse.
- *Proper identification of relapses and re-admissions should be done in a reliable manner that does not depend on the memory of health staff or the willingness of the caregiver to report a previous admission. This would require improved identification systems and improved record keeping. Without those, reporting of relapses and re-admissions may be meaningless.*

- There was some confusion over how to report patients that met both WHZ and MUAC criteria of admission to centres. This prevented us from evaluating the number of children admitted for each criterion in those centres that used both criteria for admission, which were most of them.
- *If reporting types of admissions by the criteria used to identify SAM, at least four groups should be used: WHZ, MUAC, MUAC+WHZ and oedema. This applies only to programmes using more than one anthropometric criteria to screen admissions.*
- The practice of registering a child in OTP during screening, and referring him/her to SC the same day when complications are discovered, resulted in several problems:
 - i) double counting of patients admitted in the monthly report
 - ii) a falsely high rate of referrals to SC (a category that should include only children who are already under treatment at the OTP and have to be sent to SC as a consequence of a deterioration despite treatment)
 - iii) at the SC, it prevented proper analysis of admission indicators, since most admissions in some centres were recorded as 'transfer from OTP'.
- *'First day' referrals from TSFP to OTP or from OTP to SC should be reported as a separate category in the referring site. They should not be included in the reporting of admissions or discharges from the referring site. The child should be reported as a new admission in the site where the treatment will take place, rather than the site that identified the child. In that site, the actual criteria of admission (WHZ, MUAC, oedema...) should be reported, rather than 'transfer from OTP' or 'transfer from TSFP'.*

Programme outcomes:

- Overall programme results in SC and OTP were in line with Sphere Minimum Standards Key Indicators recommendations.
- Programme performance in TSFP was often below Sphere standards.
- Aggregated results were overly influenced by a few sites with many admissions and significantly high defaulting rates (i.e. Yemen).
- *Despite improvements, performance of TSFP programmes and the factors favouring good performance remain elusive. TSFP programme performance should be evaluated critically against existing alternatives, including integration with other nutrition programmes, blanket feeding, community supplementation and community based strategies (e.g. cash and vouchers).*
- Too many sites and even programmes reported 0% defaulting rate. This makes us think that the actual defaulting rates may be even higher than reported.
- *Programme managers should investigate sites reporting zero defaulters or zero deaths to ensure that the data reported reflects the actual situation and provide corrective measures if necessary.*
- The analysis shows some very large outliers in most reporting categories. For example, most of the mortality and defaulting were concentrated in individual sites, rather than being the norm for any given programme. In SCs most mortality was concentrated in specific sites of specific programmes, with most sites and programmes having low mortality. In OTPs and TSFP most

defaulting consistently concentrated in single sites, with other sites in the same programme presenting good indicators.

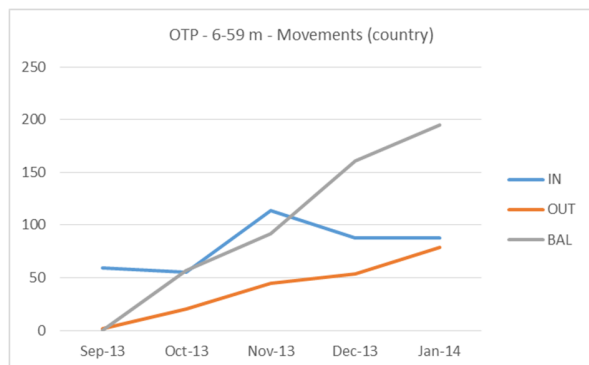
- *Programme managers and supervisors should use reporting tools to identify sites underperforming sites, and provide remedial action by providing training, support and appropriate means. This could be done in real time as reports arrive, by using graphs as the ones proposed in Appendix 1 (see graph 3 by site). These graphs can be created by the CMAM Report software.*
- There remains some confusion over the defaulting categories (i.e. confirmed and unconfirmed). These are not commonly used, or are used wrongly.
- A full evaluation of defaulting categories would require a separate investigation to evaluate the number of unconfirmed defaulters that were reclassified as dead, referral or other category. By definition, this cannot be done with the final monthly report data available to us.
- In OTP and TSFP, defaulting continues to be the most important reason why many children do not recover, confirming the main conclusion of the previous SFP-review⁶.
- *An evaluation of the use of home visits to ascertain the situation of absentees and defaulters should be done, including examination of causes for defaulting and final outcomes of defaulters after follow up.*
- *Causes for defaulting should be considered in the design of the programmes to ensure that opportunity costs for attendance are minimized at all seasons.*

Use of TSFP Follow-up (FU):

- Programmes that do not disaggregate the data from direct TSFP admissions (i.e. with moderate malnutrition) and TSFP FU (i.e. patients sent from OTP to TSFP who are no longer anthropometrically malnourished) may be inadvertently inflating recovery rate by as much as 8%.
- *TSFP follow-up patients should be registered separately from children admitted directly to TSFP, and their admission and discharge statistics should always be reported separately as recommended in SPHERE 2011.*

1. ⁶ Measuring the Effectiveness of Supplementary Feeding Programmes in Emergencies, Navarro-Colorado, C. Mason, F. and Shoham, J. Humanitarian Practice Network Paper 63, September 2008. ODI.

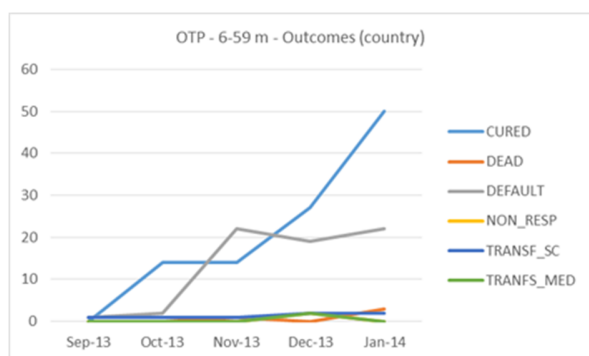
Appendix 1: Examples of admission and discharge statistics of a selected OTP programmes and recommendations.



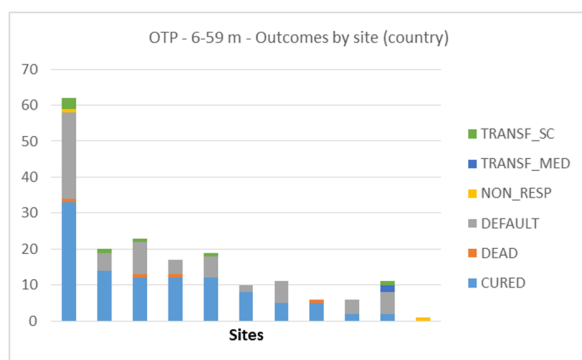
This programme represents good example of a recently opened programme. Discharges the first month start at zero, and there is a progressive increase in admissions and discharges (first graph).

A strong increase in admissions in October probably reflects an active campaign to increase screening and enhance coverage.

The programme showed a sudden increase of defaulters in November; presumably those patients who had been admitted at the first weeks of opening the programme (second graph).

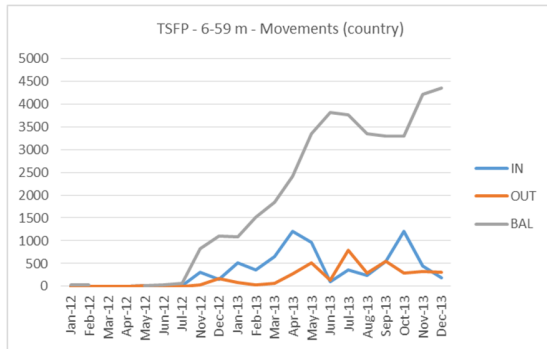


Although all sites had very high levels of defaulting, most of them came from the largest site. Some of the sites were not identifying children that need transfer to SC, and may have retained in OTP children that required inpatient treatment. Four sites observed one death each (third graph).



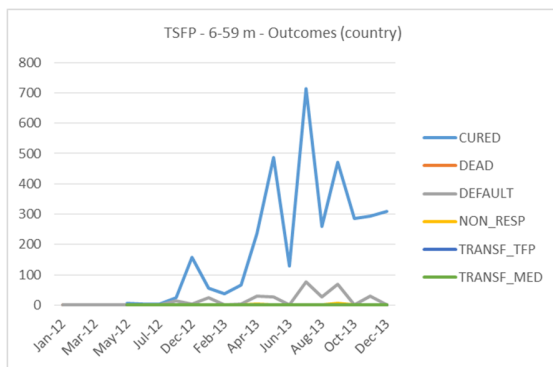
The whole performance of this programme was dependent on its largest site. Specific supervision and remedial action could result in better outcome indicators and programme performance. Alternatively, a programme design decision to split the largest site into two could've have been considered.

Appendix 2: Examples of admission and discharge statistics of a selected TSFP programme and recommendations.



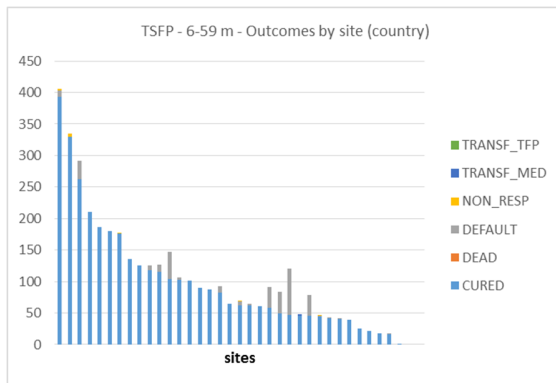
In this TSFP, the statistics of IN (admissions) and OUT (discharges) did not add up to the reported balance at the end of the month (BAL) (first graph).

Outcome statistics seemed good, with most discharged being cured, but it presents a curious pattern: most discharges were down every other month (second graph).



Analysis by site shows that defaulting was not concentrated in any particular site (third graph).

This programme should engage in thorough review of its protocols, reporting mechanisms and training of staff. It should assess the quality of reporting and admission and discharge procedures.



Appendix 3: Detailed tables.

Table A3.1. Summary of data included in the review, 2011—2013

| Code | Country | Sub-country | TSFP | FU | OTP | SC | From | To | Months |
|--------|--------------|-------------------|------|----|-----|----|--------|--------|--------|
| Afg-1 | Afghanistan | Southern | | | x | | Sep 13 | Dec 13 | 4 |
| BF-1 | Burkina Faso | Centre-Nord | X | x | x | x | Jan 12 | Dec 13 | 24 |
| CAR-1 | CAR | Kagas | | | x | | Sep 13 | Jan 14 | 5 |
| Chad-1 | Chad | Silas | X | x | x | | Jan 13 | Jan 14 | 13 |
| Eth-1 | Ethiopia | Afar | X | | x | x | Apr 13 | Sep 13 | 5 |
| Eth-2 | Ethiopia | Somali | | | x | | Nov 13 | Dec 13 | 2 |
| Eth-3 | Ethiopia | Dollo-Ado | X | | | | Nov 12 | Dec 13 | 14 |
| Ind-1 | India | Andhra Pradesh | X | x | x | | Apr 12 | Dec 13 | 21 |
| Ken-1 | Kenya | Moyale/Sololo | X | | x | x | Jan-13 | Jan-14 | 10 |
| Ken-2 | Kenya | Loitokitok | X | | x | x | Jan-13 | Jun-13 | 13 |
| Ken-3 | Kenya | Marsabit North | X | | x | | Jan-13 | Jan-14 | 13 |
| Mya-1 | Myanmar | Rakhine | | | x | | Aug 13 | Dec 13 | 5 |
| Nig-1 | Nigeria | Katsina | | | x | x | Sep 10 | Jan 14 | 41 |
| Nig-2 | Nigeria | Zamfara | | | x | x | Nov 13 | Dec 13 | 2 |
| Rwd-1 | Rwanda | Southern | | | x | x | Jan-13 | Dec-13 | 12 |
| Som-1 | Somalia | South-Central | X | x | x | | Jan 13 | Jan 14 | 13 |
| Som-2 | Somalia | North-East | X | x | x | | Sep 12 | Dec 12 | 4 |
| Som-3 | Somalia | South-Central | X | x | x | | May 13 | Dec 13 | 8 |
| Som-4 | Somalia | South-Central | X | x | x | | Nov 12 | Dec 13 | 14 |
| Sud-1 | Sudan | South Kordofan | X | | x | x | Aug-12 | Jan-14 | 17 |
| Sud-2 | Sudan | West Darfur | X | x | x | x | Jan-13 | Jan-14 | 12 |
| Yem-1 | Yemen | Sana'a | X | | x | x | Jul-12 | Jan-14 | 12 |
| Yem-2 | Yemen | Taiz | X | | x | | Apr-13 | Dec-13 | 9 |
| Yem-3 | Yemen | Al Hodeida/Sa'ada | X | x | x | | Mar 13 | Jan 14 | 22 |
| Yem-4 | Yemen | Al Hodeida | x | x | x | | Feb 13 | Jan 14 | 12 |

Table A3.2. Admission and discharge criteria for SC, by programme, 2011—2013

| Programme | ADMISSIONS | | | | DISCHARGES | | | | | |
|-----------|------------|-----|-------|-------|------------|-----|-------|-------|-----------|---|
| | MUAC | WHZ | Oedem | Compl | MUAC | WHZ | Oedem | Compl | eats RUTF | |
| BF-1 | | x | x | x | | x | | x | x | |
| Eth-1 | x | x | x | X | | x | x | x | x | |
| Ken-1 | x | x | x | X | | x | x | x | x | |
| Ken-2 | x | x | x | x | | x | x | x | x | |
| Nig-1 | x | x | x | x | | x | x | x | x | |
| Nig-2 | x | x | x | x | | x | x | x | x | |
| Rwd-1 | x | | x | x | | | | x | x | |
| Sud-1 | x | x | x | x | | | | x | x | x |
| Sud-2 | x | x | x | x | | | | x | x | x |
| Yem-1 | x | x | x | x | | | | x | x | |

Table A3.3. Admission and discharge criteria used in OTP, by programme, 2011–2013

| Programme | ADMISSION | | | | DISCHARGE | | | |
|-----------|-----------|-----|--------|--|-----------|-----|--------|-------------|
| | MUAC | WHZ | Oedema | | MUAC | WHZ | Oedema | Weight gain |
| Afg-1 | x | X | | | | | | |
| BF-1 | x | X | | | x | x | | |
| CAR-1 | x | X | x | | | x | | x |
| Chad-1 | x | X | | | x | x | | |
| Eth-1 | x | X | x | | x | x | x | |
| Eth-2 | | X | x | | x | x | x | x |
| Ind-1 | x | X | x | | x | x | x | |
| Ken-1 | x | X | x | | x | x | | |
| Ken-2 | | | | | | | | |
| Ken-3 | x | x | x | | x | x | | |
| Mya-1 | x | | x | | x | x | x | |
| Nig-1 | x | | x | | x | | x | x |
| Nig-2 | x | | x | | x | | x | x |
| Rwd-1 | x | | x | | x | | x | x |
| Som-1 | x | | x | | x | | x | |
| Som-2 | x | x | | | x | x | | |
| Som-3 | x | x | | | x | x | | |
| Som-4 | x | x | | | x | x | | |
| Sud-1 | x | x | x | | x | x | x | x |
| Sud-2 | x | x | x | | x | x | | x |
| Yem-1 | x | x | x | | x | x | x | |
| Yem-2 | x | x | x | | x | x | x | |
| Yem-3 | x | | | | | | | |
| Yem-4 | x | x | x | | x | x | | |

Table A3.4. Admission and discharge criteria used in TSFP, by programme, 2011—2013.

| Prg_nm | ADMISSION | | | DISCHARGE | | |
|--------|-----------|-----|--|-----------|-----|-------------|
| | MUAC | WHZ | | MUAC | WHZ | weight gain |
| BF-1 | x | x | | x | x | |
| Chad-1 | x | x | | X | x | |
| Eth-1 | x | x | | | | x |
| Eth-3 | x | x | | x | x | |
| Ind-1 | x | x | | x | x | |
| Ken-1 | x | x | | x | x | |
| Ken-2 | x | x | | x | x | |
| Ken-3 | x | x | | x | x | |
| Som-1 | x | x | | x | | |
| Som-2 | x | x | | x | x | |
| Som-3 | x | x | | x | x | |
| Som-4 | x | x | | x | x | |
| Sud-1 | x | x | | x | x | |
| Sud-2 | x | x | | x | x | |
| Yem-1 | x | x | | x | x | |
| Yem-2 | x | x | | x | x | |
| Yem-3 | x | x | | x | x | |
| Yem-4 | x | x | | x | x | |

Table A3.5. Products used in TSFPs, by programme, 2011—2013

| Programme | RUSF | CSB | Hyderabad mix | Oil | Salt | Pulses | HEB | Sugar |
|-----------|------|-----|---------------|-----|------|--------|-----|-------|
| BF-1 | x | x | | | | | | |
| Chad-1 | x | | | | | | | |
| Eth-1 | | x | | x | | | | |
| Eth-3 | x | | | | | | | |
| Ind-1 | | | x | x | | | | |
| Ken-1 | | x | | x | | | | |
| Ken-2 | | x | | x | | | | |
| Ken-3 | | x | | x | | | | |
| Som-1 | x | | | | | | | |
| Som-2 | x | | | x | | | | |
| Som-3 | x | | | | | | | |
| Som-4 | x | | | | | | | |
| Sud-1 | | x | | x | x | x | x | |
| Sud-2 | | x | | x | | | | x |
| Yem-1 | x | | | | | | | |
| Yem-2 | x | | | | | | | |
| Yem-3 | x | | | | | | | |
| Yem-4 | x | | | | | | | |

Table A3.6. Outcomes by programmes, 2011—2013

| | | Recovered | | Death | | Defaulter | | NR | | Med referral | | Nut referral | | TOTAL |
|-------|--------|-----------|-------|-------|------|-----------|------|------|------|--------------|------|--------------|------|-------|
| | | n | % | n | % | n | % | n | % | n | % | n | % | N |
| SC | BF-1 | 184 | 93.9 | 5 | 2.6 | 3 | 1.5 | 0 | 0.0 | 4 | 2.0 | | | 196 |
| | Eth-1 | 39 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | | | 39 |
| | Ken-1 | 39 | 88.6 | 4 | 9.1 | 1 | 2.3 | 0 | 0.0 | 0 | 0.0 | | | 44 |
| | Ken-2 | 20 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | | | 20 |
| | Nig-1 | 4683 | 89.7 | 263 | 5.0 | 269 | 5.2 | 5 | 0.1 | 0 | 0.0 | | | 5220 |
| | Nig-2 | 25 | 78.1 | 4 | 12.5 | 3 | 9.4 | 0 | 0.0 | 0 | 0.0 | | | 32 |
| | Rwd-1 | 109 | 96.5 | 2 | 1.8 | 1 | 0.9 | 1 | 0.9 | 0 | 0.0 | | | 113 |
| | Sud-1 | 204 | 81.0 | 17 | 6.7 | 3 | 1.2 | 0 | 0.0 | 28 | 11.1 | | | 252 |
| | Sud-2 | 176 | 79.3 | 22 | 9.9 | 9 | 4.1 | 2 | 0.9 | 13 | 5.9 | | | 222 |
| Yem-1 | 24 | 85.7 | 2 | 7.1 | 2 | 7.1 | 0 | 0.0 | 0 | 0.0 | | | 28 | |
| OTP | Afg-1 | 661 | 78.4 | 4 | 0.5 | 174 | 20.6 | 1 | 0.1 | 1 | 0.1 | 2 | 0.2 | 843 |
| | BF-1 | 3705 | 81.6 | 41 | 0.9 | 515 | 11.3 | 77 | 1.7 | 10 | 0.2 | 89 | 2.0 | 4541 |
| | CAR-1 | 105 | 54.4 | 4 | 2.1 | 66 | 34.2 | 2 | 1.0 | 2 | 1.0 | 7 | 3.6 | 193 |
| | Chad-1 | 1217 | 94.0 | 4 | 0.3 | 29 | 2.2 | 8 | 0.6 | 1 | 0.1 | 15 | 1.2 | 1294 |
| | Eth-1 | 1023 | 89.2 | 3 | 0.3 | 65 | 5.7 | 27 | 2.4 | 0 | 0.0 | 29 | 2.5 | 1147 |
| | Eth-2 | 15 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 15 |
| | Ind-1 | 453 | 91.7 | 0 | 0.0 | 13 | 2.6 | 15 | 3.0 | 0 | 0.0 | 13 | 2.6 | 494 |
| | Ken-1 | 615 | 83.8 | 4 | 0.5 | 88 | 12.0 | 25 | 3.4 | 0 | 0.0 | 0 | 0.0 | 734 |
| | Ken-2 | 181 | 81.5 | 3 | 1.4 | 27 | 12.2 | 2 | 0.9 | 0 | 0.0 | 5 | 2.3 | 222 |
| | Ken-3 | 66 | 69.5 | 0 | 0.0 | 16 | 16.8 | 13 | 13.7 | 0 | 0.0 | 0 | 0.0 | 95 |
| | Mya-1 | 146 | 91.8 | 0 | 0.0 | 6 | 3.8 | 3 | 1.9 | 4 | 2.5 | 0 | 0.0 | 159 |
| | Nig-1 | 51135 | 73.4 | 655 | 0.9 | 4071 | 5.8 | 5076 | 7.3 | 0 | 0.0 | 6945 | 10.0 | 69665 |
| | Nig-2 | 2558 | 80.4 | 66 | 2.1 | 341 | 10.7 | 63 | 2.0 | 0 | 0.0 | 152 | 4.8 | 3180 |
| | Rwd-1 | 1172 | 84.2 | 18 | 1.3 | 70 | 5.0 | 48 | 3.4 | 0 | 0.0 | 84 | 6.0 | 1392 |
| | Som-1 | 1887 | 85.5 | 11 | 0.5 | 160 | 7.3 | 85 | 3.9 | 6 | 0.3 | 23 | 1.0 | 2206 |
| | Som-2 | 1829 | 88.6 | 16 | 0.8 | 118 | 5.7 | 38 | 1.8 | 4 | 0.2 | 42 | 2.0 | 2065 |
| | Som-3 | 2842 | 81.7 | 0 | 0.0 | 237 | 6.8 | 0 | 0.0 | 0 | 0.0 | 24 | 0.7 | 3477 |
| Som-4 | 956 | 85.1 | 3 | 0.3 | 135 | 12.0 | 6 | 0.5 | 0 | 0.0 | 21 | 1.9 | 1123 | |
| Sud-1 | 1037 | 62.6 | 9 | 0.5 | 458 | 27.6 | 35 | 2.1 | 20 | 1.2 | 88 | 5.3 | 1657 | |
| Sud-2 | 2854 | 83.5 | 17 | 0.5 | 210 | 6.1 | 28 | 0.8 | 0 | 0.0 | 197 | 5.8 | 3416 | |
| Yem-1 | 1313 | 40.1 | 10 | 0.3 | 1907 | 58.3 | 26 | 0.8 | 2 | 0.1 | 2 | 0.1 | 3271 | |

| | | | | | | | | | | | | | | |
|-----|--------|------|------|----|-----|------|------|-----|------|----|-----|----|-----|-------|
| | Yem-2 | 1791 | 65.2 | 5 | 0.2 | 862 | 31.4 | 65 | 2.4 | 3 | 0.1 | 21 | 0.8 | 2747 |
| | Yem-3 | 2175 | 75.8 | 11 | 0.4 | 495 | 17.3 | 101 | 3.5 | 4 | 0.1 | 45 | 1.6 | 2868 |
| | Yem-4 | 3116 | 94.0 | 9 | 0.3 | 53 | 1.6 | 81 | 2.4 | 13 | 0.4 | 29 | 0.9 | 3316 |
| SFP | BF-1 | 3542 | 91.7 | 0 | 0.0 | 306 | 7.9 | 11 | 0.3 | 2 | 0.1 | 0 | 0.0 | 3861 |
| | Chad-1 | 1840 | 86.5 | 1 | 0.0 | 193 | 9.1 | 3 | 0.1 | 0 | 0.0 | 89 | 4.2 | 2126 |
| | Eth-1 | 5393 | 99.9 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 4 | 0.1 | 5397 |
| | Eth-3 | 1847 | 97.1 | 0 | 0.0 | 4 | 0.2 | 5 | 0.3 | 36 | 1.9 | 10 | 0.5 | 1902 |
| | Ind-1 | 1196 | 95.4 | 0 | 0.0 | 7 | 0.6 | 2 | 0.2 | 4 | 0.3 | 45 | 3.6 | 1254 |
| | Ken-1 | 1060 | 78.3 | 1 | 0.1 | 235 | 17.4 | 50 | 3.7 | 0 | 0.0 | 7 | 0.5 | 1353 |
| | Ken-2 | 643 | 77.6 | 0 | 0.0 | 170 | 20.5 | 9 | 1.1 | 0 | 0.0 | 7 | 0.8 | 829 |
| | Ken-3 | 391 | 74.8 | 0 | 0.0 | 56 | 10.7 | 69 | 13.2 | 0 | 0.0 | 7 | 1.3 | 523 |
| | Som-1 | 2037 | 83.4 | 4 | 0.2 | 325 | 13.3 | 38 | 1.6 | 7 | 0.3 | 32 | 1.3 | 2443 |
| | Som-2 | 2465 | 98.5 | 4 | 0.2 | 5 | 0.2 | 13 | 0.5 | 0 | 0.0 | 15 | 0.6 | 2502 |
| | Som-3 | 2290 | 92.8 | 0 | 0.0 | 178 | 7.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2468 |
| | Som-4 | 2411 | 83.7 | 6 | 0.2 | 400 | 13.9 | 15 | 0.5 | 40 | 1.4 | 10 | 0.3 | 2882 |
| | Sud-1 | 246 | 90.8 | 0 | 0.0 | 25 | 9.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 271 |
| | Sud-2 | 1937 | 95.6 | 1 | 0.0 | 44 | 2.2 | 19 | 0.9 | 0 | 0.0 | 25 | 1.2 | 2026 |
| | Yem-1 | 7628 | 45.2 | 1 | 0.0 | 9224 | 54.6 | 2 | 0.0 | 19 | 0.1 | 7 | 0.0 | 16881 |
| | Yem-2 | 2151 | 24.2 | 0 | 0.0 | 6732 | 75.7 | 0 | 0.0 | 12 | 0.1 | 0 | 0.0 | 8895 |
| | Yem-3 | 901 | 91.8 | 0 | 0.0 | 67 | 6.8 | 6 | 0.6 | 0 | 0.0 | 7 | 0.7 | 981 |
| | Yem-4 | 1822 | 97.5 | 1 | 0.1 | 4 | 0.2 | 12 | 0.6 | 0 | 0.0 | 30 | 1.6 | 1869 |