

MANAGEMENT OF SEVERE ACUTE MALNUTRITION IN CHILDREN: WORKING TOWARDS RESULTS AT SCALE



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**UNICEF Programme
Guidance Document**

**Management of Severe
Acute Malnutrition
in children: Working
towards results at scale**



FOREWORD

Over 17 million children are affected by severe acute malnutrition (SAM) worldwide. Despite significant progress in recent years, approximately 2.9 million children accessed treatment in 65 countries in 2013 – only about 17 percent of the children needing treatment.

Children with SAM are nine times more likely to die than well-nourished children. The management of severe acute malnutrition (SAM) is critical for child survival and is a key cost-effective component of the scaling up nutrition framework for addressing undernutrition. Governments face great challenges in building capacity and providing sufficient resources to prevent and treat acute malnutrition. While a significant number of acutely malnourished children live in countries where cyclical food insecurity and protracted crises further exacerbate their vulnerability, many more are in developing countries not affected by emergencies. The result is significant barriers to sustainable development in these nations. Climate change and increasing numbers of natural disasters are expected to further challenge efforts to protect the nutritional status of children and women.

Scaling up access to critical nutrition interventions such as the treatment of SAM is paramount to achieve the global target, agreed to at the Sixty-Fifth World Health Assembly in 2012 (WHO, A65/11), of *reducing and maintaining childhood wasting to less than 5 per cent*. This underscores the urgent need to increase actions to strengthen country-level capacities to scale-up access to the treatment of SAM alongside preventive actions to protect the nutritional status of children and women.

This Guidance Document provides practical assistance to Country Offices scaling up programmes to manage SAM in young children. It outlines a step-by-step process through which countries can analyse their current situation, identify barriers and bottlenecks through the MoRES approach, and plan action to scale-up treatment. In particular it addresses the challenge of supporting governments to accelerate and sustain scale-up, build national capacities and source reliable and sustained supplies and financing for managing SAM. This document also provides complementary background information, references to international technical recommendations, resources and tools.

The document is aimed at UNICEF country-level programme managers and their main partners – MoH technical staff and managers, non-governmental organizations and community-based organizations.

The document was prepared by staff from the Nutrition Section and Supply Division at UNICEF headquarters. Inputs were provided by regional offices; the Health, HIV and Early Childhood Development units at headquarters; and selected Country Offices with experience in scaling up management of SAM. The financial support of USAID Food for Peace in the translation and publication of the document is gratefully acknowledged.

This is a working document. It draws on a growing body of learning that is being built as programmes to manage SAM are scaled up. Comments and suggestions are welcome, as are questions and/or requests for additional information and support on any of the areas covered in this document. Please direct communications to nutrition@unicef.org.

I hope you find this document helpful in addressing the problem of SAM as we work together so that all children in every community, especially the most marginalized, realize their right to development.

Ted Chaiban

Director of Programmes



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ACRONYMS AND ABBREVIATIONS

ACF	Action Against Hunger / ACF International	MAM	Moderate acute malnutrition
CCCs	Core Commitments for Children in Humanitarian Action (UNICEF)	MDG	Millennium Development Goal
CMAM	Community-based management of acute malnutrition	MoH	Ministry of Health
CO	Country Office	MoRES	Monitoring Results for Equity System
CSAS	Centric Systematic Area Sampling	MSF	Médecins Sans Frontières
DFID	UK Department for International Development	M&E	Monitoring and evaluation
DHSS	District Health Systems Strengthening	MUAC	Mid-upper-arm circumference
DIVA	Diagnose, intervene, verify, adjust	NGO	Non-governmental organization
ECD	Early childhood development	RUTF	Ready-to-use therapeutic food
ECHO	European Community Humanitarian Office	SAM	Severe acute malnutrition
ENN	Emergency Nutrition Network	SCN	Standing Committee on Nutrition
FANTA	Food and Nutrition Technical Assistance	SLEAC	Simplified LQAS Evaluation of Access and Coverage
GNC	Global Nutrition Cluster	SQUEAC	Semi Quantitative Evaluation of Access and Coverage
HIV	Human immunodeficiency virus	S3M	Simple Spatial Survey Method
IMCI	Integrated Management of Childhood Illness	SUN	Scaled-up Nutrition
ICCM	Integrated Community Case Management of Childhood Illness	WFP	World Food Programme
IYCF	Infant and young child feeding	WHO	World Health Organization



Introduction

In 2013, an estimated 2.9 million children under-five were admitted globally for treatment of severe acute malnutrition (SAM). This figure represents significant progress when compared with just over 1 million reported during 2009 (UNICEF Nutrition Section 2013) yet is clearly insufficient when compared to the global burden of 17 million children affected by SAM (UNICEF, WHO, World Bank 2014). Children with SAM are nine times more likely to die than well-nourished children. In light of the growing understanding of the links between episodes of acute malnutrition and stunting¹, it is clear that prevention and treatment of acute malnutrition is critical to child survival and development.

In 2007, the United Nations endorsed the community-based treatment of SAM² (WHO, WFP, SCN and UNICEF 2007), (CMAM or CTC or IMAM) and in 2008, UNICEF issued programme

guidance³ on this approach for children 6–59 months old UNICEF 2008). The 2008 programme guidance aimed to provide general guidance for UNICEF Country Offices (COs) in developing and implementing programmes and organizing supply of ready-to-use therapeutic food (RUTF).

Since 2008, there has been great progress in introducing and scaling up CMAM programmes. Initially, SAM was seen as a problem primarily in emergency contexts, but globally there has been growing recognition of its extent in non-emergency situations. This recognition has led to a shift in implementation focus and efforts to embed the management of SAM in national health systems and community structures. Thus, the management of SAM needs to be scaled up through deliberate efforts to increase programme coverage for treatment of children. Successful efforts address both horizontal dimensions (systems) and vertical dimensions (geographic coverage). This combined approach represents the only sustainable way to raise the impact of SAM treatment and develop high-quality programmes. In 2013, 67 countries

1 WHO, 'WHA Global Nutrition Targets 2025: Stunting Policy Brief' http://www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf

2 WHO, et al., 2007, 'A Joint Statement, Community Based Management of Severe Acute Malnutrition,' http://www.unicef.org/publications/files/Community_Based_Management_of_Severe_Acute_Malnutrition.pdf

3 UNICEF, 2008, 'Programme Guidance Management of Severe Acute Malnutrition in Children,' [https://intranet.unicef.org/PD/Nutrition.nsf/0/9740CF29DC6FC854852579FA005399AA/\\$FILE/Management%20of%20SAM%20in%20Children%202008.doc](https://intranet.unicef.org/PD/Nutrition.nsf/0/9740CF29DC6FC854852579FA005399AA/$FILE/Management%20of%20SAM%20in%20Children%202008.doc)

reported that they implemented the community-based approach to some degree, increasingly outside of emergency contexts, and many are working towards its integration within national health systems.

Experience in introducing and scaling up CMAM has brought many challenges and lessons, many of these documented in [country level evaluations](#)⁴ and consolidated in the 2013 report of [UNICEF's global evaluation](#)⁵ of community management of acute malnutrition (CMAM). Current challenges lie particularly in (a) creating enabling national policy environments, (b) supporting governments to accelerate and sustain scale-up, (c) building national capacities of health workers and other stakeholders in scaling up access to quality treatment of SAM and (d) strengthening the functioning of health systems to support the management of SAM and ensure reliable and sustained supplies and financing. In particular, many countries have struggled to develop central operational plans to scale-up management of SAM, and specifically to scale-up the community-based approach recommended for the treatment of children suffering from severe acute malnutrition but without medical complications. In most countries, the progress seen to date has largely been achieved through ad hoc expansion of the approach based on responses by non-government organizations (NGOs) and United Nations agencies, the enthusiasm of district officials particularly in emergency contexts with short term funding. The shift in focus over the last few years to non-emergency contexts calls for a more planned approach to scaling up.

UNICEF is in a unique position to support the management of SAM at the national level. This is due to its close supportive relationship with ministries of health, as well as its partnerships with a network of international and national

NGOs and its role as the cluster lead agency for nutrition at the global and country level. UNICEF's main objective is to provide leadership and technical and operational support to governments and partners to scale up management of SAM in line with global priorities and national policies and programmes.

At the same time, in a number of contexts and countries, the decision has been made to not adopt CMAM at this time, or to use a home-based approach that does not involve RUTF.⁶ Reasons have included (a) concerns about introducing an externally produced or mass produced commodity, (b) the belief that the number of children suffering from SAM does not justify adoption of a decentralized programme or (c) the view that the approach is not currently feasible. In such cases UNICEF's main objective is to ensure that sufficient monitoring and data collection are in place to clearly demonstrate the burden of SAM in the country, ensure that alternative approaches are rigorously evaluated to produce evidence for future use, and facilitate and advocate for the introduction of the community-based approach where evidence indicates it is merited. See page 5 for more guidance on introducing the community based approach.

Aim and scope

This guidance document takes the approach that CMAM is the desired, evidence-based approach to treating SAM for the majority of children in need.

The aim of this document is therefore to provide the more practical guidance now required at the country level to establish and continue scaling up community-based management of SAM using an approach that is embedded within existing systems and serves to strengthen them. The focus is on designing, establishing and managing

4 The CMAM forum hosts many country-level documents and evaluations on CMAM <http://www.cmamforum.org/>

5 UNICEF, 2013, 'Global Evaluation of Community Management of Acute Malnutrition (CMAM): Global Synthesis Report', 2013. www.unicef.org/evaldatabase/index_69843.html

6 This refers to ready-to-use therapeutic food as defined in the specifications from the WHO/WFP/SCN and UNICEF Joint Statement on Community-Based Management of Severe Acute Malnutrition, 2007.

high-quality national programmes in a variety of contexts that reach the majority of children in need.

The objectives of this guidance document are to:

1. Strengthen the capacity of country teams to effectively scale up and manage programmes to address severe acute malnutrition
2. Extend the geographic reach of quality treatment for SAM to all vulnerable communities in need⁷
3. Maximize access to appropriate and quality treatment for SAM among all eligible children in the community at all times⁸
4. Aid the formulation and implementation of national policies and strategies that support objectives 1 to 3
5. Aid the creation of an enabling environment that supports objectives 1 to 3 through advocacy, documentation of successful practices, support for operational research, mobilization of resources and collaboration with partners

This guidance document is not meant to offer a prescription for achieving scale-up. It provides guidance on processes and a summary of measures that have proved successful in supporting sustainable scale-up within existing health systems and increasing access to treatment in other contexts. Text boxes in this document illustrate particular guidance points and good practices. Of course, what works is specific to the context and the time, so the examples focus on mechanisms and structures rather than specific actions.

The guidance document also provides background information for SAM management programming,

⁷ See definitions, box 33, page 59

⁸ See definitions, box 33, page 59



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including UNICEF's corporate aims in relation to SAM management, evidence and history, partnerships and core programme components in Chapter 3. The guidance document does not aim to provide comprehensive technical protocols for managing individual cases of SAM or training materials for management of SAM. These resources already exist and are referred to throughout the document and summarized in the annexes.

The scope of this guidance document is the outpatient and inpatient therapeutic components of the management of SAM including the community-level component, local production of RUTF and links to information about interventions to prevent malnutrition (see figure 1). The community component is particularly emphasized as it has often been neglected, and there is extensive evidence showing that CMAM without a strong community component results in limited coverage and therefore limited impact.

This guidance focuses on the main client group for management of SAM – children 6–59 months old. Infants are covered only under the inpatient component. (See annex F, Management of SAM in Other Groups, for discussions about and links to the best current guidance and resources for infants and other client groups.)

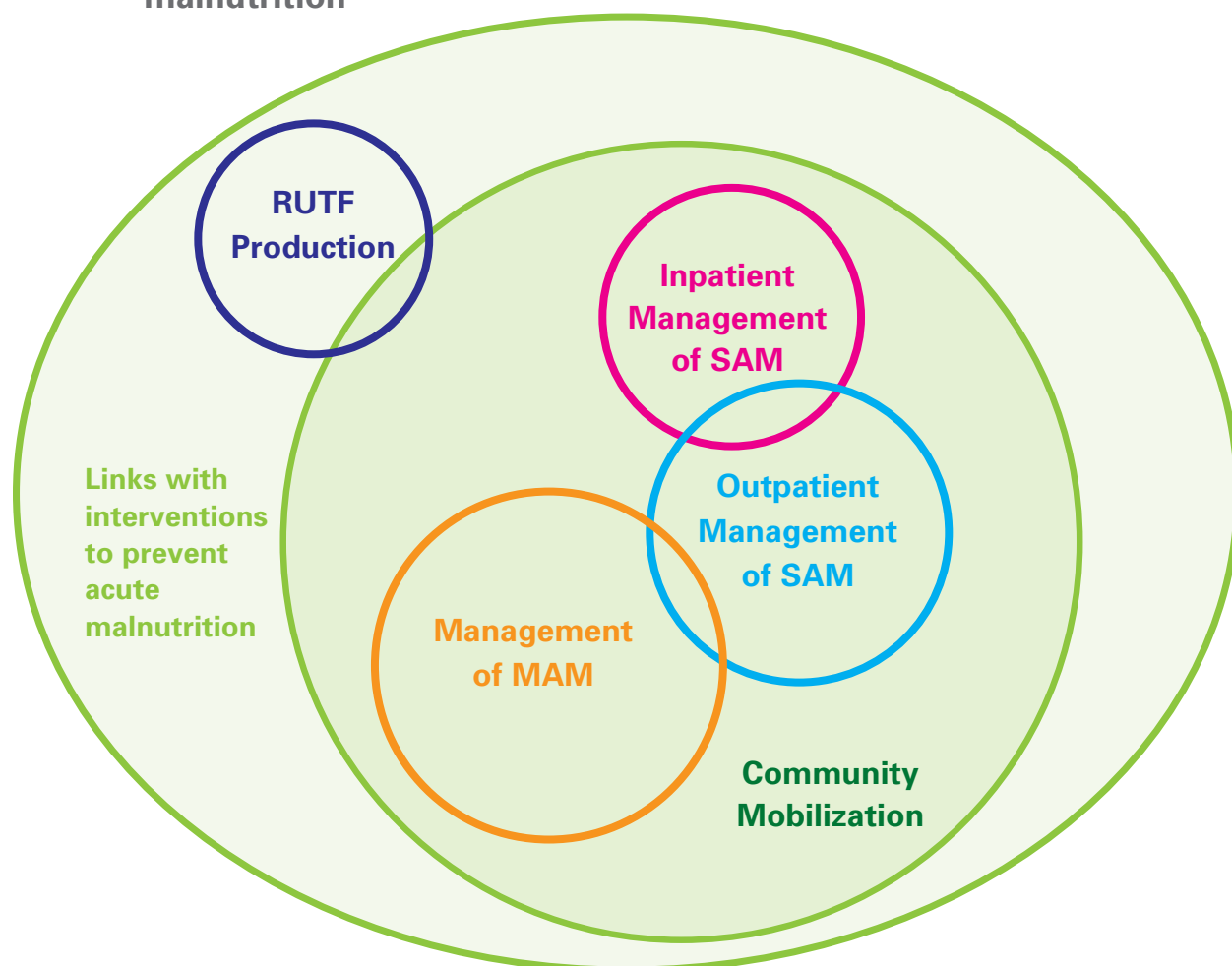
Even though the wider management of SAM encompasses management of moderate acute malnutrition (MAM) where possible, the document does not attempt to provide operational guidance for managing MAM, given that questions remain on protocols and appropriate approaches. At the same time, the specific relationship between SAM and MAM services, and the relative need for services, should be

based on consultative assessments at the country level with the World Food Programme (WFP) and stakeholders.

Audience

The intended audience of this document is UNICEF programme managers at the country level (health and nutrition specialists) and their main government partners (ministries of health and nutrition managers) in countries attempting national scale-up of SAM management. The contents may also be of interest to other government institutions involved in the management of SAM, other United Nations agencies and NGO staff operating at the country level.

FIGURE 1 Components of community-based management of acute malnutrition

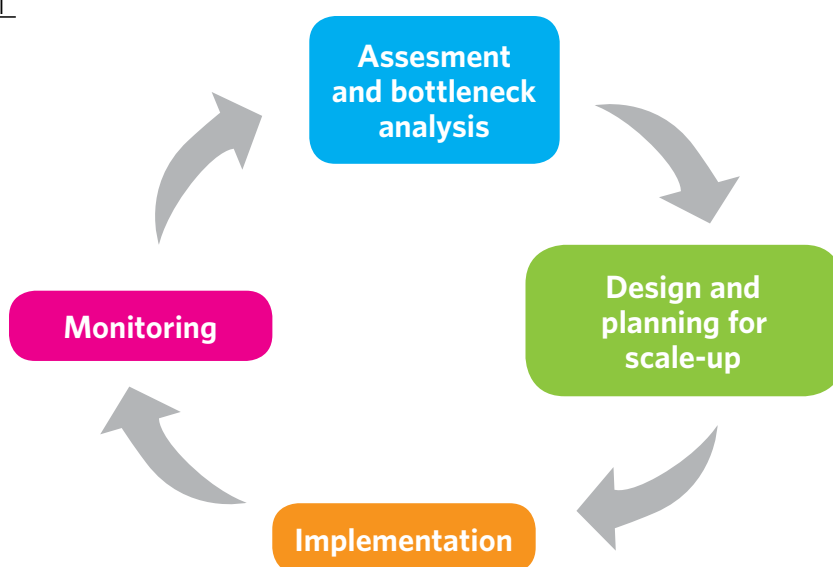


Planning the scale-up of SAM management

This section outlines five key steps to undertake when planning scale up of SAM management. Guidance is drawn from existing technical guidelines as well as lessons learned. Where possible, the steps are illustrated with practical examples and the guidance summarised in boxes. While this section focuses on SAM management, the steps may be embedded in national level discussions on scaling up or expanding nutrition services more generally. The literature suggests that some countries are forging ahead in scaling up CMAM, at least in terms of the proportion of health facilities offering the service. The [2011 global CMAM conference](#)⁹ highlighted several examples including Ethiopia, Malawi and Niger which achieved high geographic coverage (as of 2013, reported as 60%, 87% and 89% respectively). All these countries figure prominently in the literature and thus inform much of the guidance below. However, they have also received substantial funding, intensive NGO support and international attention for the management of SAM.

Therefore, care must be taken to avoid forming prescriptive models based on these cases. Each country's progress, bottlenecks and solutions must be assessed individually and addressed locally. Following is a process for doing this (see figure 2) and guidance on options that have been successful in a number of countries.

FIGURE 2 Process for scaling up management of SAM



9 ENN, 2012, 'Government experiences of scale-up of Community-based Management of Acute Malnutrition (CMAM): A synthesis of lessons', www.cmamforum.org/Pool/Resources/CMAM-Conference-Synthesis,-Addis,-ENN-2012.pdf.

Step 1. Assess the magnitude and distribution of SAM

Children aged 6–59 months with SAM are the main target for the majority of SAM treatment programmes, so the following information concentrates on this age group. However, other groups such as infants and HIV-positive older children and adults with SAM may represent substantial caseloads in some situations. In these cases it will be important to estimate the magnitude and distribution of SAM for those groups. (For more information see annex F, Management of SAM in other groups.)

Estimate the burden

Estimating the approximate yearly burden of SAM (the need for treatment) at the national level

BOX 1

Guidance point: Data sources

- Population and health service provision data (e.g., Demographic Health Surveys, routine health data)
- Nutrition survey/assessment data from recent years (district, regional, national)
- Maps showing district boundaries and/or health services
- Information on who is doing what and where in health and nutrition and specifically for management of SAM
- Relevant policy, strategy and guidance documents (health, nutrition, other)
- Specific guidelines/protocols for management of SAM and MAM
- Any compiled programme outcome data for management of SAM including indicators on quality (district, regional, national)
- Management of SAM programme and/or pilot reviews and evaluations
- Coverage assessment/survey data
- Any information/studies on community-level structures and community perceptions and practices

among children aged 6–59 months can be very useful to illustrate the extent of the problem. Having this information helps in advocating for a response, and it can subsequently be fed into planning. However, the limitations of using such estimates must be taken into account, particularly for planning (see page 56 and annex A).

Determine geographical and seasonal distribution

Prevalence of SAM is rarely uniform. Assessment of the problem should therefore also involve use of data on the distribution of SAM within the country – noting, for example, particular areas or population groups that have recorded especially high levels of SAM. Understanding the geographic distribution of SAM will help prioritizing scale-up activities (e.g., priority given to high burden and low coverage) especially when resources are limited.

Any data on the seasonality of acute malnutrition should also be taken into account. Information can be gathered through seasonal calendars and review of the literature or nutrition surveys to pinpoint specific periods where different factors (such as the lean season or rainy season) may exacerbate the underlying causes of malnutrition. Understanding seasonality of SAM will aid in determining where and when resources and additional support may be needed.

Understanding the underlying causes of malnutrition should also be factored during the assessment of the situation particularly in geographic areas where SAM burden is particularly high. This information will be useful for advocating with relevant actors to address the concerns identified in the assessment or in planning for integration of services with SAM treatment.

Identify vulnerable groups

There may also be specific groups that may be particularly affected by SAM. Data, if available disaggregated by sex, socio-economic status, or livelihoods group may be able to show if specific groups exhibit a higher burden of SAM

which might necessitate specific targeting of programming in order to equitably reach the population.

Step 2. Map, mobilize and consult

Map and Mobilize partners

An important stage of scale-up is mapping, mobilizing and involving partners, including government departments, United Nations agencies, international and national NGOs, academic and training institutions, donors and the private sector. The aim is to assemble a group of practitioners who can be fully briefed and oriented on the approach and help to direct the assessment of the extent of SAM in the country and of the bottlenecks that impede treatment. This should be the same group that will develop scale-up plans and put them into practice.

Mapping capacity and potential partners is also one component of preparedness activities outlined in UNICEF's Core Commitments for Children in Humanitarian Action (CCCs).¹⁰

Mobilization of this audience may need to be undertaken as a specific standalone activity, or may also be part of broader coordination and planning in countries. It is important at this stage to mobilize as wide an audience as possible (see box 1) and to maintain a multisectoral approach to ensure that stakeholders or potential stakeholders outside the traditional health and nutrition sectors are not missed. It is also important to seek representatives from subnational levels, as they will have a different

¹⁰ UNICEF, 2010, 'Core Commitments for Children in Humanitarian Action', www.unicef.org/publications/index_21835.html.

BOX 2

Guidance point: Partners to include in consultations

- Relevant MoH sections: includes clinical services, infectious/communicable diseases, health promotion, information management, HIV, not just the section with primary responsibility for nutrition
- Private sector: health providers (particularly where they are numerous) and those with potential for involvement in local production
- Ministry of agriculture: particularly where active community extension workers are in place and where local production is under discussion
- Ministry of social affairs/social welfare: particularly where community extension workers fall under their responsibility, where systems are in place for free health care based on eligibility criteria and where social protection schemes are in place that could provide useful links
- Ministry of education: particularly to ensure links with early childhood development initiatives and for discussion on pre-service training
- Regional and district administrations, social development departments and health offices
- Professional associations: national paediatric associations, midwife associations, etc.
- Religious organizations: particularly those involved in service delivery and community support
- Training and academic Institutions: universities, colleges, medical schools, etc.
- Other ministries (water, planning, child protection etc.) for specific issues or topics that need to be discussed, such as advocacy with the Ministry of Planning for budgetary allocation during the government's financial year
- United Nations organizations present in the country: UNHCR, WFP, WHO, UNOCHA if present in the country
- Potential donors and/or traditional nutrition donors
- NGOs

perspective on managing SAM scale-up than those at the national level. The exercise should include an initial mapping of the capacity and comparative advantage of different agencies and institutions in relation to treatment of acute malnutrition. Where relevant, the mapping should involve a consideration of the ability of NGOs to support the capacity development of government officials in more central and strategic ways, such as working with national institutions to develop in-service training or build national capacity for coverage assessments.

It may be helpful to hold additional preparatory meetings with partners identified during the mapping prior to the larger consultation meeting with all stakeholders to discuss the aims of the consultation and encourage participation, particularly from partners who previously have had little involvement in management of SAM.

Map sources of data

It is important to map sources of data on implementing management of SAM (see box 2). This information will inform initial consultations and bottleneck analysis. Plans to track down additional data identified as essential for use during bottleneck analysis should also be made at this stage.

Consult with stakeholders

Next, a stakeholder meeting should be held at the national level, facilitated through a national-level technical working group or coordination mechanism such as the Nutrition Cluster. The purpose of the meeting is to build a common understanding of how to manage SAM; discuss the scope and objectives of scale-up; and agree on broad processes, activities, timelines and responsibilities for capacity assessment and bottleneck analysis. A working group for planning and implementing scale-up of management of SAM can be formed at this stage, if one doesn't already exist. This process should include defining how this national group will reach down to regional and district levels and actively engage stakeholders at the subnational level.

Step 3. Perform bottleneck analysis

While progress continues in the development of global level guidance for integrating SAM treatment into the broader health system package, it is important to ensure that bottlenecks are analysed and potential solutions identified as part of the local planning process. An assessment of bottlenecks should be conducted in a participatory way with representatives from all stakeholder groups, covering national, district and community levels. Such an exercise can inform the planning and implementation of new SAM management programmes. It can also be used to assess national implementation capacity in order to identify bottlenecks that need attention, which in turn feeds into the development of annual action plans.

Monitoring Results for Equity System (MoRES) and District Health System Strengthening (DHSS) tools and guidance can be used for bottleneck analysis, focusing on management of SAM in isolation or as part of a wider health or nutrition package. MoRES can be implemented through a DHSS approach for many of the young child survival and development interventions that are delivered through the health system using different delivery platforms (facility-based, outreach and community-based). (See page 64 and annex E for more on these tools.) These tools can be used to systematically identify bottlenecks that impede scaling up management of SAM at the community, district and national levels, and to periodically track progress towards alleviating the bottlenecks. The table of benchmarks in annex B can also be used to structure this type of analysis. Even where a formal MoRES approach is not undertaken, the same guiding principles can be used to provide a pathway for actions.

Carry out determinant analysis

The determinant analysis focuses on the key determinants (or a factor that affects the nature or outcome of coverage) of coverage for the management of SAM, and aims to identify the strategies to be implemented to improve coverage and quality. The status of each determinant is analysed and enabling factors

should be identified, as well as bottlenecks and barriers that constrain the fulfilment of the determinants. The removal of bottlenecks and barriers are then monitored frequently (usually every six months or annually) to assess progress in fulfilling the respective determinants. To support this ongoing monitoring, UNICEF is currently exploring how best to include key determinants of coverage indicators into SAM/CMAM monitoring systems and database.

The determinants of coverage used in DHSS have been adapted from the standard MoRES determinants to better fit the realities of health systems, while they can still be easily used to inform the progress in achieving results towards equity.

The conceptual framework for the determinant analysis is derived from the bottleneck analysis

approach originated by Dr. T. Tanahashi.¹¹ It is based on the principle that certain critical conditions or determinants need to be fulfilled to achieve effective and high-quality coverage of services, practices and systems, which are essential for the realization of the rights of disadvantaged children and their families. Understanding the determinants and assessing how they affect the desired results enables sound programming. Ten determinants have been identified by UNICEF as critical to achieve results for children across all programme sectors (see table 1). These determinants are grouped into four domains: enabling environment, supply, demand and quality.

¹¹ The approach was originally proposed by Dr. T. Tanahashi in the 1970s and has been incorporated into the Marginal Budgeting for Bottlenecks approach to identifying and alleviating bottlenecks to coverage of health care. The basic principles remain the same in MoRES, but the 'enabling environment' category was added as determinants of financial access, and socio-cultural beliefs and practices were added under 'demand'.

TABLE 1 Key determinants in managing scale-up of SAM management

Determinant framework, MoRES	Determinant framework, DHSS
ENABLING ENVIRONMENT	
Enabling environment	Social norms
Legislation/policy	Legislation/policy
Budget/expenditure	Budget/expenditure
Management/coordination	Management/coordination
SUPPLY	
Supply	Availability of commodities
Access to adequately staffed services, facilities and information	Availability of human resources
	Geographic access to delivery points
DEMAND	
Financial access	Initial utilization of services
Demand	
Continuity of use	Timely and continuous utilization
QUALITY	
Quality	Effective coverage or good quality of services

MoRES standard determinants have been adapted for Young Child Survival and Development (YCSD) interventions provided through the health sector and which include the management of SAM; the adaptations cater for the specificity of interventions that are provided mainly through the health system.

Once the interventions/programme approaches and objectives are defined, the next step is to further define the 'pre-conditions' that need to be in place to fulfil each determinant in order to achieve the desired result in that particular context. The indicators proposed in the DHSS approach, given in annex B, are grouped according to the major determinants for scale-up as well as delivery platforms. They cover all aspects of the approach and incorporate the objective of integration. These can be used to perform a participatory stakeholder appraisal of the stage of scale-up in the country and to identify key areas of concern and main bottlenecks within each of the major determinants.

Collect data and assemble the baseline

The process of collecting all relevant data for managing implementation of SAM treatment was described in step 1. The data collection to establish a baseline of determinants of coverage is critical. Any gaps in information will need to be filled by additional discussion with key informants, site visits or primary data collection at the community level. If serious data gaps exist, or if quality or accuracy of existing data sources is not adequate, depending on the means of verification this can be a resource-consuming exercise (human, time, financial). Often a mix of already available data and additional data collected ad hoc is used.

At this stage, as the baseline is developed it is also extremely important to validate the data independent of the source. One of the most commonly used validation techniques is data triangulation — in simple terms, triangulation means cross-checking different sources of data to compare estimates. (See annex B for more guidance on types of additional assessments that may be required.)

Identify and carry out causal analyses of bottlenecks

Using all the information and data collected, the same stakeholder group works together to identify the main causes of the identified bottlenecks. Identification of main causes can be done for all bottlenecks or just for major bottlenecks and/or those that need to be addressed first. As part of this exercise the importance of the different causes of any given bottleneck should be assessed in the country context so that remaining actions can be focused accordingly. Some of the information may also come from the review process outlined in step 4, which is particularly relevant when moving from limited to full scale implementation.

The bottleneck analysis, undertaken in a consultative manner with stakeholders, will result in a common understanding of the causes of bottlenecks and identification of solutions, which in turn will provide the basis for developing realistic scale-up plans. The scale-up plans must also take account of the desired pace and targets of scale-up, which are additional parameters that need to be agreed among stakeholders. This process is covered in the next section.

Step 4. Develop scale-up plan

Establish a participatory planning process

The planning process should be participatory, through meetings involving the same stakeholders involved in the bottleneck analysis. The planning process should take place under the direction of the appropriate technical working group, such as one overseeing nutrition coordination or management of SAM. This participation is essential to ensure that (a) all available information and experiences are reflected in the plan and (b) that those who support the scale-up and can allocate resources to it are present and able to indicate their commitments in the plan. This participation also allows for consensus to be reached on the gaps identified and for preparation of a concurrent

BOX 3**Guidance point: Additional tools to facilitate planning for CMAM scale up**

- UNICEF [Supply Division forecasting tool](#) (2012). This will be replaced by an updated version in 2015 following revision of the supply component of the Nutridash tool. Please refer to the CMAM page on the Nutrition programme intranet page for the updated link in 2015.
- [FANTA CMAM costing calculation tool version 1.1](#)
- Potential caseload and target calculations (annex A).

Note: Supply Division tool online at intranet.unicef.org/pd/pdc.nsf/e59d3405e8ee2cb9852567460068fae4/f417f9d4a4d33d7a85257a7e004da073?OpenDocument. FANTA tool online at www.fantaproject.org/tools/cmam-costing-tool.

plan to mobilize additional partners or resources or to advocate at higher levels (see box 3).

Agree on overall objectives, scale-up modalities, pace and targets

The bottleneck analysis from page 8 -10 and the review on page 12-13 will have identified the most critical bottlenecks to coverage, and these become the priority bottlenecks to address. The causal analyses of these bottlenecks and solutions identified among partners form the basis of the scale-up plan which takes into account the country context.

Experience shows that the quality of implementation of SAM management is directly related to the treatment coverage achieved. That is, a programme with good adherence to treatment protocols and has a well-planned and implemented component on community mobilization is more likely to achieve high coverage. Similarly, identification of cases of SAM early in the progress of the disease is important to achieve good treatment results. The challenge for countries, therefore, has been how

to reconcile the push for geographic coverage (disseminating the approach to the largest number of districts) with the mandate to reach the population in need with high-quality services. A parallel challenge for countries is monitoring progress in terms of coverage and quality.

Rapid expansion at the expense of quality has been documented, for example, in [Ethiopia, Pakistan and Somalia](#)¹². This dynamic has particularly been problematic where short-term funding has induced agencies to rush to increase geographic coverage and/or distribute supplies without putting quality checks into place or building sufficient local capacities to implement the approach. The results were compromised quality and effectiveness of services, which undermined motivation of communities and lead to poor treatment coverage. All of these issues take time and resources to rectify and can be avoided.

There are examples of modalities for scale-up that have been shown to be more successful. These modalities used to introduce and then expand the approach to new districts include the following:

- **Covering all facilities in a district before expansion:** This involves expanding management of SAM to all facilities within a district within a specific time period with the aim of achieving coverage before moving on to the next district. This approach works best in the early stages of a programme, as each new district begins implementation, usually in response to demand from the district and reported high levels of SAM. However, this approach initially requires intensive support in terms of resource mobilization and capacity development.
- **Covering a selection of facilities in a number of districts:** This involves introducing the approach in a limited number of facilities in

¹² ENN, 2012a, 'Government experiences of scale-up of Community-based Management of Acute Malnutrition (CMAM): A synthesis of lessons', www.cmamforum.org/Pool/Resources/CMAM-Conference-Synthesis.-Addis.-ENN-2012.pdf.

multiple districts and then gradually expanding to all district facilities over a period of time. This approach is implemented in response to pressure to expand, the need to scale-up SAM management in non-emergency contexts and in situations of scale-up without substantial NGO support at district level. While support required is less than the previous approach, this approach has major implications for initial performance, as implementing management of SAM in just a few dispersed facilities reduces coverage, early detection and full compliance with treatment.

- **Phased approach:** Under this approach, the district health team builds its capacity to manage the programme as it gradually expands the number of facilities (see box 4). In contrast to the previous approach, the expansion is planned and based on specific criteria. This modality works as long as the expansion takes place relatively quickly, such as over a few months, so that quality can be addressed. Such a planned progression also allows for establishment of good practices at limited sites, which can then serve as learning/training sites. Treatment coverage can then be achieved throughout the district, especially if measures to assess coverage and improve poor coverage are implemented.

Based on a consideration of these approaches, during the planning process participants will need to build consensus on the specific objectives for scale-up. Specific objectives reported to date range from scaling up nationally to scaling up in high burden areas only. Stakeholders will also need to agree on targets in terms of the time frame and indicators for achieving the objectives, based on the agreed pace and reach of scale-up (see box 5).

Incorporate review and learning during scale-up

An external review of implementation of SAM treatment in a country is critical when expanding from limited to implementation at national

BOX 4

Guidance point: A phased approach to scale-up

A phased approach has proved a successful way to drive scale-up while maintaining quality (for e.g., in Malawi). In this approach, expansion to new districts and within districts is based on specific criteria such as:

- Demand from the district and/or identification of districts with high SAM prevalence
- Demonstrated quality of service
- Availability of resources (funds, supplies, skilled personnel)
- Availability of qualified technical personnel to provide training and sufficient follow-up
- Availability of supervision and support mechanisms

scale, and should be incorporated as a specific activity in the planning of the scale-up process in countries. External reviews have proven useful in identifying priority areas not detected during routine monitoring and should be conducted as part of the planning process and should include the following activities:

- Collate data on programme performance and coverage, by reviewing routine monitoring data being produced by programmes (which will identify issues of completeness of reporting, performance and quality)
- Assess coverage (treatment coverage and geographic coverage) and barriers to coverage so the programme design can be adjusted and measures put in place to remove barriers during scale-up
- Facilitate sharing of experiences among stakeholders to assess the success of different programme design strategies and implementation modalities
- Identify mistakes, major challenges and bottlenecks being faced

BOX 5**Guidance point: Examples of targets for scale-up**

- Extend the geographical coverage of management of SAM to all health facilities in at least 50 per cent of districts within three years, or more than 50 per cent of target districts.
- Attain at least 50 per cent treatment coverage in at least 80 per cent of districts within a year of initiation of SAM management.
- Incorporate SAM management into national development plan review within two years of start up.
- Ensure that more than 40 per cent of districts where SAM management is being implemented include some resources for SAM management in their district implementation plans within three years.
- Ensure that a certain number/percentage of regional and national training institutions have incorporated SAM management training into their curricula for health workers.

- Identify operational research needs
- Identify specific aspects of policy that hinder scale-up and therefore require attention
- Identify aspects of national SAM and/or MAM management guidelines that require adaptation to respond to local contexts

After this information is collected and analysed, findings should be discussed and reviewed with stakeholders. The results can feed into the bottleneck analysis and further scale up planning. Exercises to review implementation and progress with limited implementation of SAM treatment should be carried out prior to initiation of scale-up and then annually throughout the scale-up process to promote learning and programme adaptation.

It may also be useful for ministry of health (MoH) officials or other stakeholders to visit countries where the management of SAM has been scaled up while maintaining programme quality. Similarly, countries who have scaled up and maintained quality are also encouraged to document and share their lessons learned more widely.

Lessons from similar contexts – such as in the same geographic region or with similar urban/rural characteristics – should be sought and taken into account when planning.

Decision-making, in particular, when moving from limited area provision to national implementation, should be based on experience from pilots and other limited implementation, bearing in mind the context and capacities of the countries' structures and systems (which have been assessed through processes outlined in step 3). The design aspects that ministries of health will have to consider are outlined in the following subsections.

Ensure harmonized national guidelines are in place and supported by all actors

Conflicting guidelines can cause confusion. Where different agencies use different protocols for treatment of SAM, particularly for admission criteria, the result is frustration for both government staff and communities, and an overall reduction in uptake of life-saving services. Alternatively, where both national- and field-level stakeholders are involved in developing the guidelines and tailoring their application to the country context, the stage is set for coherent programming.

It is therefore critical to use a harmonized approach in developing and adapting national guidelines for treatment of SAM that incorporates the latest evidence-based recommendations and takes into account other relevant services such as management of MAM. Resources with internationally recognized protocols and other country guideline examples are useful to inform development of country guidelines (see annexes E and G, so the process of adapting them to meet country needs and experiences must be highly

inclusive. Though the adaptation process may take time, the result will be heightened ownership and capacity. In most countries guidelines have been developed concurrently with introduction of the approach. But if this has not been the case, guidelines must be developed as part of the review and scale-up process (UNICEF 2008). Existing guidelines can be revised as part of scale-up planning to ensure they incorporate lessons from initial implementation and new evidence on treatment protocols.

Decide what to implement and where

Integration with national structures and systems is widely viewed as an efficient way to use resources and increase coverage. But country experience shows that how management of SAM fits within existing structures and systems must be specific to the context, and will not necessarily look the same from country to country. Whether SAM treatment is part of Integrated Management of Childhood Illness (IMCI) or Integrated Community Case Management of Childhood Illness (ICCM), and whether SAM treatment is delivered at the level of health clinic or health post depends on the capacity of those programmes and structures.

Careful assessment is needed to decide at what level to implement inpatient, outpatient and community components of care for the treatment of SAM: hospital, health centre, health clinic, health post or community. Currently, outpatient care is generally implemented at health centre and clinic level. In some countries (for example, [Ethiopia](#)¹³ and Niger) (Chamois) SAM treatment is implemented by health extension workers based in health posts; in others (for example, [Bangladesh](#)¹⁴) (Sadler et al.) by community volunteers or mobile teams (see box 6). Bringing services closer to the population, avoiding the need for parents to travel for long distances (which often means

13 Chamois, S., "Decentralisation and scale up of outpatient management of SAM in Ethiopia (2008-2010)," Field Exchange 40, www.enonline.net/fex/40/decentralisation.

14 Sadler, K. et al., 2008, 'Community Case Management of Severe Acute Malnutrition in Southern Bangladesh', Save the Children and Feinstein International Center, www.cmamforum.org/Pool/Resources/SAM-Bangladesh-Feinstein-Save-2011.pdf.

BOX 6

Guidance point: Dispersed populations and mobile teams

Where few children with SAM attend a facility, delivering the small quantities of supplies needed is expensive, and staff members have fewer opportunities to consolidate their skills. In such cases, mobile teams linked to a central fixed site may be the most effective way to deliver outpatient care, particularly in areas with dispersed populations.

Mobile teams are being tested in Ethiopia, northern Kenya and Somalia. Efficiencies are further maximized by having these teams deliver multiple health services at one point of contact.

that children will not be taken for care until a child is very ill) facilitates access and increases coverage. However, this advantage has to be balanced with the capacity of the health system, the resources available to support lower level implementation, and the capacity to establish and maintain strong links from the service provision to the health centre. If the lower level facilities cannot offer dependable service with sufficient resources, communities will not attend and there will be no benefit. One approach in cases where current capacity is limited is a stepped increase in decentralization as capacity is built at each level.

- **At the health facility:** It is also important to decide:
 - At which points children will be identified: The goal should be to identify children at all points where they come into contact with health providers. At these points MUAC should be routinely measured to identify and refer children with SAM. Screening for SAM is particularly important in hospital settings, which have many contact points in different departments, as well as the outpatient clinic, where acutely malnourished children may

be identified. All staff need to be vigilant and engaged in the identification of individuals with SAM.

- **Where treatment will be carried out and when:** This will depend on space and capacities. Outpatient follow-up should be part of routine services and offered daily. However, it may be offered on specific days in some instances, such as where capacities are limited, as long as new cases are dealt with on the day of presentation. When scaling up it is important to consider current workloads of health facility staff involved in SAM treatment.
- **At the community level:** For the community component, community-level inquiry will guide what to do based on social mobilization, identification of cases and follow-ups (see annex B).

How to support the integration of SAM management into health systems is unclear and has raised concerns in the nutrition community. As a result, a global task force (composed of NGOs and UN agencies) has been formed to provide guidance on the integration and scale-up of the management of SAM into health systems. The task force is currently working on reviewing existing approaches and models, outcomes and recommendations will be disseminated through various platforms such as the CMAM forum (www.cmamforum.org).

Decide who will be involved at each level of implementation

The degree of decentralization of decision-making within the health system is important in the process of determining responsibilities. Where there is little decentralization, it may be possible to assign roles centrally based on the activities required, as long as the assignments are based on successful pilot experiences. Assignments must then be effectively communicated down to regions, districts and facilities. In some cases national guidelines are used to set out specific responsibilities for specific staff though this can undermine ownership at lower levels.

Programmes are usually more effective if the heads of district health offices and health facilities can allocate responsibilities based on their team members' skills and interests. The first step is to familiarize district health offices and heads of facilities with well-run programmes. This can be achieved through the use of learning sites and exchange visits (see page 12).

At the community level, involvement will be guided by community inquiry, which identifies important community agents and communication channels (see annex B). Community health workers can speed the scale-up process by providing an instant delivery mechanism for mobilization and screening activities. If there are no community health workers, volunteers and other key community figures can be recruited for mobilization if motivational packages can be adequately worked out and maintained (see page 37).

Develop community mobilization strategies

If community-level management of SAM is to be effective, communities must know about the programme, mechanisms must be in place for timely identification and referral of cases, and follow-up on children who don't appear for follow-up visits or are not responding well to treatment. Development of these strategies should be driven and informed by community inquiry.

Strategies should also detail how cases are to progress from 'active' case finding, in which community agents seek out cases, to increasing levels of 'passive' case finding, in which carers are able to identify malnutrition in their children and know how to assess and refer them. Building the skills of community agents is as important as building understanding among communities about the programme and removing barriers to services (see [Module 3: Community Outreach](#)¹⁵ (FANTA et al. 2008). See box 7 for some successful components of community mobilization strategies.

¹⁵ FANTA, et al., 2008, 'Community Outreach Training Manual. Module 3', www.cmamforum.org/resource/973.

Select capacity development modalities

If management of SAM is to become an integral part of health services, support needs to focus on building system capacities to deliver the full package of care, from prevention to management. The analysis of health systems and what system functions need to be supported and strengthened is therefore important to support the integration of SAM. While a single capacity assessment analytical framework is not yet available, UNICEF COs can assess their support to health programmes and see how that support can be extended to the management of SAM. Capacity development requirements vary by level. Some illustrative capacity development actions for each level are outlined below. These activities need to build into longer term support activities, and are best developed with specific targets and milestones to monitor progress. There may be value added in planning these capacity development activities with stakeholders engaged in health system strengthening as well,

- **District level:** District and subnational health managers need to know how to manage SAM services within the management of their health programmes. This includes planning, logistics and supply chain management, monitoring, supervising, and analysis and reporting. Training on these aspects should be extended to other relevant staff such as information managers and pharmacists to ensure integration. Topics are typically dealt with in global training materials, but they must be adapted to address the context.
- **Facility level:** The most effective way to build and maintain the quality of SAM management is to offer classroom training by experienced trainers, followed by on-the-job mentoring and learning visits that allow health workers to support each other. (Classroom training alone has very limited impact.) This method has also been found to help trainees to retain skills learned and minimize the time spent out of the facility. This should be further boosted with supportive supervision to maintain and enhance lessons learned and identify additional

BOX 7

Guidance point: Successful community mobilization strategies

- Agree on responsibilities for developing, implementing and monitoring community mobilization. These responsibilities may be shared between the MoH and any other appropriate ministry or administrative body.
- Use paid community health workers from other initiatives or MOH to identify cases of SAM
- Complement paid health workers with volunteers/community agents identified from a broad range of fields, working on narrowly defined tasks in a limited geographic area.
- Jointly train community agents with health facility staff to promote understanding and team-building. After training, hold regular meetings to discuss issues – this is particularly useful in building appreciation for the work of community agents among health facility staff.
- Promote positive mother-to-mother communication to bring in new cases.
- Add MUAC screenings to Child Health Week activities, immunization campaigns and growth monitoring sessions and in early childhood development centres
- Incorporate messages on SAM and SAM management into programme communication strategies.

technical guidance the team may need regularly. Experience shows that with proper planning this approach allows for more staff to be trained than under a traditional cascade 'training of trainers' approach, which has reportedly led to quality issues in some countries. This approach also frees up time and resources for supportive supervision. However, it is important to first take stock of all training events conducted in the country to assess if and where classroom training is needed; on-the-job training and learning visits may be sufficient in situations where most health workers have received classroom training with updated protocols.

- **Community level:** Where paid community health workers are used to identify and refer SAM cases, issues of added workload need to be addressed. Where possible, identification and follow-up of SAM cases should be integrated into the existing training and supervision packages for these workers. Training packages for community health workers are typically conducted over 2-3 days (see page 53 and Annex E) Though paid community-level workers can greatly facilitate the scale-up of management of SAM, they are not a prerequisite for a successful programme. Capacity development can also focus on community volunteers and other local agents identified during community-level inquiry who can complement the work of community health workers and reduce their workload (see page 37).

Develop referral modalities between management components

When children with SAM are identified at community level, referred to facilities and then moved between inpatient and outpatient care or other programmes such as targeted supplementary feeding programmes to treat MAM and provide support for discharged SAM cases, a key challenge is to avoid ‘losing’ children between inpatient and outpatient services or between the community and the service. This can happen, for example, when a child is referred by a community agent but never arrives at the facility. Addressing this issue requires attention to information systems and communication channels that can be mobilized to facilitate patient transfer. Such mechanisms should be investigated during community enquiry (see annex B) and can be enhanced through innovative methods.

Consider support for the supply chain

Continuous availability of supplies without stock-out is a pre-requisite for successful scale-up of the management of SAM since recovery is undermined by interruptions to treatment.

Information on the specific commodities, routine medications and equipment available through UNICEF are available in the online

[supply catalogue](#) (see page 60).¹⁶ RUTF lies at the centre of the community-based approach to management of SAM. At the same time, among therapeutic supplies (pharmaceuticals, equipment, etc.) procurement of RUTF presents the biggest challenge as it represents about half of total costs for implementation and is a heavy and high-value commodity. Considerable supply chain analysis and support is needed, along with experience in providing such a heavy product, if supplies are to be delivered reliably through government mechanisms. (See page 35 for guidance on addressing common supply bottlenecks.)

Establish links within and outside the health sector

There are many potential entry points within the health sector, at both health facility and community level, for the management of SAM (see box 8). These links can multiply entry points for identification of SAM cases and act as points of referral for children with SAM to access complementary health and nutrition services. The value of these entry points is in increasing the reach of services, providing continuity of care, ensuring more efficient use of time and resources (joint trainings, efficient use of staff, funds sharing), and increasing the effectiveness of interventions, particularly in terms of links with HIV programming.

In addition, there may be links that can be established between the health sector and other sectors to improve coverage and quality of SAM treatment. Where complementary nutrition interventions are in place it is possible to forge links both to widen opportunities for identifying children with SAM and to provide continuity of care and rehabilitation for them. At the same time, there is less operational guidance on intersectoral linkages to enhance SAM treatment. For this reason, the effects of intersectoral links should be tested and documented on a small scale to assess whether they improve coverage

¹⁶ [https://supply.unicef.org/unicef_b2c/app/displayApp/?layout=7.0-12_1_66_67_115&carearea=%24ROOT\)/do?rf=y](https://supply.unicef.org/unicef_b2c/app/displayApp/?layout=7.0-12_1_66_67_115&carearea=%24ROOT)/do?rf=y)

Guidance point: Examples of successful programme links

- Using growth monitoring and promotion sessions to measure MUAC on all children with faltering growth, followed by referral for treatment if needed (e.g., Mozambique)
- Screening children for acute malnutrition in ECD centres (e.g., Nepal) and incorporating ECD activities into emergency nutrition programmes
- Using IMCI and community-IMCI services as the main entry point for management of SAM (see [modified IMCI tool](#), annex E). Adding identification, referral and possibly management of SAM into community case management of pneumonia, malaria and diarrhoea
- Identifying SAM cases as part of Child Health Weeks and immunization activities and outreach
- Holding SAM management consultations in mother and child health clinics, obstetric care centres and antenatal clinics
- Linking SAM consultation with caregivers and infant and young child feeding (IYCF) counselling and/or referral for additional IYCF support. This has been carried out in Sierra Leone, Zimbabwe and Ethiopia using the [CMAM/IYCF training package](#) and documenting positive experiences in the CMAM programme. Mother-to-mother IYCF support groups have also been used to conduct follow-ups on children with SAM (e.g., Ghana, Malawi, Pakistan)
- Linking HIV/tuberculosis programming with management of SAM. There is well-documented evidence of effective treatment of SAM in children suffering from HIV and of increased uptake of voluntary HIV counselling and testing when offered during SAM consultations.

Note: For the CMAM/IYCF training package, see ENN, IFE Core Group & Collaborators, 'Integration of IYCF support into CMAM', 2009, www.ennonline.net/integrationiycfintocmam. For SAM treatment of children with HIV, see M. Ndekha et al., "Home-based therapy with ready to use therapeutic food is of benefit to malnourished, HIV-infected Malawian children," *Acta Paediatrica* vol. 94 (2): 222-225, (onlinelibrary.wiley.com/doi/10.1111/j.1651-2227.2005.tb01895.x/abstract) and K. Sadler et al., "Improving the management of severe acute malnutrition in an area of high HIV prevalence," *Journal of Tropical Pediatrics*, 2008, 54 (6): 364-369, (tropej.oxfordjournals.org/content/54/6/364.abstract). For increased uptake of HIV counselling and testing see P. Bahwere et al., "Uptake of HIV testing and outcomes within a community based therapeutic care (CTC) programme to treat severe acute malnutrition in Malawi: a descriptive study," *BMC Infectious Diseases*, 2008, 8 (106): 1-13, www.biomedcentral.com/content/pdf/1471-2334-8-106.pdf.

or recovery, benefit the other sector and allow more efficient use of resources.

Success may depend largely on how well those services are implemented; some links within health and between health and other sectors that have proved successful are in Box 8 and detailed further in this section.

There is a close linkage between prevention and management of SAM and infant and child feeding (IYCF) programming. The majority of protocols include provision for IYCF counselling for children in SAM treatment. However, using the management of SAM consultation to deliver IYCF counselling focuses on a very small group

of children (those with SAM) and on only one aspect of IYCF support (counselling). SAM management can be more strongly linked to a comprehensive IYCF programme that tackles the major barriers to good IYCF practice with the aims of community-level impact for the prevention or recurrence of SAM. The need for more robust models of linkages is illustrated by the experience documented in [Zimbabwe](#)¹⁷, where the lack of population impact from integrating IYCF into CMAM underlined the need for a more comprehensive IYCF strategy.

¹⁷ Dube, Wisdom G., Thokozile Ncube, and Paul Musarurwa, 2012, "Frontline experiences of Community Infant and Young Child Feeding in Zimbabwe," *Field Exchange* 43, www.ennonline.net/fex/43/frontline.

The latest [UNICEF IYCF programme guidance](#)¹⁸ and associated materials are clear on the need for linkage between programmes: “IYCF and CMAM should be conceptualized and planned as two integral parts of a single programme to prevent and treat under-nutrition, not as two completely separate programmes.”

There is also specific guidance available for [integrating early childhood development \(ECD\) activities into emergency nutrition programming](#)¹⁹. This guidance is based on the evidence that emergency programmes using mother-to-mother group support and home visits to improve mother-child interaction had other benefits: As the mother became more responsive to the child’s needs, maternal mood and well-being improved, as did the child’s nutritional status and growth outcomes. This approach suggests that ECD activities could be integrated within or linked to management of acute malnutrition in emergencies to maximize the recovery and the physical, social, emotional and intellectual development of children being treated. However, there is little evidence of what might be possible in this area in non-emergency contexts.

Though such results are encouraging, there are still few documented cases of SAM management being planned together with or linked comprehensively with a range of nutrition and health interventions. One example is a comprehensive approach being implemented in Kenya, which is already offering some insights into best practices and issues (see box 9).

Where other complementary health and nutrition interventions are not in place, management of SAM can help to bring those issues onto the agenda. The absence of services for the management of MAM is one example, in terms of ensuring a continuum of care for acute

malnutrition. Whether traditional MAM treatment through targeted supplementary feeding is feasible or advisable in long-term non-emergency contexts is currently under discussion at global level.

Although there is an increasing amount of literature highlighting the importance of linking nutrition programs to water, sanitation and hygiene; agriculture, food security; and education programmes, there is still little documentation outlining optimal operational links. Their cross-sectoral nature makes it more challenging to build the evidence base for the added value of forging such links. Examples are:

- Training primary school teachers and/or students to identify SAM in their villages and establishing links with community health workers

BOX 9

Good practice: Kenya’s integrated nutrition package

During 2010, Kenya adopted a package of 11 high-impact nutrition interventions focusing on infant feeding, food fortification, micronutrient supplementation and prevention and management of acute malnutrition at the health facility and community level. These essential nutrition services are integrated into routine health services and have proved efficient in preventing and addressing malnutrition and mortality in children. The package is being tested in three districts. An initial evaluation indicates that:

- Ownership of nutrition interventions by the district health team generally increased and coordination for nutrition improved.
- Uptake increased (in term of client numbers) for the majority of the interventions including for management of SAM.
- Extensive support from partners was required to address health system weaknesses.
- Increased monitoring and use of data were required to routinely identify best practices and encourage staff to modify and adapt the services.

18 UNICEF, 2012, ‘Programming Guide: Infant and Young Child Feeding,’ www.unicef.org/nutrition/files/Final_IYCF_programming_guide_2011.pdf

19 UNICEF and WHO, 2012, ‘Integrating Early Childhood Development (ECD) activities into Nutrition Programmes in Emergencies: Why, What and How,’ www.who.int/mental_health/emergencies/ecd_note.pdf.

- Supporting smallholder farmers to produce quality crops of peanuts for a guaranteed market and price, for local production of RUTF, thus ensuring quality and reliable supply

There has also been little documentation of experience in linking management of SAM with social protection schemes, such as cash grants, vouchers and productive safety net initiatives targeting the poorest and most food-insecure households. There may be potential for health staff to refer families for participation in such initiatives or for community-level identification of SAM to link to activities that form part of these initiatives. This is an area for future development.

Consider emergencies and contingency planning

Emergencies can drive scale-up by providing additional funds and involving other stakeholders. However, these benefits may also cause problems. Emergency funds are usually short term and unpredictable, starting and stopping periodically. An emergency-based approach can hinder progress by undermining government ownership, complicating coordination, creating parallel programming and putting in place inappropriately resource-intensive solutions to implementation issues such as monetary incentives for volunteers and complicated reporting systems. UNICEF can play a role in mediating these issues by supporting strong government coordination and the promotion/enforcement of the use of standard guidelines and protocols as well as integrated and harmonized approaches that will continue to strengthen existing systems (see page 21).

To address the issues associated with stop/start funding, an alternative framework²⁰ for guiding UNICEF and NGO support to government is being implemented in some places, including Uganda and Kenya (see figure 3). The approach

20 Hailey, P. and Daniel Teweldeberha, 2010, "Suggested new Design Framework for CMAM Programming," *Field Exchange* 39, www.ennonline.net/fex/39/suggested.

is based on identifying thresholds corresponding to the numbers of children with SAM that each health facility (or district) can manage with minimal long-term support. This framework is coupled with contingency agreements reached with district/subnational and national health teams on the type and intensity of additional support required, based on a detailed risk analysis – such as in supply and logistics, human resources, supervision and monitoring, data collection and analysis – and who will supply it if those thresholds are exceeded.

In terms of management of SAM, this framework redefines emergencies based on the capacity of the system to manage the caseload rather than on SAM prevalence. It therefore serves to sharpen programme focus on disaster risk reduction and local capacity development as explicit strategies for the long term, contributing to resilience of communities and health systems in the face of multiple shocks.

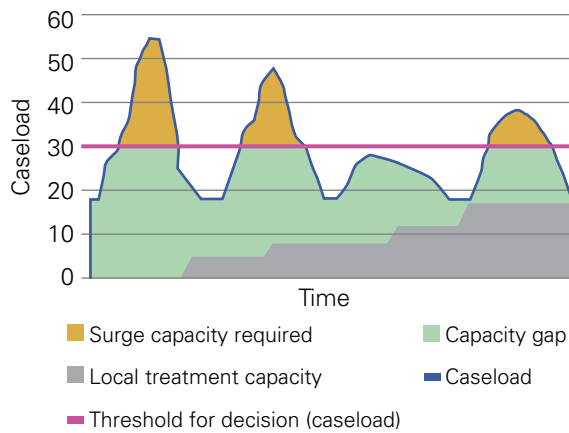
The increased decentralization of programmes for management of SAM to the health clinic/health centre level as part of national scale-up is in line with UNICEF's disaster risk reduction (DRR) programme guidance note²¹. Scale-up provides additional treatment capacity, catching children with SAM earlier in the progression of the disease and treating them closer to home. Earlier identification and initiation of treatment helps to reduce both the vulnerability of children to additional shocks and the vulnerability of families caring for those children. It also enables these families to continue with their livelihood and coping strategies while their children receive treatment, thus protecting community resilience. This approach is also in line with UNICEF's approach to humanitarian action²².

21 UNICEF, 2011, 'Disaster Risk Reduction Programme Guidance Note,' <https://intranet.unicef.org/Emops/EMOPSSite.nsf/root/Page0502>.

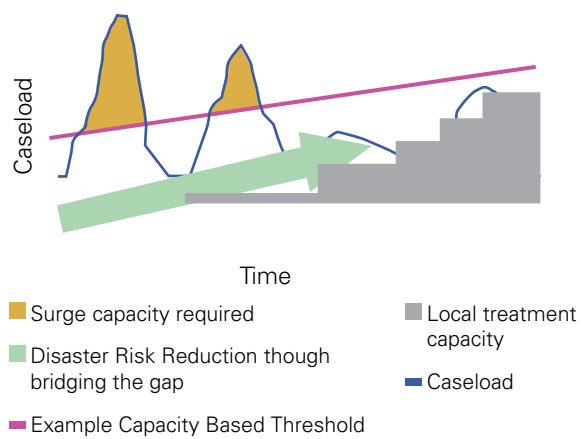
22 UNICEF 2011, 'UNICEF's Approach to Humanitarian Action,' <https://intranet.unicef.org/pd/pdc.nsf/e59d3405e8ee2cb9852567460068fae4/f417f9d4a4d33d7a85257a7e004da073?OpenDocument>.

FIGURE 3 New framework for designing management of SAM, illustrating the disaster risk reduction approach

New framework for design of SAM



DRR framework for MSAM



Source: Hailey and Tewoldeberhe, 2010.

Specific actions to enhance preparedness and DRR are outlined in the CCCs²³ (UNICEF 2010) and DRR guidance²⁴ (see box 10). Note that all these actions should routinely be part of SAM management programming scale-up. The use of the thresholds model noted above adds the critical component of defining the capacity gap that needs to be addressed and identifying support partners and modalities for emergency response as part of preparedness.

Address coordination requirements

The consultation at the beginning of the planning process, which would have identified a range of stakeholders for management of SAM scale-up, can contribute to the development and/or strengthening of coordination mechanisms and partnerships for management of SAM, and nutrition more broadly, in the country. It is essential that the scale-up planning and management is linked to longer term coordination mechanisms and partnerships, in order to contribute to smooth implementation and monitoring of scale-up.

23 UNICEF, 2010, 'Core Commitments for Children in Humanitarian Action', www.unicef.org/publications/index_21835.html.

24 UNICEF, 2011, 'Disaster Risk Reduction Programme Guidance Note,' <https://intranet.unicef.org/Emops/EMOPSSite.nsf/root/Page0502>.

BOX 10

Guidance point: CCC preparedness and DRR actions for management of SAM

- Establish integrated guidelines for management of acute malnutrition.
- Assess coverage of existing services for management of SAM and establish a contingency supply and distribution plan (see supply contingency calculations in supply tools from Box 3).
- Map community capacities and communication channels to identify the most effective ones for disseminating nutrition information.
- Ensure that the situation analysis takes account of trends in SAM admissions, in terms of the numbers and whether any particular groups (beyond children aged 6–59 months) are being identified with regularity.
- Ensure emergency preparedness is included in national management of SAM scale-up plans and UNICEF national work plans.
- Ensure capacity development for management of SAM.

National structures: Where management of SAM coordination is located at the national level and who leads it usually depends on how nutrition and health are coordinated in the country. However, the most important aspect is that coordination should be led by government (where one exists). Government leadership is essential for national ownership and to ensure a long-term view of what is feasible and sustainable when addressing barriers to scale-up, including addressing shortfalls in the enabling environment. For this reason, coordination of management of SAM exclusively through short-term nutrition coordination structures that are not linked to longer term national coordination structures are discouraged.

UNICEF COs are often already supporting government to provide a strong coordination platform for nutrition in both emergency and non-emergency contexts and therefore are well placed to also support management of SAM coordination (see box 11). This coordination platform may be a nutrition sector or cluster.²⁵ Strong national coordination is important to ensure harmonized approaches and standards among partners; clarify roles to maximize resource use and avoid conflicts; achieve consensus on the best approach to scale-up; establish roles and responsibilities; ensure representation of key cross-sectoral stakeholders; and strengthen monitoring and accountability. UNICEF's technical support should focus on providing the additional information and skills required for government to effectively coordinate the multiple stakeholders involved in the scale-up of SAM management.

Ideally, management of SAM coordination is taken on by the existing nutrition coordination group in MoH with substantial authority. In some cases, a smaller subgroup or technical working group may be set up with specific terms of reference to move forward on particular aspects of scale-up. Where management of SAM is strongly coordinated

²⁵ UNICEF as cluster lead agency for nutrition has specific roles and responsibilities in relation to coordination of the nutrition response. For more information, see the Global Nutrition Cluster website <http://nutritioncluster.net/>.

BOX 11

Guidance point: Elements of UNICEF coordination support to governments to scale up SAM management

- Providing up-to-date technical expertise, tools, reviews, reports and results of latest operational research on management of SAM
- Supporting field supervision visits and holding coordination meetings
- Mediating relationships between government and NGOs
- Facilitating the process of defining clear roles for various partners
- Supporting reviews to guide programming (programme performance, supply chain, coverage etc.).

through the health sector, there will be buy-in from health staff at all levels, and SAM coordination can reap the benefits of a well-functioning coordination system. However, if the existing nutrition coordination group is comprised of stakeholders only from the health sector, it can be difficult to maintain the essential cross-sectoral work. In this case, care should be taken to mobilize additional stakeholders from other relevant sectors identified during the initial stakeholder mapping and the coordination group should be linked to multisectoral platforms, for example, Scaled-up Nutrition (SUN). Where coordination of nutrition is placed beyond the MoH (see box 12) the benefits can be wider buy-in.

- **Technical working groups:** In many countries technical subgroups working under the nutrition coordination body have been effective in coordinating the scale-up of management of SAM. These subgroups take on the main coordination role and perform specific activities. These groups can effectively bring together stakeholders, building consensus on protocols, approach and plans. The result can be 'one voice' advocating for management of SAM, which can play a key role in influencing

policy agendas, or protocols that have wide scale buy-in and endorsement, depending on the TOR of the technical working group. Such groups may also be dynamic enough to provide technical support for capacity-building, supervision and reporting. They may be set up just on the national level or also at the regional and district level (e.g., Ghana) depending on needs and capacities. Points for inclusion in national technical working group TORs include:

- Building of consensus among stakeholders for management of SAM

BOX 12

“Guidance Point” Coordination Mechanisms”

In many countries, the MoH plays the lead role in national coordination of SAM management.

In some countries, like Malawi, nutrition is coordinated under the Office of the President.

In such cases it may be easier to raise the issue of management of SAM on the national agenda and to maintain the multisectoral team and approach required for management not just of SAM but of all nutrition programmes that reach beyond the health system.

However, when nutrition coordination cuts across ministries, there can be challenges, such as unclear accountabilities, resulting in fragmentation of the approach at the field level. In a balanced approach it is possible to maximize the advantages of both approaches.

In Niger, for example, the MoH nutrition directorate is responsible for coordination, and management of SAM is included in special programmes under the Office of the President.

Note: Regarding fragmentation at the field level, see H. Deconinck et al., ‘Review of Community-Based Management of Acute Malnutrition Implementation in West Africa: Summary Report’, 2011, www.cmamforum.org/Pool/Resources/WEST-AFRICA-CMAM-Synthesis-Oct2011-FANTA.pdf.

- Development of operational plans for scaling up CMAM including costing
- Development/adaptation of national protocols, guidelines and materials for management of SAM, including training materials and strategies
- Providing technical oversight, analysis of bottlenecks and troubleshooting for implementation
- Advocacy/lobbying for inclusion of CMAM in relevant health, nutrition and development policy and in government and donor budgets
- Monitoring and reporting on scale-up progress
- Linking closely with regional (and district) coordination mechanisms to share information and to supervise and monitor implementation
- **Subnational structures:** The decentralized nature of management of SAM means that coordination must be addressed at the regional and district levels, again through existing mechanisms where possible. It also means that vertical coordination between these levels must be strengthened. This coordination is likely to be performed within existing mechanisms, led by regional and district health offices. As noted above, in some cases it may be possible to set up technical working groups for management of SAM at regional and district level, with support and periodic participation by the national level to decentralize some of the working group functions. This type of structure has been found to improve monitoring and quality assurance.

Determine available resources

It is important to include all stakeholders, including donors, when discussing available resources and potential funding sources and mechanisms. Broad based inclusion will help ensure that realistic plans are developed, based

on the costs calculated during the planning process, available resources and an understanding of the enabling environment in terms of government budgeting processes. It will also allow for future plans based on agreed resource mobilization strategies. (See page 31 for more on addressing financing bottlenecks.)

Step 5. Develop a monitoring and evaluation plan

Identify areas needing monitoring

As part of developing the scale-up plan, it is important to identify the key areas and/or bottlenecks that need to be monitored and establish systems to allow routine capture of the data in a way that facilitates analysis and use of the data collected. Developing the framework of benchmarks and indicators used for the bottleneck analysis can serve as the basis for this activity (see annex B and the framework for integration of management of SAM into national health systems). The aim is to progressively remove the identified bottlenecks to scale-up effective coverage.

The monitoring and evaluation (M&E) plan should identify, for each determinant indicator in the framework, the **means** (e.g., routine programme monitoring data, programme reviews, meeting reports, supervision reports, coverage assessments, external evaluations), **frequency** and **responsibility** for collecting and compiling data appropriate to the country context (see table 2). Data for the M&E plan will often include a range of information, including performance statistics and programme outcome

data, as outlined below. Data quality will also need to be taken into account during the analysis process and incorporated into the M&E plan. Where data quality issues exist, they should be systematically addressed as part of overall supervision and management of the scale-up process.

It is useful to collectively review progress of the implementation of the scale-up plan and the removal of critical bottlenecks with stakeholders on a regular basis (every six or 12 month) as part of M&E and ongoing planning of the national programme.

Assess programme performance indicators

Performance of SAM management should be assessed primarily through analysis of (a) the **effectiveness of treatment** (rates of recovery, death, default and non-recovery) and (b) **treatment coverage** (access to and use of services) (see box 13).

Measuring progress towards scaling up **geographical coverage** is also a useful means of assessment (see annex A). Additional useful indicators are (a) the degree to which the programme is **integrated** into existing systems (sustainability), (b) the effectiveness of the **supply chain** and (c) the **completeness of data** on performance.

Benchmarks and key indicators to monitor the performance of management of SAM are suggested in annex B, and discussed below.

In the case of emergencies, appropriate **indicators of performance** are outlined in the [CCC handbook](#) (available in English, French and

TABLE 2 Example of monitoring framework

Indicator	Means	Frequency	Responsibility
Proportion of health facilities offering CMAM services	Routine programme monitoring report compilation	Monthly	UNICEF and MoH information management focal point
Proportion of medical/nursing schools that have integrated training in CMAM into their curricula	Stakeholder review	Yearly	Nutrition directorate of MoH and national teaching institution nutrition focal point
Percentage of reports reaching national level for compilation	Routine programme monitoring report compilation	Monthly	UNICEF and MoH information management focal point

BOX 13**Guidance point: Criteria for measuring programme performance**

- Supply chain functions/stock-outs
- Human resources
- Access to services/geographical coverage
- Continuity of treatment
- Treatment coverage
- Effectiveness of treatment
- Integration into health systems

Spanish).²⁶ These are in line with International Sphere standards (see box 14).

To monitor the performance of SAM management in non-emergency contexts, Sphere indicators (for recovery, default, death and coverage) are still used. Though questions have been raised as to the appropriateness of Sphere standards in non-emergency contexts, well-run national programmes are achieving results using these standards, at least for recovery, default and death.

Though Sphere targets for **treatment coverage**²⁷ in rural and camp settings are proving to be routinely attainable at the district level in emergency programmes, experience is showing that it is challenging to achieve these levels of coverage with the less intensive support that characterizes national programmes.

The targets are also proving hard to attain in urban settings where community mobilization has particular challenges. As direct assessment of treatment coverage becomes more common in non-emergency contexts and as it is increasingly applied to assess treatment coverage at subnational and national levels, more information will accumulate

²⁶ UNICEF, 'Core Commitments for Children in Humanitarian Action', 2010, www.unicef.org/publications/index_21835.html.

²⁷ For more information on coverage and definitions, please see page 28, page 58, and annex A.

BOX 14**Guidance point: Sphere performance indicators for SAM management**

- More than 90 per cent of the target population is within less than one day's walk of the programme site, including time for treatment and walk home.
- Coverage is greater than 50 per cent in rural areas, 70 per cent in urban areas and 90 per cent in camp situations. (For current guidance consult relevant forums.)
- The proportion of discharges from therapeutic care who have died is less than 10 per cent, recovered is greater than 75 per cent and defaulted is less than 15 per cent.

Note:

- *Coverage in the Sphere standards* refers to individuals who need treatment against those actually treated (e.g., treatment coverage)
- Performance indicators should combine inpatient and outpatient care outcomes without double counting (i.e., by removing transfers between the two components).
- The population of discharged individuals consists of those who have recovered, died, defaulted or not recovered. Individuals who are referred to other services (e.g., medical services) have not ended treatment and are not considered discharged.

Source: Sphere 2011. There Sphere Project. Humanitarian Charter and Minimum Standards in Humanitarian Response. 2011, www.sphereproject.org/handbook/

on appropriate targets and the time frames required to meet them in non-emergency programmes. Sharing coverage experiences on the forums outlined in annex G is therefore important.

Capture and analyse programme outcome data and provide feedback

Capturing reliable programme information is a critical but often overlooked part of managing an effective programme. It is no small task to

Guidance point: Nationally agreed reporting for SAM management

For management of SAM it is important to ensure that appropriate national reporting formats are respected in emergencies, through support to a strong coordination platform. This will ensure consistency and comparability of reporting of programme results to the national coordination group and the government.

Save the Children UK has developed a monitoring and reporting tool for NGOs in emergency supplementary feeding programmes (the Minimum Reporting Package). Though it includes modules for monitoring management of SAM, these are unlikely to be sufficiently streamlined for national programmes. Therefore they should only be used where agreed national formats are not in place.

capture quality information, but its potential value for improving the programme and providing a basis for advocacy and resource mobilization is significant.

The simple online format produced by the Global SAM Management update (<http://sammanagementdata.org>)²⁸ (see box 34) articulates a limited set of key SAM indicators and information (adhering to common definitions) to be collected as standard across countries.²⁹ This set of indicators can help provide a framework within which countries can develop their more extensive national and subnational reporting and monitoring systems. As part of the Global SAM Update, each country will have online access to update specific indicators annually. This information will be stored at the country level and will be available at regional and global levels. This will enable tracking of trends in specific indicators such as geographic

²⁸ Only accessible online during data collection period (usually Q1 and Q2). To get an excel version of the latest format, please contact nutrition@unicef.org.

²⁹ Currently only accessible to UNICEF staff but in future will have a publically accessible component.

coverage, annual caseloads, reporting completeness and performance indicators.

Treatment outcomes

A suggested minimum reporting format for collecting programme outcomes at facility level was circulated in the 2008 programme guidance and is included in annex E. This minimum reporting format can form the basis for development or modification of national formats for reporting on treatment of SAM and providing information on performance needed to guide implementation of the service, but it is not meant to be applied without adaptation to the country context, in particular if there is an existing nutrition information system in place. The minimum reporting format single form is to be used by both outpatient and inpatient facilities and includes a simplified set of admission and exit categories. Streamlined reporting, like that in this model, can help facilitate accuracy and completeness.

Community referrals

The number of children being identified and referred for treatment by area (village or collection of villages covered by community agents) should also be collected. This information may be incorporated into facility reports, compiled by community health workers as part of their reports of their actions and the actions of other community agents. Rapid SMS is also showing some potential (Ethiopia, Uganda, Nigeria) for timely collection and compilation of these data, enabling it to be reported simultaneously to subnational and national levels (see box 22, page 36).

Additional data

At the national level, the following additional information needs to be collated, analysed and used to inform plans/actions:

- **Completeness of reporting:** Proportion of districts and health facilities submitting reports within the reporting period.
- **Supply chain functioning** (see page 35): Reports of stock-outs.

- **Geographical coverage:** Number of facilities with active treatment services out of the total number of facilities.³⁰ This information allows tracking of scale-up progress in terms of the number of districts/facilities offering treatment, and the information can be collected from district reports and/or coordination forums (see annex A).
- **Treatment coverage:** Proportion of children with SAM that are being reached with treatment. This information allows an assessment of scale-up progress in terms of what proportion of the burden is being reached. (See page 28, annex A and annex C for means of collection.)
- **Trends in admissions, performance indicators and bottlenecks:** One important component of analysis is the identification of trends over time and geographic areas or centres where performance may be lagging. Where possible the data should be disaggregated by sex and analyzed to identify any notable differences between boys and girls. It is often useful to compare gender patterns in admissions versus gender disaggregated information from nutrition surveys. Information on specific bottlenecks can also be extracted and trends of removal of bottlenecks analysed.

Analysis

Analysis based on national formats should focus on:

- **Numbers and trends in admissions:** to (a) identify seasonal patterns for resource planning, (b) identify anomalies in these trends that require further investigation, (c) track the effects of mobilization and scale-up efforts and (d) identify deterioration in the nutrition situation (in programmes with good coverage). This information will also be used to decide when additional support is required (example in page 20).
- **Recovery, default, death and non-recovery as a proportion of exits:** as measures of

³⁰ This is one of two definitions for geographical coverage. The other one used in this document refers to number of districts with SAM services out of total districts.

programme quality, these indicators can identify issues with adherence to treatment protocols, management of the service (waiting times, approach to clients etc.), RUTF sharing, insufficient community mobilization and poor coverage (see box 14)

- **Numbers of clients transferred to inpatient care as a proportion of admissions:** a possible indication of problems regarding adherence to treatment protocols, difficulties with referral mechanisms and/or coverage issues (poor coverage is equated with late presentation, which often leads to a large number of referrals)
- **Consumption rate for RUTF and therapeutic milk** (depending on other systems in place): to aid in supply planning and potentially to trigger investigation if quantities used differ greatly from the average that would be expected given the number of children receiving treatment (136-150 sachets RUTF/child)
- **Numbers and trends in the proportion of 'other' admissions** (mainly other age groups): an indication of the need for further programme support in identifying and treating those groups. Increases may also indicate deterioration in the nutrition situation.
- **Numbers and locations of referrals:** allows for tracking of community agents' activities, identification of areas needing additional services and those that may have gaps in coverage (low numbers of referrals may reflect either low levels of SAM or poor identification of cases).
- **Number of readmissions or repeat cases:** allows for understanding of the community members perception of the programme, the identification of causal factors in the community and additional services needed.

Feedback

At district, regional and national level, reports should be shared with stakeholders and fed back to facilities and community agents through

supervision visits and meetings. The information should be used to address supervision, support and resources in particular areas; decide on staff training focus; and trigger further investigation visits (see page 28). Ideally the analysis, discussion and decisions for action taken are documented within the nutrition coordination forum.

Integrate coverage monitoring

Treatment coverage (the extent to which all eligible children are being reached) is one of the most critical indicators to assess how well a programme is meeting the needs of the population, and is therefore a vital indicator to monitor.

Why coverage is so important

Meeting the need for coverage requires both highly effective treatment and high coverage (see figure 4 and box 16):

Met need = Effectiveness x Coverage

The **efficacy** of SAM management protocol may be defined as how well the protocol works in ideal and controlled settings. It is measured by the cure (recovery) rate, usually estimated in a clinical trial. For the management of SAM protocol, the recovery rate should be close to 100 per cent if the full protocol is implemented, including early identification.

The **effectiveness** of SAM management protocol may be defined as the cure rate of the protocol under real programme conditions. Effectiveness depends, to a large extent, upon:

- 1. Severity of disease:** Early treatment seeking and timely case finding and recruitment of SAM cases will result in a group of beneficiaries in which the majority of cases are uncomplicated, incident (new) cases. The cure rate of the management of SAM protocol in such a group is close to 100 per cent. Late treatment seeking and weak case finding and admission will result in a group of more severe and more complicated cases. The cure rate in such a cohort may be much lower than 100 per cent.

- 2. Compliance:** Programmes in which the beneficiary and the provider adhere strictly to the protocol have a better cure rate than those in which adherence is compromised. Poor compliance can result from a practices of at the level of the beneficiary (e.g., sharing of RUTF within the household) or the challenges at the level of the provider (e.g., stock-outs of RUTF and drugs). Both levels hamper effectiveness.

- 3. Defaulting:** This is the ultimate in poor compliance.

Therefore, an effective programme must have (a) thorough case finding and early treatment seeking; (b) good compliance; and (c) good retention from admission to cure (i.e., little or no defaulting).

Coverage depends directly upon:

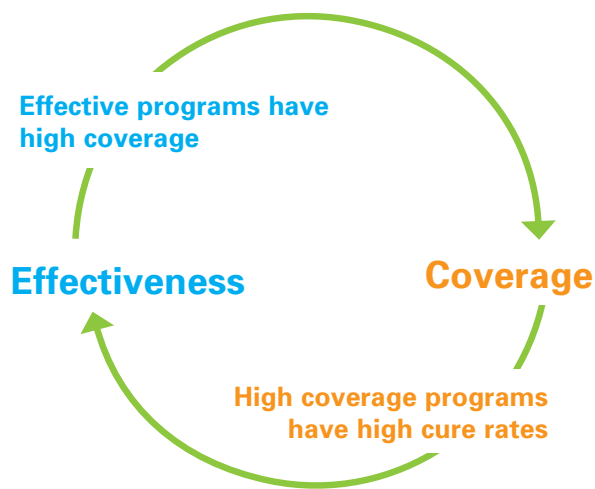
- Thorough case finding and early treatment seeking. This ensures that the majority of admissions are uncomplicated cases leading to positive outcomes.
- Good retention rate, with a high proportion of admitted cases participating in the programme until being discharged as cured. Defaulted cases are uncovered cases.
- Coverage also depends indirectly upon compliance – lengthy stays due to sharing and stock-outs can lead to more defaulting.

How to estimate coverage

In most cases, when data are available in a country it is possible to report on indirect estimates of **geographic coverage** (see annex A for discussion and standard calculations).³¹ Such statistics are very useful for monitoring the progress of scale-up to new facilities within districts, regions and nationally, and they should be reported nationally and subnationally. However, geographic coverage gives little information on

³¹ For definition see box 33.

FIGURE 4 Relationship between effectiveness and coverage



Source: Myatt, M, 2012.

how well programmes are fulfilling their objective of reaching all eligible children, and therefore it provides little information on programme impact.

Indirect estimates of treatment coverage

can also be generated and added to analysis of programme scale-up, but they rely on often secondary data, which has its limitations.³² Thus conclusions based on indirect estimates should be interpreted with extreme caution (see annex A for discussion and standard calculations). At the same time, there may be limited resources to conduct a specific direct coverage assessment. Indirect methods do not supply information on why coverage is poor, information that is needed to maximize performance and therefore impact. That level of information can however be gathered through bottleneck analysis from routine data.

The latest innovations in **direct assessment of treatment coverage** offer the potential to periodically monitor certain aspects of coverage for use in programme planning and development. These are Semi Quantitative Evaluation of Access

³² For definition see box 33.

BOX 16

Guidance point: Coverage and effectiveness

Coverage and effectiveness depend upon the same things and are linked with each other.

- Effective programmes have high coverage, and high-coverage programmes have high cure rates.
- Good coverage supports good effectiveness.

Therefore maximizing coverage maximizes effectiveness and met need.

and Coverage (SQUEAC), Simplified LQAS Evaluation of Access and Coverage (SLEAC) and Simple Spatial Survey Method (S3M). The different methods yield different outputs, and the appropriate methodology will depend on the specific context. These methods, outlined in more detail in annex C, Direct Coverage Assessment, enable direct assessment of treatment coverage at the district, regional and even national level, but also have limitations that need to be taken into account. Information on geographic distribution of coverage enables identification of the main barriers to coverage and actions that can be undertaken without major resources. (UNICEF, CMN, and ACF 2012. See also The State of Global SAM Management Coverage.)³³

Scaling up management of SAM is a complex undertaking, and bottlenecks can emerge in several areas. They are most commonly encountered in dealing with the enabling environment, in terms of policies and practices, and in supply, demand and quality.

³³ UNICEF, CMN, and ACF, 2012, 'The State of Global SAM Management Coverage', www.cmamforum.org/Pool/Resources/The-State-of-SAM-Management-Coverage-2012.pdf.

Good practices for addressing bottlenecks in scaling up

Enabling environment

Political Commitment and policy

Political commitment and leadership determine whether management of SAM is included in development and health priorities and policies and whether government staff time and funds are allocated to the programme. It is at this high-profile level that bottlenecks often arise. Common political/policy bottlenecks include:

- Lack of government commitment to implementation outside the emergency context and/or at the community level
- Incoherent messages and disagreement on nutrition priorities among different agencies/ organizations
- Insufficient incorporation of management of SAM into sectoral and multisectoral advocacy tools
- Insufficient incorporation of management of SAM in health and wider development policy, impeding implementation
- Insufficient budgetary allocation to SAM or to nutrition

While some countries have relied on NGOs (e.g. DRC managed to scale up using NGOs at first), in general, countries where management of SAM is being implemented most broadly are those that have achieved the greatest degree of incorporation of the approach into policies, strategies and plans. Determining which components are most important is country specific and dependent on how much backing those policies have internally and externally. It is therefore necessary to be strategic in assessing political commitment and determining which policies to back.

Where nutrition policies and strategies are in place, they may be the most obvious starting point for the strategic review. However, given that health staff will be largely responsible for implementing SAM treatment, it is essential for management of SAM to be properly reflected in health policies and plans, whether as part of mother and child health care services, IMCI, community case management or elsewhere (Gatchell et al. 2006). If SAM management is incorporated in health policies and plans, it is more likely that appropriate human resource structures, training, responsibilities and performance reviews will be in place and that scale-up will receive sufficient support and resources.

Good practice: Bringing management of SAM into the policy agenda

- **Key agency support:** Have a key agency at the national level (with the agreement of other major agencies) that advocates for and supports the programme with expertise and resources.
- **Emergencies:** Use emergencies to highlight the insufficient capacity to treat SAM with existing approaches and through accurate measuring of the burden of the problem.
- **International dialogue:** Use discussions between nutrition experts (both international and national) and government officials to (a) help demonstrate the burden of SAM in the country and its implications for mortality, and (b) to debate technical protocols and strategies for achieving coverage and raising understanding of the importance of managing SAM as an integral part of the health system. This has been particularly useful in countries with concerns about how to introduce the approach, such as India (see special issue on management of SAM, *Indian Paediatrics* vol. 47). The participatory process of developing national guidelines for management of SAM can serve as a vehicle.
- **National momentum:** More and more countries are joining the SUN Movement, thus demonstrating a clear interest and commitment towards nutrition. This represents key opportunities to ensure that the management of SAM is included in the national policies, strategies and action plans countries may review or develop to fulfil their commitments.
- **National technical working group:** Use a central technical working group or government unit with wide buy-in from the nutrition sector to speak with one voice in advocating for management of SAM during national policy and strategy reviews and drafting exercises in the health and nutrition sectors. This group can also be used to advocate for wider poverty reduction and community development strategies. This group's level of influence is determined by the importance accorded to nutrition at national level, which in turn influences the level at which discussions on management of SAM take place. In addition the technical working group can raise its influence among those who have a voice in the broader discussions.
- **Raising the institutional position of nutrition:** Where nutrition cuts across sectors institutionally, exploit these benefits, such as facilitation of cross-sectoral work and greater mobilization of political will and thus resources for nutrition initiatives. (Some of the global initiatives described in page 45 may help to raise the institutional position of nutrition in a country.)
- **Pilot approaches:** Widely share the results of pilot approaches (e.g. efforts by NGOs) that show the striking results achievable in terms of recovery and coverage. These studies can be useful to inform the adaptation of the approach to the country context.
- **Champions:** Use nutrition champions from different levels (e.g., from the regional level where experience with the approach is strongest or the national level where influence may be greater) to influence agendas. This has been identified as a key to the success of management of SAM in [Ethiopia](#).

Note: A special issue on management of SAM was published in the *Indian Paediatrics*, August 2010, Volume 47; Number 8, <http://www.indianpediatrics.net/aug2010/current.htm>.

On SAM in Ethiopia, see E. Mates, 'Integrating OTP into routine health services: Concern's experiences', *Field Exchange* 40, 2011, www.enonline.net/fex/40/integrating.

However, there are drawbacks associated with focusing the strategic review only on the health system. While this approach can facilitate uptake of the management of SAM approach by all health staff, it can also limit the uptake of critical cross-sectoral aspects, particularly for community mobilization. It is clear that a strong community component is crucial for geographic and treatment coverage of SAM (Guerrero et al. 2010³⁴). Therefore, strategic advocacy for incorporating SAM management into wider food security and development policies will be needed to reflect the approach in its entirety.

General guidance on nutrition agenda-setting may be useful to apply to the experience with SAM (Pelletier et al. 2012³⁵). More specifically, bringing management of SAM into national policy agendas and within health structures and systems, including financing, has been facilitated in various interconnected ways (see box 17).

Resources

All UNICEF-supported countries are attempting to build capacities for management of SAM at all levels – community, health facility, district, subnational and national. Most governments are either unable or have not yet made a commitment to provide resources from domestic budgets for CMAM scale up. Both UNICEF and NGOs are being called on to respond to government and community needs for scaling up SAM management. Ensuring a long-term commitment to develop the capacity of health and community systems is challenging when funding is short term (for supplies and programming) and when it is extremely donor dependent (when little allocation comes from the government). For the most part, at the global level, financing for management of SAM displays both these characteristics.

34 Guerrero, S. et al., 2010, "Determinants of coverage in community-based therapeutic care programmes: towards a joint quantitative and qualitative analysis," *Disasters* 34 (2): 571-85. www.ncbi.nlm.nih.gov/pubmed/20002705.

35 Pelletier, D.L. et al., 2012, "Nutrition agenda setting, policy formulation and implementation: lessons from the Mainstreaming Nutrition Initiative," *Health Policy Plan* 27(1): 19-31. <http://www.ncbi.nlm.nih.gov/pubmed/21292709>.

Common financing bottlenecks include:

- Reliance on short-term funding
- Donor incompatibilities between support for emergency responses versus support for long-term development with respect to supporting management of SAM
- Insufficient government resources for management of SAM at national and subnational levels
- Missed opportunities to mobilize funds through links with (or as a component of) other interventions.

UNICEF directs large scale resources towards supporting SAM management, particularly in terms of procurement of therapeutic supplies. In many countries it has long been the main supplier of therapeutic milk and support for inpatient care; as coverage of cases was extremely low, these costs were also relatively low. With CMAM and the volume of RUTF required, the funding implications are considerably larger. However, UNICEF is in a good position to advocate with donors for longer term funding, to pursue long-term rather than short-term funds, and with governments for increased allocation of domestic funds. This advocacy can be facilitated in a number of ways (see box 18).

Coordination mechanisms

Issues of political and policy-level commitment to management of SAM and the strength of coordination mechanisms may need to be addressed before developing operational scale-up plans (see page 21 and 30 for more guidance in these areas). Common bottlenecks include:

- Lack of central operational plans for scale-up
- Lack of cross-sectoral buy-in or participation in planning
- Insufficient reflection of SAM in wider health and nutrition sector or cluster action plans

- Weak coordination structures
- Lack of long-term funding
- Lack of cost and cost-effectiveness data for development of plans

Over the last few years, management of SAM has often been scaled-up through ad hoc expansion of the approach driven by stakeholder and partner activities, district officials' enthusiasm, availability of funds and emergencies. In some respects this reflects the nature of the approach, which is demand driven and builds on the commitment of district officials to produce results. Though in some cases (e.g., Somalia) quality has been maintained while impressive scale-up has been achieved in this ad hoc fashion (ENN 2012a³⁶), the dangers of relying on such an approach are:

- Lack of ownership by central government, resulting in low allocation of time and resources
- Coordination challenges, including conflicts between NGOs and government over areas of expansion
- Pipeline breaks in RUTF as a result of demand exceeding supply
- Poor quality of programmes, with insufficient resource allocation to follow up on trainings

As a result, those most in need of services may not be covered. For some solutions, see box 19.

Supplies

Human resources: availability and competencies

Common human resource bottlenecks include:

- Staffing levels and workload within the health system

³⁶ ENN, 2012a, 'Government experiences of scale-up of Community-based Management of Acute Malnutrition (CMAM): A synthesis of lessons', www.cmamforum.org/Pool/Resources/CMAM-Conference-Synthesis-Addis-ENN-2012.pdf

BOX 18

Good practice: Facilitating resource mobilization

- Develop accurate funding estimates for management of SAM programmes, with clear scale-up plans and targets. Assess the possibility of piggy backing management of SAM on other resourced child survival programmes.
- Implement additional cost-effectiveness studies in different contexts and with different scale-up modalities, linking with existing services to reduce costs and improve effectiveness.
- In discussions with donors, focus on the threshold model and use the DRR lens to emphasize the importance of management of SAM in the long term.
- Bring donors into scale-up discussions along with government so that both sides can contribute to the plan's development.
- Include management of SAM when using wider advocacy tools such as Marginal Budgeting for Bottlenecks and PROFILES for national, regional and international advocacy (see page 57).
- Diversify funding through health or HIV channels or innovative financing options for funding the full nutrition package with management of SAM as one component (see page 66).

- Workload and motivation of community-level workers and volunteers
- Rotation of staff within the health system
- Skills and capacity of health workers at facility and community level

The response must be closely based on the assessment of capacities and bottlenecks,

BOX 19**Good practice: Planning solutions**

It is possible to balance the demand-driven nature of the scale-up of the management of SAM approach while ensuring coherent planning. Initial expansion should be based on district-level demand in tandem with a central plan to control the speed of scale-up, such as by targeting a specific number of districts for expansion within a given time frame (as in [Malawi](#)).

Lack of cost and cost-effectiveness data is now being addressed with better tools and methods (see page 54).

Development of medium-term plans covering a given time frame has proven useful in securing funds (in [Ethiopia](#), for example), even if they are still from short-term sources.

Note: On scale up in Malawi, see Kathumba S., 'Creating an Enabling Policy Environment for Effective CMAM implementation in Malawi', <http://www.enonline.net/fex/43/creating>.

On funding in Ethiopia, see ENN, 2012, 'Government experiences of scale-up of Community-based Management of Acute Malnutrition (CMAM): A synthesis of lessons', www.cmamforum.org/Pool/Resources/CMAM-Conference-Synthesis-Addis-ENN-2012.pdf.

including human resources management policies. Positive experiences are summarized in box 20.

Health workers' skills and competencies often need to be strengthened, as management of SAM is not included in pre-service training curricula. Common training and mentoring bottlenecks include:

- Lack of knowledge of SAM and experience in managing SAM programmes
- Inadequate quality of training
- Staff turnover, necessitating repeated trainings

A number of countries have developed successful measures to address training bottlenecks (see box 21).

BOX 20**Good practice: Supporting health staff at facility and community levels****Facility level**

- Place additional nutrition staff at district and regional levels, and make them available to all nutrition programmes, not just to the management of SAM.
- Allocate funds from the national budget to increase staff at the lowest level of service delivery.
- Distribute management of SAM follow-up visits over different days of the week to reduce the workload at the treatment sites on any given day.
- Mobilize support staff, such as guards, for crowd control to ease the workload of those delivering treatment.

Community level

- Integrate trainings and materials on management of SAM into existing pre-service and in-service curricula.
- Follow short in-service training with a period of on-the-job mentoring to reinforce skills and ensure accurate referrals.
- Include training on active and adaptive case finding for SAM (see annex C, Direct Coverage Assessment) so that workers can efficiently identify SAM cases without having to go house to house.
- Ensure that communication and feedback mechanisms are in place between the facility and the community-level staff through periodic meetings and supportive supervision.
- Use new technology such as Rapid SMS to communicate information on referrals between community-level workers and the facility to minimize the need for additional facility visits by community workers.
- Pair up community health workers with other community agents (volunteers) and community groups (women's groups, youth groups) who can identify and refer cases under supervision.

Commodities and logistics

Common supply and logistics bottlenecks include:

RUTF pipeline breaks. Interruptions in supplies of RUTF can have a devastating effect on community confidence in the programme. Where pipeline breaks have occurred, they have been reported as one of the major barriers to achieving coverage. While some pipeline breaks are attributed to shortage in global supplies and issues of customs clearance, the majority result from insufficient buffer stocks, late reporting of requests and poor forecasting.

Data problems. Difficulties in planning/forecasting can result from using calculations based on population, SAM prevalence and estimated coverage, which are fraught with inaccuracies. They can also be due to planning based on data on RUTF consumption, which doesn't reflect increases in caseload due to programme expansion, seasonal surges in numbers, intensification of mobilization activities or the use of RUTF for other target groups, such as children with MAM.

Unpredictable funding. This inhibits a country's ability to plan procurement of therapeutic supplies, equipment and other commodities.

Delays and challenges in setting up local production of RUTF.

Measures to address these bottlenecks are the following:

(a) Maintaining the supply chain

The challenges of maintaining the supply chain only increase as scale-up and decentralization of services progress and the overall volume in the supply chain expands. These issues are reported even where parallel delivery systems are implemented with support from the United Nations and NGOs. UNICEF is well placed to support the government supply chain at the country level and is often already doing so for other commodities.

Measures to avoid supply breaks and improve forecasting include:

- **Registering RUTF as an essential supply/commodity.** This will allow the MoH to facilitate clearance of supplies at port and allow government storage at central medical stores and government-led distribution and logistics.

BOX 21

Good practice: Addressing training issues

- **Hold integrated trainings.** These are useful to manage training resources more efficiently and minimize the time spent out of service. One example is conducting refresher training on management of SAM for staff already familiar with the approach alongside training on IYCF (see annex E for materials). Another example is covering SAM in the training package for community health workers.
- **Hold inclusive trainings.** Where high health staff turnover is an issue, all staff in a facility should be trained so they can be rotated and can orient new staff.
- **Focus on district health teams.** It is useful to start implementation of the approach with district health teams. Once they have the skills, they can train others, allowing for future staff to be trained from within. This reduces the burden on national trainers and builds ownership and skills at the local level.
- **Use learning sites.** With learning sites or training grounds in districts, trainees can see good practices being demonstrated and practise their own skills.
- **Integrate management of SAM into pre-service training.** The priority measure for addressing training needs is to integrate management of SAM into pre-service training for health and nutrition staff, working directly with national institutions responsible for establishing curricula.

- **Use of the forecasting tool** to define requirements, together with country partners, using the best information available, reflecting scale-up/expansion plans and patterns of seasonal fluctuations.
- **Improving calculation of programme targets** for planning and forecasting. Methods for indirect estimation may be less accurate than using previous years' admissions or consumption figures. Improvements to the accuracy and timeliness of reporting are required for indirect estimation to be reliable. Extrapolation of current consumption is also required where reports are missing, or to take account of realistic expansion plans and any predicted surges in prevalence (see annex A)
- **Forecasting at district/subnational and national levels** to improve accuracy
- **Maintaining minimum stock levels** at health facility, district, subnational and national levels
- **Implementing contingency planning** for emergencies as well as reductions in access (for example due to rainy season) using the appropriate section in the therapeutic supplies forecasting tool (see box 3)
- **Improving systems to communicate stock levels and ordering.** RapidSMS technology has shown some potential for improving communication of stock levels and requests up the supply chain, thus avoiding supply breaks (see box 22).
- **Supporting appropriate stock management** to minimize wastage (see box 23).

(b) Considering local production of RUTF

As noted above, local production of RUTF can facilitate the scale-up of management of SAM, but it should not be a prerequisite for the implementation of SAM management. Local production of RUTF offers the potential to **create**

political interest, to reduce overall production costs, making it more affordable and reducing the need for foreign currency. However, UNICEF can usually source RUTF more cost effectively offshore. This limitation of local production should be kept in mind when earmarking programmatic funds for local purchases of RUTF. Two factors limiting local production have still not been resolved: insufficient or erratic demand, and complications in producing RUTF.

Insufficient/erratic demand

Local production of RUTF becomes economically feasible when there is stable annual demand for the product at a minimum of 20,000 cartons (276 MT) per year. This level of demand has not been reached in many countries, though sustaining

BOX 22

Good practice: Use of Rapid SMS technology in Ethiopia

In 2008, capitalizing on the widespread use of mobile phones in Ethiopia, a project was initiated to improve the RUTF supply chain. Field monitors were trained to use the RapidSMS system (two hours of training plus provision of a field guide) to send reports every two weeks from the facility level. The reports covered:

- Quantity of RUTF received
- Quantity of RUTF consumed
- Number of new admissions
- Location of distribution centre
- Current stock balance.

The project also allowed for specific alerts on urgent issues, such as “there is no stock at this outpatient therapeutic programme”.

Coverage of supply reporting doubled in just five weeks from initiation of the project, with obvious implications for improved responsiveness and troubleshooting of ordering and supply. By improving completeness of admissions reporting this initiative can also improve forecasting.

Good practice: Protecting shelf life of products

Pharmaceuticals have limited shelf life and must be stored under appropriate conditions to maintain their quality. It is important to assure proper inventory management and stock rotation (first expired, first out) of these products.

Nutrition products also have limited shelf life, determined mostly by the stability of the vitamins and minerals contained in the finished product. Shelf life of RUTF and therapeutic milk is 24 months, indicated on the label as 'best before' date.

The 'best before' date indicates the last date on which the manufacturer guarantees the product's compliance with product specifications. Use of products after that date is not recommended. It is not possible to extend product shelf life based on analytical testing of product samples.

Product shelf life can be affected by storage conditions. High humidity and temperatures accelerate the degradation of vitamins.

Therefore, it is important to comply with instructions provided by the manufacturers when storing nutritional products:

- Products should be stored in clean, dry and cool warehouses away from direct sunlight.
- Temperature and humidity in the warehouses should be regularly checked and recorded.
- Products must be stored in a way that allows air circulation and regular stock turnover.

Further resources on the supply chain are listed in annex E.

a scale-up could change that. Although the RUTF manufacturing process is technically not complicated, substantial investment is required in infrastructure, manufacturing equipment, quality control laboratory, starting materials and working capital. For this reason, supplies purchased from outside the country may be more cost effective in terms of production costs. Overall efficiency

needs to take both production costs and transportation costs into account.

Complications in producing RUTF

Companies producing RUTF in programme countries often face challenges in terms of sourcing materials, particularly of high quality peanuts; cost of ingredients e.g. milk powder, due to high import charges, local currency fluctuations and value-added tax; and quality control measures, particularly the need for an independent laboratory to ensure the finished product complies with specifications and is safe. The UNICEF accreditation process ensures that good quality products are available in sufficient quantities. Though the process can be lengthy, it raises confidence in the product.

Demand

Demand often increases with good community mobilization in support of initial and continued use of services. Common community mobilization bottlenecks include:

- Insufficient attention to community mobilization, leading to poor treatment coverage
- Poor communication about the programme, so that communities don't know about it or don't understand who is eligible or why
- Poor motivation and heavy workload of community volunteers

Insufficient attention to community mobilization (or demand creation) has been identified as a major barrier to achieving programme coverage, particularly during the initial stages of implementation (Ethiopia, Ghana, Mozambique, Pakistan, Somalia, Sierra Leone) (ENN 2012a³⁷). Poor community mobilization may result from (a)

37 ENN, 2012a, 'Conference on government experiences of scaling up the Community-based Management of Acute Malnutrition (CMAM) and lessons for the Scaling Up (SUN) movement,' <http://www.ennonline.net/ourwork/enmeetings/cmamconference2011>.

perceptions that mobilization is not essential, (b) insufficient funds or expertise, (c) concerns about overburdening the health system or (d) lack of leadership by the MoH. As noted earlier, a focus on the health system can create these difficulties, as mechanisms for mobilization may often lie outside its traditional realm. Some measures that can help enhance demand creation are given in box 24.

Community agents/volunteers are an excellent tool for identifying children and following up with them. The challenges are the amount of work required of them, particularly in terms of the geographic area or number of households they are expected to cover. Some measures that have been used to address issues of motivation and workload of community agents are in box 25.

Quality

Protocols and guidance

Common bottlenecks in protocols and guidance include:

- Gaps in content of national protocols and guidance³⁸
- Limited application of or adherence to protocols and guidance
- Unclear protocols and systems for referral between components.

Developing or updating national guidelines is a necessary step in building consensus and buy-in for the approach to management of SAM, adapting the approach to the country context and reflecting management of SAM in policy. This process should be as participatory as possible, involving both regional and national actors, as this will increase ownership of the guidelines and adherence to them. Though good international resources exist, they should never be imposed without consultation and adaptation.

³⁸ Gaps could include limited guidance for the treatment of one form of malnutrition (e.g., SAM) but can also refer to gaps in guidance to promote a continuum of care for acute malnutrition, in particular where MAM management is operational in country.

BOX 24

Good practice: Measures to increase focus on demand creation

- **Cross-sectoral discussion** on the mechanisms for community mobilization during the bottleneck analysis and planning process
- **Clear allocation of responsibilities** for the community mobilization component during programme planning
- **Investigation of community understanding of malnutrition** during the community enquiry process, and identification of key community figures to communicate programme information
- **Implementation of regular coverage assessment** to illustrate the need for a strong community component (and advocacy for funds) and help to identify particular geographic areas and barriers to coverage on which community mobilization can focus

Resources like the [CMAM forum](#)³⁹ and [en-net](#)⁴⁰ (see page 54) or consultation with regional or headquarters nutrition advisors or international experts are useful to ensure addressing gaps in guidance during the guideline development process.

Accompanying tools and job aids, including agreed monitoring and reporting formats, and supervision checklists and specific training materials, are equally critical tools for national capacity development. A number of global tools and resources can be adapted for country use (see annex E). As with guidelines, the process of adapting tools is essential to ensure they reflect best practices and are appropriate for the context. This process is best overseen by the national working group for management of SAM.

In non-emergency contexts, the challenge is to ensure smooth referral between community,

³⁹ See <http://www.cmamforum.org/>

⁴⁰ <http://www.en-net.org/>

BOX 25**Good practice: Addressing motivation and participation of volunteers and other community agents**

- As part of the community enquiry, conduct an assessment of the acceptable level of workload for volunteers (see annex B). Experience has shown that it is possible to maintain quality of referrals with large numbers of volunteers, so it should be possible to strike an effective balance by holding workload and area of operation to acceptable levels.
- Develop appropriate and nationally agreed motivation packages for volunteers.
- Rewarding good performance by volunteers (either through cash or non cash incentives)
- Include community agents/volunteers in training on management of SAM.
- Where volunteers are already a recognized delivery mechanism for health services, advocate for them to be included as a paid cadre of community workers who are trained, properly supervised and supported as part of the health team. This may be a long process, but it can be a powerful advocacy tool because of the effectiveness of these volunteers in identifying cases of SAM and promoting treatment coverage.
- Forge relationships with community agents who already have regular contact with mothers and sick children, such as traditional healers and mothers of children already in the programme. Have them refer cases, which should impose little additional time burden on them.
- Encourage regular meetings between community agents/volunteers and health facility staff to exchange information, views and suggestions. Community dialogue and engaging with opinion leaders and community leaders improves understanding of the CMAM programme and therefore its uptake

outpatient and inpatient components of management of SAM and to ensure that children are not lost in the referral between different services. Addressing this topic during community enquiry (see annex B) helps in identifying useful community-level mechanisms. Some innovative technologies are also showing promise for this area (see box 26).

Supervision

Common supervision bottlenecks include:

- Limited health system supervision capacity
- Attempts to replicate unsustainable supervision models put in place by NGOs.

Supervising the management of SAM implementation is critical to maintaining quality, but it is a common challenge during scale-up, primarily due to shortcomings in supervision in

BOX 26**Good practice: Referral in Uganda**

Uganda is testing use of RapidSMS, using a toll-free number to allow community extension workers to communicate with health staff when they identify a child with SAM or other major diseases.

Overall, extension workers are reported to be enthusiastic about the technology. These are some of their responses:

- The system will “help improve the functioning of health services at the community level.”
- The system is helping to share information very quickly. “The information goes very fast” and it allows for a “quicker response.”
- “There are no costs attached to this SMS system.” Reporting via SMS is easier and cheaper than hiring a *boda* (bicycle taxi) to transport hard copies of reports, as previously done.

Source: www.acted.org/en/writing-sms-can-save-lives-northern-uganda.

most health systems. Reinforcing new skills, troubleshooting issues that arise and giving feedback on performance are all critical elements of supportive supervision, particularly when a new programme is being rolled out. The benefits can be seen both in good adherence to protocols and in staff motivation. The level of supervision required, at least during initial scale-up, usually necessitates additional support from the MoH. Some successful measures that countries have used to address the capacity challenge of supervision are given in box 27.

Developing monitoring and reporting systems

Common monitoring and reporting bottlenecks include:

- Complexity and lack of uniformity of reporting formats and systems
- Lack of harmonization of templates and data collection tools across countries or between partners working at the country level
- Absence or weakness of systems for collating, analysing and acting upon the data collected
- Insufficient attention to coverage monitoring
- Incomplete or untimely reporting
- Difficulty integrating reporting for management of SAM into health management information systems Limited feedback loops and limited analysis/application at decentralized levels.

Measures to address these bottlenecks are discussed below.

Simplifying formats

The monitoring and reporting formats and systems used for SAM management need to be simple in order to not overburden staff and information systems. As decentralization of treatment increases, so too does the need to simplify and standardize reporting, as

BOX 27

Good practice: Addressing supervision and monitoring challenges

- **A dedicated unit.** The supervisory role is taken on by a national management of SAM support unit that is housed within and comprises members of the national health team, with financial and technical support from UNICEF and/or others. Supervision is progressively turned over to corresponding units in regional and district health teams as scale-up progresses and the workload increases.
- **Joint supervision with support partners** (UNICEF and/or others) helps to build capacity, pool transport, improve motivation and facilitate follow-up of recommendations made during monitoring visits.
- **Third party supervision and monitoring** takes place through an independent third party who is contracted to carry out these tasks on behalf of the government following clear criteria (including defined checklists and tools) and identify support needs. This approach may be particularly useful where there are issues of access for government and international staff.
- **Periodic bimonthly spot quality checks** are undertaken by government and/or international agency staff. These may be called for where donors have questioned the reliability of third-party monitoring.
- **Community-level informants** report on quality of implementation as a cross-check against information gathered during supervision.

progressively lower level health or community-level staff are being called on to collect and act on the information. Simplifying treatment monitoring formats requires:

- Harmonization of inpatient and outpatient reports
- Inclusion only of information that will be used for assessment and action at the district, regional or national level
- Clear systems for analysis, action and feedback

Addressing comprehensiveness and timeliness

Complete and timely reporting is an issue in many countries, particularly as programmes expand and data need to reach the national level. Some successful measures adopted include:

- Directives from senior health managers communicated down to subnational and district level on the importance of timely, accurate reporting and how the information can be used effectively
- Technical assistance to support reporting at subnational level
- Additional training on monitoring and reporting for key staff
- Experimentation with new reporting technologies that allow immediate submission of reports and improved reporting flows

Integrating data into health management information systems

The system for reporting on management of SAM is usually run in parallel with the national health management information systems. Integrating SAM data into these systems, which are often already loaded with data, would require further simplification, such as by routinely including just admissions and recovery rates. There are concerns that these would not be sufficient data for programme management and that existing systems do not function well in providing timely data for decision-making. While dialogue is ongoing at the global level with WHO on the review of HMIS, it is important to avoid creating parallel information systems; instead

they should be linked to the MoH database to ensure sustainability and ownership by the MoH/government. Ownership of this data will further support advocacy and increase commitment to management of SAM.

Some experience indicates that compromises are possible to allow 'ownership' of data by the health system. This avoids reliance on the health management information systems and maintains the level of monitoring desired by regional and national government managers so they can direct effective programme performance. Examples include:

- Integration of 'systems' in which data on management of SAM is collected by health teams (health staff or nutrition officers) at the district level and then compiled with the data coming from health information managers (the health management information systems) at the regional or national level
- Collection of reports at district level by health teams, which pass them into a parallel system managed by the nutrition body within the MoH, while feeding limited data into the health management information systems.

Monitoring coverage

As mentioned earlier, new methods allow direct measurement of data on treatment coverage and major barriers to coverage to be incorporated periodically into monitoring systems at the district, regional and national level. Some of the tools included in these methods can be used as routine indicators of treatment coverage, to complement or replace indirect estimates of treatment coverage and bottleneck analysis. These tools for direct estimation of treatment coverage include admissions curves to assess seasonal patterns of admissions and identify anomalies; tallies of admission MUACs to assess whether early presentation is occurring; and mapping patterns of defaulters (see annex C, Direct Coverage Assessment Methods).

4

SAM management: Information for programming

This section aims to provide a comprehensive reference for UNICEF programme managers at country level and UNICEF's main country level partners (ministry of health technical staff and managers, non-governmental organizations (NGOs) and community-based organizations) who are working to scale up management of SAM. The section includes information on roles and responsibilities, overview of scale up trends, and resources for each component of programme design.

Background and context

SAM and mortality

Globally, it is estimated that over 17 million children are severely, acutely malnourished at any given time (UNICEF, WHO, World Bank 2014)⁴¹. SAM is classified by very low weight for height (below -3 z scores of the median growth standards published by the World Health Organization [WHO]), by mid-upper-arm circumference (MUAC) less than 11.5 cm or by the presence of bilateral pitting oedema (see box 28).⁴² SAM is associated with very high mortality

(10 to 21 per cent) demonstrated in longitudinal studies (WHO 2007⁴³). Severely wasted children⁴⁴ have been estimated to have a risk of dying more than nine times greater than a well-nourished child (relative risk of 9.4) (Black et al. 2008)⁴⁵. That compares to a threefold increased risk for moderately wasted children.⁴⁶ Unfortunately, no published data are available on the relative risk of SAM with bilateral pitting oedema, so estimates using these figures should always be interpreted with caution.

The 2008 *Lancet* series on maternal and child nutrition recognized SAM as one of the top three nutrition-related causes of death in children under five (Black et al. 2008⁴⁷). Arriving at estimates of global deaths directly attributable to SAM

41 UNICEF, WHO, and World Bank, 2014, 'Joint Child Malnutrition Estimates', data.worldbank.org/child-malnutrition

42 Also referred to as bilateral pitting oedema.

43 WHO, et al., 2007, 'A Joint Statement, Community Based Management of Severe Acute Malnutrition,' http://www.unicef.org/publications/files/Community_Based_Management_of_Severe_Acute_Malnutrition.pdf.

44 Assessed according to weight-for-height z scores using the WHO standards.

45 Black, R. et al., 2008, "Maternal and Child Undernutrition: global and regional exposures and health consequences," *The Lancet*, http://www.who.int/nutrition/topics/Lancetseries_Undernutrition1.pdf.

46 While MAM may have a lower mortality risk than SAM, the caseload of MAM is higher than SAM and thus the overall impact is considerable.

47 Black, R. et al., 2008, "Maternal and Child Undernutrition: global and regional exposures and health consequences," *The Lancet*, http://www.who.int/nutrition/topics/Lancetseries_Undernutrition1.pdf.

Definitions: Commonly Used Terms

Chronic malnutrition (stunting). Chronic malnutrition, also known as stunting, is a form of growth failure which develops over a long period of time. Inadequate nutrition over long periods of time (including poor maternal nutrition and poor infant and young child feeding practices) and/or repeated infections can lead to stunting. In children, it can be identified using the height-for-age nutritional index.

Acute malnutrition (wasting). Also known as wasting, acute malnutrition is characterized by a rapid deterioration in nutritional status over a short period of time. In children, it can be identified using the weight-for-height nutritional index or with mid-upper-arm circumference, or identified based on the presence of bilateral pitting oedema. There are different levels of severity of acute malnutrition: moderate acute malnutrition (MAM) and severe acute malnutrition (SAM).

Undernutrition. The outcome of insufficient food intake and/or inadequate absorption of nutrients, inadequate feeding and care and infectious illness. Undernutrition includes being underweight, stunted, acutely malnourished or deficient in vitamins and minerals.

Underweight. A composite form of undernutrition that includes elements of both wasting and stunting or a combination of both. In children, it can be identified using the weight-for-age nutritional index.

Severe acute malnutrition (SAM). Defined in children 6–59 months old as weight-for-height z-score* of <-3 standard deviations of the WHO standards and/or bilateral pitting oedema and/or MUAC <11.5cm

Moderate acute malnutrition (MAM). Defined in children 6–59 months old as weight-for-height z-score <-2 and \geq -3 standard deviations of the WHO standards and/or MUAC <12.5cm and \geq 11.5cm

Community-based management of acute malnutrition (CMAM). An approach that includes community engagement and mobilization for early detection and referral of cases of acute malnutrition; outpatient management of SAM for children 6–59 months without medical complications; inpatient management of SAM for children 6–59 months with medical complications,** and in some cases management of MAM for children 6–59 months. Where management of MAM is not included the term CMAM has been used to describe the approach. The approach may also be called community-based therapeutic care in some contexts.

Integrated management of acute malnutrition (IMAM). Another specific term used in some contexts for CMAM programmes that have a primary objective of integration within the existing health and community systems; used to emphasize this objective

Note: *z-score: the number of standard deviations below or above the reference median value.

** infants under six months of age with acute malnutrition are also treated in inpatient care.

is challenging and dependent on reporting mechanisms, classification of cause of death and HIV status (Bhutta 2009⁴⁸). However, estimates have varied from 0.5 million (Black et al.⁴⁹) to 2

million annually (Collins et al. 2006⁵⁰). Whatever the actual figure, the importance of addressing acute malnutrition is clear in terms of for reducing child mortality (Bhutta et al. 2008⁵¹).

48 Bhutta, Z., 2009, "Addressing severe acute malnutrition where it matters," *The Lancet* 374 (9684): 94-96, [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)61264-2/fulltext#article_upsell](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61264-2/fulltext#article_upsell)

49 Black, R. et al., 2008, "Maternal and Child Undernutrition: global and regional exposures and health consequences," *The Lancet*, http://www.who.int/nutrition/topics/Lancetseries_Undernutrition1.pdf.

50 Collins, S. et al., 2006, "Management of severe acute malnutrition," *The Lancet* 368: 1992-2000. www.chnri.org/resources/4.%20Research%20Articles/Nutrition/management%20of%20acute%20malnutrition.pdf.

51 Bhutta, Z. et al., 2008, "Maternal and Child Undernutrition 3: What works? Interventions for maternal and child undernutrition and survival," *The Lancet*, http://www.who.int/nutrition/topics/Lancetseries_Undernutrition3.pdf.

It is important to note here that the anthropometric classification of SAM has undergone some changes in recent years. One factor in this change has been countries' growing use of the 2006 WHO child growth standards, which were developed for use in all populations. These standards were expected to result in SAM caseloads increasing two to four times above those obtained with the previous National Center for Health Statistics (United States) references, assuming identification of cases was widespread ([WHO/UNICEF 2009](#)⁵², [Seal & Kerac 2007](#)⁵³). In line with this and based on data collection, analysis and consensus-building conducted by the Global Nutrition Cluster (GNC), in 2009 WHO and UNICEF also revised their guidance on the MUAC cut-off for SAM from 11.0 cm to 11.5 cm which also led to an increase in cases. During emergencies this cut-off is sometimes assessed based on the context and availability of other services such as supplementary feeding programs for moderately malnourished children. As CMAM has become more widespread, it has driven an increase in the use of MUAC as the primary identification tool for SAM. This is mainly due to the focus on early case finding (greatly facilitated by having a measure that can be taken at the community level), on identifying those at most risk of mortality and on promotion of community understanding of SAM ([Myatt, Khara and Collins 2006](#)⁵⁴).

Management of SAM: A brief history

In the past, formal treatment of SAM was restricted to inpatient approaches focusing on intensive clinical and nutritional protocols administered

by highly trained health care professionals.⁵⁵ Developments in these protocols led to dramatic reductions in case fatality rates when administered in specialized units or by well-resourced NGOs during humanitarian operations. However this impact was not widespread and coverage of such interventions remained limited ([Collins 2007](#)⁵⁶).

In 2001, a new approach was piloted in Ethiopia in an area where the opening of Therapeutic Feeding Centres was not permitted due to previous experiences of high mortality. In this approach, children with SAM who presented without major medical complications were treated for the first time on an outpatient basis through decentralized sites within a day's walk of their homes. The approach involved engagement of communities in order to identify severely malnourished children early (defined as before their condition deteriorated to a stage where they required inpatient care for medical complications) and distribution of specially formulated RUTF and essential medicines on a weekly basis with simple orientation for caregivers. RUTF is a highly fortified oil-based paste made of peanuts, milk powder, oil, sugar, and vitamin/mineral powder developed in the 1990s by research scientist Andre Briend and Nutriset (a private company making nutritional products for humanitarian relief). It is equivalent in formulation to F 100 (milk formula recommended by WHO for the inpatient treatment of SAM). The approach proved to be effective and offered the potential to treat far greater numbers than ever before ([Collins and Sadler 2002](#)⁵⁷). By adding inpatient care for the referral and treatment of complicated cases of SAM (<10% of the caseload in programmes with effective case finding) and in some situations,

52 WHO, 'Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children. A Joint Statement by the World Health Organization and the United Nations Children's Fund,' www.who.int/nutrition/publications/severemalnutrition/9789241598163_eng.pdf.

53 Seal, A., and Kerac M., 2007, 'Operational implications of using 2006 World Health Organization growth standards in nutrition programmes: secondary data analysis,' <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1847893/pdf/bmj-334-7596-res-00733-el.pdf>.

54 Myatt, M., Tanya Khara and Steve Collins, 2006, 'A review of methods to detect cases of severely malnourished children in the community for their admission into community-based therapeutic care programs,' http://www.who.int/nutrition/publications/severemalnutrition/FNB_0379-5721_A_review.pdf.

55 Contained in the WHO protocols 1999 ([WHO 1999](#)) and later updated as part of the WHO training package in 2002 ([WHO 2002](#)).

56 Collins, S., 2006, 'Treating Severe Acute Malnutrition Seriously', <http://adc.bmj.com/content/92/5/453>.

57 Collins, S., and K. Sadler, 2002, "Outpatient care for severely malnourished children in emergency relief programmes: a retrospective cohort study," *The Lancet*, [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(02\)11770-3/fulltext#article_upsell](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(02)11770-3/fulltext#article_upsell).

depending on context and resources, targeted supplementary feeding for the treatment of MAM, a more complete approach to CMAM was born. In parallel to these developments, new methods were designed to accurately map the programme coverage and identify coverage barriers (see annex C, 'Direct Coverage Assessment').

Early successes led to the uptake of the community-based approach by a number of NGOs working in emergency contexts in countries of Africa, with various degrees of government involvement. In 2007, based on a review of the evidence of impact collected over the previous seven years (Collins et al. 2006⁵⁸), and work from similar programmes (home-based care, ambulatory care) (Collins et al. 2005⁵⁹) the UN endorsed the community-based approach for management of SAM with a [joint statement](#)⁶⁰. The approach could achieve coverage to over 70 per cent whilst recovery and mortality rates could be maintained well within Sphere standards for humanitarian response.⁶¹ The global endorsement paved the way for the further expansion of the approach, creating consensus within the global nutrition community including international agencies and donors on the optimal programme approach for treating SAM. It also enabled governments to start adapting their national guidelines and establishing and scaling-up CMAM programming at national level often with the support of UNICEF. As a result, a shift of focus to seeing CMAM as a requirement of routine health activities has emerged.

In parallel to these developments was increased attention to diversification of suppliers for RUTF

and support for local production. The option of local production of RUTF initially offered hopes of reduced product price, reduced transportation costs, more responsive delivery times and the potential to contribute to the economy of a country. Initially, a patent by Nutriset (the company involved in the original development of the product and responsible for the majority of production) on their Plumpy'nut branded recipe for RUTF restricted local production to those producers operating under Nutriset's franchise scheme and according to certain conditions of ingredient purchase, production quantities and potential markets. Over the last few years, however, international pressure from agencies, media and high profile commentators has emphasized the humanitarian imperative of ensuring sufficient and timely supplies of RUTF to countries. This has led to a relaxing of restrictions and the issuing of usage agreements to local producers so that they can operate using the Plumpy'nut recipe without having restrictive conditions imposed on them. To date, however, due to the high cost of certain ingredients (particularly milk powder), the need to import ingredients as well as packaging materials, government import/customs duty, and the challenge of achieving economies of scale in smaller production facilities, local produced RUTF remains more costly than the Nutriset product. However, reduced transport costs and shortened transportation time can offer considerable savings, not to mention benefits to local economy including employment and building local capacity.

Global initiatives and the inclusion of management of SAM

Since CMAM was endorsed by United Nations agencies in 2007, the issue of SAM, including its contribution to mortality and its management, has increasingly been reflected on international agendas. The *Lancet* series highlighted the importance of SAM as a major contributor to mortality and management of SAM therefore as a key priority. This has further stimulated attention to effective programmes for SAM management.

58 Collins, S. et al., 2006, "Management of severe acute malnutrition," *The Lancet* 368: 1992-2000. www.chnri.org/resources/4.%20Research%20Articles/Nutrition/management%20of%20acute%20malnutrition.pdf.

59 Collins et al., 2005, 'Key Issues in the Success of Community-based Management of Severe Malnutrition', http://www.who.int/nutrition/publications/severemalnutrition/FNB_0379-5721_Key_issues.pdf.

60 WHO et al., 2007, 'Community based management of acute malnutrition', http://www.unicef.org/publications/files/Community_Based_Management_of_Sever_Acute_Malnutrition.pdf.

61 Recovery >75%, Default <15%, Death <10%, [The Sphere Project 2011](#).

The Renewed Efforts against Child Hunger and Undernutrition (REACH) initiative is a country-led approach to scaled up effective interventions through coordinated action of United Nations agencies, civil society, donors and the private sector, under the leadership of national governments (UNICEF is a major supporter). It focuses on countries with a high burden of child and maternal undernutrition to accelerate the scale-up of food and nutrition actions. The initiative aims to link child nutrition, food security, health and care in a sustainable strategic approach. It provides facilitators who help to build the capacity of government counterparts and put in place structures to improve nutrition governance and management. Renewed Efforts against Child Hunger and Undernutrition has the potential to influence the enabling environment for management of SAM. Increasing treatment of SAM is one of the 'big-five' interventions that it endorses.⁶²

In the paper 'Scaling-Up Nutrition: What will it cost?' (Horton et al. 2010)⁶³, which draws on the work of the *Lancet* series, the World Bank lists management of SAM in its 13 top cost-effective interventions to combat undernutrition. CMAM is the second step of the proposed scale-up process due to concerns over cost and capacity challenges. Such decisions are best taken at the country level, based on local assessment of capacity challenges.

The same list of priority interventions for scale-up has been taken up by the global SUN movement⁶⁴, based on field studies that suggest 1 million deaths per year could be averted if this package were fully implemented. The SUN movement was born of concerns expressed

by the authors of the *Lancet* maternal and nutrition series that nutrition was generally an afterthought in development priorities and that SAM management has been seriously underemphasized by both donors and developing countries. The result has been formation of a global partnership for collective urgent action for nutrition among 102 key stakeholders.⁶⁵

The SUN movement is based on a shared belief that countries could best improve their people's nutrition security if they developed and implemented their own plans. An agreed framework of action for nutrition was developed focusing on multisectoral action; results at country level; scale-up of key evidence-based and cost-effective interventions to prevent and treat undernutrition; and substantially increased assistance to country nutrition programmes and capacities. As of November 2014, high-level officials from 54 countries have publicly pledged their commitment to reduce undernutrition by placing nutrition at the centre of development policies.⁶⁶ This political commitment has been reinforced by setting bold goals and specific targets and by developing or revising national plans for scaled up nutrition that combine nutrition-sensitive development with specific nutrition interventions.

Management of SAM within national structures, systems and programmes

Supporting ministries of health to incorporate management of SAM into routine child health activities and to incorporate supervision and monitoring of SAM management into national structures and health systems is a key challenge for UNICEF and others trying to build capacity for treatment of SAM (see box 29 for definitions). A number of country and regional evaluations and workshops have documented the progress and lessons of integration and scale-up of

62 The others are: improve infant and young child feeding practices, increase micronutrient intake, improve hygiene and parasite control, and increase food availability and accessibility. They are described in http://www.reachpartnership.org/c/document_library/get_file?uuid=5e744fdf-4eb2-4424-9b33-5478392aec3f&groupId=94591.

63 Horton, S., et al., 2010, 'Scaling Up Nutrition, What will it Cost?' <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/Peer-Reviewed-Publications/ScalingUpNutrition.pdf>.

64 Scaling Up Nutrition (SUN) Movement <http://scalingupnutrition.org>.

65 These include United Nations, multilateral and bilateral agencies along with foundations, developing country governments, civil society organizations, researchers and the private sector.

66 See www.scalingupnutrition.org.

management of SAM (FANTA/ENN 2008⁶⁷; Grellety, Schwartz and Rizzi 2010⁶⁸; FANTA 2011⁶⁹; ENN 2012a⁷⁰; UNICEF WCAR 2010⁷¹).

Five UNICEF country CMAM evaluations conducted in Chad, Ethiopia, Kenya, Nepal and Pakistan have added to this body of literature. At the end of 2011 an international workshop was convened in Ethiopia to share government experiences in scaled-up CMAM, with representation by 22 countries.⁷²

Several points that emerged from the conference are important to highlight:

- **Scale-up requires time, commitment and dependable funding.** Managing SAM nationally as part of standard health care packages requires time, political support, continuity of funding and consideration of how to support public health systems, which are often already struggling.
- **Successful models cannot be directly duplicated.** Fitting management of SAM into existing structures and systems must take into account the structure of national health systems and country-specific needs related to treatment of SAM (for example in terms

67 FANTA and ENN, 2008, 'International workshop on the integration of community-based management of acute malnutrition', <http://www.ennonline.net/ourwork/othermeetings/cmamintegration2008>.

68 Grellety, Y., H  l  ne Schwartz and David Rizzi, 2010, 'Management of Acute Malnutrition Programme Review and Evaluation', <http://www.cmamforum.org/Pool/Resources/WEST-AFRICA-REGIONAL-Evaluation-English-23nov-UNICEF-WCARO.pdf>.

69 Deconinck, H., et al., 2011, 'Review of Community-Based Management of Acute Malnutrition Implementation in West Africa: Summary Report', www.cmamforum.org/Pool/Resources/WEST-AFRICA-CMAM-Synthesis-Oct2011-FANTA.pdf.

70 ENN, 2012a, 'Conference on government experiences of scaling up the Community-based Management of Acute Malnutrition (CMAM) and lessons for the Scaling Up (SUN) movement', <http://www.ennonline.net/ourwork/ennmeetings/cmamconference2011>.

71 UNICEF and WCAR, 2010, 'Report of a Meeting to Harmonize the Criteria for Monitoring and Evaluation of the Treatment of Acute Malnutrition in West and Central Africa', <http://www.cmamforum.org/Pool/Resources/Meeting-report-on-M-E-IMAM-West-and-Central-Africa-Dakar-Golden-et-al-ENG-2010.pdf>.

72 The countries presenting at the conference were Ethiopia, Ghana, Kenya, Malawi, Mozambique, Niger, Pakistan, Sierra Leone and Somalia. The 12 additional participants were Afghanistan, Bangladesh, Cambodia, Liberia, Nepal, Nigeria, South Sudan, Republic of Sudan, Tanzania, Uganda, Zambia and Zimbabwe.

BOX 29

Definitions: Integrated health services and integrated management of SAM

Integrated health services:

- "The management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system" (WHO)
- "The organization and management of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money" (WHO)

Integrated management of SAM:

- It is one of the basic health services to which a child has access.
- It is embedded into a broader set of nutrition activities (IYCF, micronutrient supplementation, etc.).
- It is integrated within a multisectoral approach to tackling the determinants of undernutrition

Note: ENN, 2012a, 'Government experiences of scale-up of Community-based Management of Acute Malnutrition (CMAM): A synthesis of lessons', www.cmamforum.org/Pool/Resources/CMAM-Conference-Synthesis-Addis-ENN-2012.pdf.

of linkages at which entry point, delivery of services at what level, etc.). Bottlenecks and potential solutions must be identified locally.

- **Scale-up of health interventions can offer very relevant lessons.** Efforts to integrate and scale up management of SAM within the health care package should draw on the successful experiences of financing and scaling up of other health services, such as malaria treatment. This collaboration has remained largely untapped till now.
- **Management of SAM will be most effective as part of a continuum of nutrition services.** Management of SAM should be part of the

package of nutrition interventions delivered within the health system but also at the community level and/or through programmes implemented by NGOs. Opportunities for this are addressed in more detail in the Guidance Document, but in general, management of SAM can be seen as linking with, as an entry point for, or as a means of reinforcing a variety of other health and nutrition interventions. In particular, rooting management of SAM within a wider IYCF programme is appropriate to provide a continuum of care for acute malnutrition, for both infants and children, and to site the approach within a prevention framework (see annex E for related IYCF guidance).

Integration of SAM management into nutrition policy is a mark of progress, yet integration at policy level does not guarantee implementation of an integrated approach, which also requires effective coordination and operational capacity. Providing a continuum of nutrition services therefore needs to be considered at assessment, design and planning stages as well as during analysis of barriers and bottlenecks.

UNICEF policy, roles and partnerships

UNICEF policy on management of SAM

UNICEF's commitment to supporting management of SAM in the emergency context is elaborated in the 2010 CCCs,⁷³ in which management of SAM is a specific programme area (see box 30). Management of SAM is also supported by the UNICEF approach to humanitarian action, which stresses the importance of improving coverage (a key feature of CMAM) and enhancing the policy environment and risk reduction through support to national capacities and systems. The UNICEF disaster risk reduction approach⁷⁴ has the longer term

73 UNICEF, Core Commitments for Children in Humanitarian Action, 2010, www.unicef.org/publications/index_21835.html.

74 UNICEF, 2011, 'Disaster Risk Reduction Programme Guidance Note,' <https://intranet.unicef.org/Emops/EMOPSSite.nsf/root/Page0502>.

BOX 30

CCC programme actions for management of SAM

Preparedness

- Establish integrated guidelines for management of acute malnutrition.
- Assess coverage of services for management of SAM and establish a contingency supply and distribution plan.
- Map community capacities and communication channels to identify the most effective ones for nutrition information.

Response

- Support development of capacity for management of SAM at community and facility levels.
- Initiate and support additional therapeutic feeding as required to reach the population in need.
- Support and establish systems for community mobilization and identification and referral of acute malnutrition cases.

Early recovery

- Initiate discussion on national policy, strategy and guidelines for sustainable management of SAM, if not already in place.
- Include routine monitoring of data from malnutrition management programmes to support introduction, reinforcement and/or adaptation of nutrition information systems.

objective of supporting national capacities for scaled up management of SAM.

UNICEF's commitment to the management of SAM in non-emergency contexts is contained in the strategic plan 2014-2017 and in the inclusion of SAM treatment in the guidelines to Scale Up Nutrition (see box 31). In the new Strategic Plan 2014-2017, UNICEF adopts an integrated approach to nutrition programming, combining both nutrition-specific interventions and nutrition-sensitive approaches, focusing on

the most disadvantaged. The focus is on the first 1,000 days of life, which is the most crucial time to meet a child's nutritional requirements and prevent the long- and short-term consequences of both wasting and stunting. UNICEF supports the scale up of nutrition interventions, such as community prevention and management of SAM, within the broader context of the principles of the SUN movement. The new Strategic Plan reflects strategies to continue the scale-up and integration of SAM management into routine services. It emphasizes the need to move away from vertical implementation to horizontal implementation that is integrated into national programmes and systems. For programme sustainability, it also underlines the need to support central level work with integrated outreach, community mobilization and participatory approaches. Strategic global partnerships for management of SAM programming (including collaboration with WHO and WFP) are also highlighted as key for sustainable technical support.

Global and country-level roles

At the global level UNICEF has played a major role in the initial endorsement of the community-based approach to management of SAM, along with the other United Nations agencies. UNICEF has been similarly engaged in developing global guidance and materials and supporting introduction and scale-up of the approach in a number of countries.

Since 2008-2009, responding to the rapid expansion of the approach and the lack of consolidated information on country progress, UNICEF has also undertaken an initiative to map global progress in management of SAM (see page 51). The first stage of this effort concluded that there were considerable information gaps and constraints in the data collection system for management of SAM, despite the wealth of valuable information provided by UNICEF country offices. The exercise identified a need for a well-structured, reliable information system on the status of scale-up of CMAM, to inform delivery of resources to improve the quality of programming.

BOX 31

Management of SAM within the UNICEF Strategic Plan 2014-2017

Programme impact: Realizing the rights of every child, especially the most disadvantaged

Outcome 4: Nutrition Outcome Indicators: Improved and equitable use of nutritional support and improved nutrition and care practices

Outputs:

- Enhanced support for children and caregivers and communities for improved nutrition and care practices
- Increased national capacity to provide access to nutrition interventions
- Strengthened political commitment, accountability and national capacity to legislate, plan and budget for scaling-up nutrition interventions
- Increased country capacity and delivery of services to ensure protection of the nutritional status of girls, boys and women from effects of humanitarian situations
- Increased capacity of governments and partners, as duty-bearers, to identify and respond to key human rights and gender equality dimensions of nutrition
- Enhanced global and regional capacity to accelerate progress in child nutrition

UNICEF has taken this up as a key role, involving collaboration among country and regional offices and headquarters.

Together with WHO, UNICEF has coordinated training for inpatient care and the community-based approach and mediated discussions over the RUTF patent issue. UNICEF has also allocated substantial funding to countries to support SAM management, including costs for procurement and transport of RUTF. In addition UNICEF has been instrumental in developing quality standards for RUTF production, for inspection of production facilities and for diversification of global producers

(see page 60). UNICEF is also one of the key members on the Steering Committee for the CMAM forum (see page 54), helping to direct its design and establishment.

At country level UNICEF supports management of SAM from a programmatic point of view. This support, which can be technical and material (e.g., supplies, equipment, financial), concentrates on capacity building of government structures and services for management of SAM, or in the absence of government, of other local structures. Support can be provided directly or through NGO implementing partners and consultants. UNICEF's aim is to facilitate support when and where it is needed in line with government guidance for management of SAM scale-up.

This is particularly pertinent during emergencies, when UNICEF must balance its roles as cluster lead and ongoing supporter of government for CMAM scale-up with its commitment under the CCCs to ensure effective management of SAM for the affected population. UNICEF has played a key role in mediating relations between government and NGOs, in particular for ensuring that government retains or takes ownership over the national programme (for e.g., that guidelines are adhered to and information shared) while helping NGOs to respond to the surge in demand for services.

Partnerships for management of SAM

Building government capacity to manage SAM at a national level requires extensive support, and international and local NGOs as well as academic institutions have a major role to play in most contexts.

Of late, UNICEF has tended to work with fewer, larger NGO partners that have broader geographic and programmatic scope. Management of SAM spans nutrition, health and HIV; thus, community-level programming needs the support of experienced partners with a national perspective who can act cross-sectorally. Increasingly, international NGOs are being called

on to provide support at the national level rather than just in one or two districts. They may be asked to provide support in a range of areas: building the capacity of national institutions for pre-service and in-service training for CMAM; supporting monitoring and supervision systems for programme quality, particularly in coverage monitoring; and testing new ideas and technologies for addressing bottlenecks, such as those in monitoring, referral mechanisms or community mobilization.

Conversely, in countries with hard-to-access communities (e.g., Somalia, the Sudan) working with more local or national NGOs may help to integrate the scale-up of CMAM more closely into community structures.

Forging partnerships with national institutions such as universities, paediatric associations, training centres and medical schools is important to maintain links between inpatient and outpatient components and contribute to sustainable scale-up and ownership. These are critical to effective implementation at the community level and to facilitate the integration of management of SAM into pre-service trainings.

At the global and country level, UNICEF strives to maintain independence from its suppliers and therefore does not promote specific partnerships with RUTF manufacturers, including for local production of RUTF.

At the global level, UNICEF has a number of partnerships relevant to the management of SAM. UNICEF is a key Global Nutrition Cluster partner, serving on the Strategic Advisory Group. UNICEF also participated as a member of the MAM task force under the GNC and participates in GNC initiatives to harmonize emergency nutrition response. UNICEF and WHO co-chair the integration task force that aims to support integration of the management of SAM into health systems. UNICEF works most closely with WFP and WHO in terms of management of acute malnutrition. An excerpt

from the technical annex of the MOU between WFP and UNICEF is found in table 3. In 2011, UNICEF revised its global memorandum of understanding with WFP to better outline areas of responsibility. UNICEF recently developed a Letter of Understanding with UNHCR alongside technical guidance and areas of cooperation⁷⁵.

UNICEF has a partnership with the US Center for Disease Control and Prevention for epidemiological support on operational research and collection and analysis of situational nutrition data. The Nutrition section at UNICEF headquarters has also worked with Valid International, Action Against Hunger/ACF International (ACF) and the Coverage Monitoring Network to improve the quality and frequency of SAM management data. UNICEF now has a functional Internet-based database to collate and

analyse trends and progress in SAM management (Nutridash) which is updated annually. In 2014, Nutridash was expanded to include IYCF and micronutrients as well as SAM management data.

Global progress of SAM management scale-up

In 2009/2010, UNICEF conducted a mapping review (updated in 2011) to determine the status of scale-up of CMAM with a focus on SAM treatment.⁷⁶ Some key findings are summarized below.

⁷⁶ It consisted of a questionnaire based on the WHO health systems framework covering qualitative information (general CMAM programme background and context; policy, financing and coordination; training and capacity development; drugs and therapeutic supplies) and quantitative information (caseloads; prevalence; access and coverage; performance indicators). The questionnaire was sent to 77 countries, selected due to previous orders for therapeutic supplies or recommended by the regional officers. The full findings can be accessed online at: <https://intranet.unicef.org/pd/pdc.nsf/e59d3405e8ee2cb9852567460068fae4/a0d7bc73a4211ec985257a7e004c8312?OpenDocument>; and <http://www.enonline.net/fex/41/global>.

⁷⁵ At the time of writing, the WFP UNICEF MOU technical annex on Nutrition and the UNICEF UNHCR Letter of Understanding has not been posted online but is available on request.

TABLE 3

UNICEF and WFP memorandum of understanding (2011): Except from the technical annex for nutrition

Programme area	WFP commitments	UNICEF commitments	Joint principles and action
Management of SAM UNICEF will coordinate and support treatment programmes that follow established and agreed upon UN protocols, such as CMAM	To seek food for the recovery phase of therapeutic feeding and for family members of children suffering from SAM. In cases where UNICEF is unable to support therapeutic feeding, WFP may provide support after discussion with UNICEF at country level. If no arrangement can be made, agreements will be made at regional or headquarters level.	To take the lead in supporting and coordinating the organization of therapeutic feeding programmes and interventions in communities and health facilities. To mobilize resources and ensure the availability of RUTF and other supplies and products required for the treatment of children suffering from SAM. To support the training of health staff on SAM. In case WFP is unable to provide SFP, UNICEF may do so after discussion with WFP at country level. If no arrangement can be made, agreements will be made at the regional or headquarters office level.	To assist governments in adopting SAM treatment protocols in collaboration with WHO. To explore and promote local production of therapeutic food. To seek programme synergies for mobilizing and screening children and assigning them to the appropriate treatment, together with partners. To aim for joint training of staff on management of SAM.

Programming

In 2005, nine countries reported that SAM treatment was underway at varying levels of limited scale, mostly introduced as part of an emergency response.⁷⁷ Between 2005 and 2008, there was an enormous increase in the number of countries implementing this approach, and by the end of 2013 the total was 67 countries⁷⁸. Though data on numbers treated were incomplete, the UNICEF mapping exercise estimated a 2009 caseload of 1 million children admitted for treatment,⁷⁹ rising to almost 2.9 million in 2013. The increase in the number of admissions reflects adoption of the approach in new countries as well as scale-up of existing programmes and improvements in reporting. Over half of the countries implementing SAM treatment have national nutrition policies that reflect community-based management of acute malnutrition. A large part of the global burden of SAM is in countries where a national policy on CMAM is still absent.

In at least half of the countries surveyed, progress was reported in integrating CMAM into primary health care activities. This was mainly through the addition of MUAC to identify SAM within integrated management of childhood illness and through links with IYCF and HIV/AIDS programmes. However, countries stressed the gap between integration at the level of policy and guideline documents and activity in health centres.

By 2011, over half of the countries had stated a goal of national implementation of CMAM. Major barriers to scale-up were identified as political will, financial resources, human resource capacities, inadequate quality of implementation even at limited scale, poor monitoring and reporting, and

77 Bangladesh, Ethiopia, Haiti, Malawi, Niger, South Sudan, Republic of Sudan, Uganda and Zambia.

78 Note that there are at least eight other countries, which did not submit data to the NutriDash, but which have SAM programmes in-country (known from past data collection exercises).

79 The figure is only an approximation and underestimates the number of SAM cases admitted, as 10 countries did not supply caseloads, six provided estimates only and the majority of the others gave estimates based on less than 50% reporting.

difficulties in integrating the programme into existing systems, maintaining the supply chain and assessing progress in terms of coverage.

Supply

The mapping has underlined the critical role of UNICEF in facilitating the supply chain for SAM treatment. By 2011, UNICEF provided at least 80 per cent of RUTF in 70 per cent of the implementing countries, and provided 100 per cent of RUTF in 43 per cent of the countries⁸⁰. Certified/approved local production of RUTF (see page 60) was occurring in eight countries by the end of 2011⁸¹ and in another five countries (Burkina Faso, Haiti, Sierra Leone, Sudan and Uganda) for 2012 (see figure 5).

Evaluation and lessons learned

Nearly half the countries surveyed in 2011 had conducted a review of SAM management in the last three years, including those covered in a 10-country West Africa review. UNICEF has conducted a further five national evaluations (in Chad, Ethiopia, Kenya, Nepal and Pakistan)⁸², and FANTA has conducted an additional four (Burkina Faso, Mali, Mauritania and Niger⁸³). In addition many countries have a national management of SAM technical working group/task force that provides a forum for sharing experiences, and a number of national workshops have been conducted to share and document experience in implementing programmes. Though much of this information stays within countries, links to some of these reviews and workshop reports can be found on the Emergency Nutrition Network

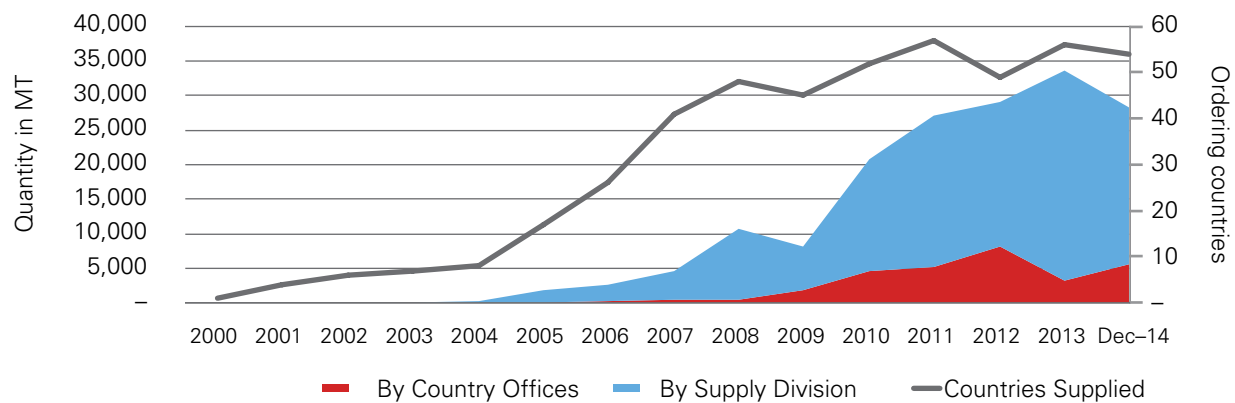
80 Deconinck, H., et al., 2011, 'Review of Community-Based Management of Acute Malnutrition Implementation in West Africa: Summary Report', www.cmamforum.org/Pool/Resources/WEST-AFRICA-CMAM-Synthesis-Oct2011-FANTA.pdf.

81 Democratic Republic of the Congo, Ethiopia (two factories), Kenya, Madagascar, Mozambique, Malawi (two factories), Niger and United Republic of Tanzania.

82 UNICEF, 2013b, 'Global Evaluation of Community Management of Acute Malnutrition (CMAM): Global Synthesis Report', 2013. www.unicef.org/evaldatabase/index_69843.html.

83 Deconinck, H., et al., 2011, 'Review of Community-Based Management of Acute Malnutrition Implementation in West Africa: Summary Report', www.cmamforum.org/Pool/Resources/WEST-AFRICA-CMAM-Synthesis-Oct2011-FANTA.pdf.

FIGURE 5 RUTF acquisition from 2000 to 2014, by metric tonnes and number of countries



Note: The left axis refers to metric tonnes of RUTF ordered and the right axis to the number of countries ordering it.

Source: UNICEF Supply Division, Copenhagen, December 2014.

(ENN) website⁸⁴, the FANTA II website⁸⁵ and the CMAM forum⁸⁶. Increasingly, countries are also attempting to evaluate treatment coverage at regional and national levels using newly available coverage assessment techniques (see annex C).

Regional and global resources to support scale-up

Various tools and resources have been developed over the last few years to provide policy, technical and implementation guidance on CMAM. These include tools for advocacy (United Nations joint statements), planning (costing and supply forecasting tools, integration framework), implementation (technical guidelines, and training materials) and monitoring (simplified reporting format, coverage tools, Minimum Reporting Package)⁸⁷. An annotated list with links to each of the tools and materials is given in annex E.

84 <http://www.enonline.net/resources>.

85 <http://www.fantaproject.org/focus-areas/nutrition-emergencies-mam>.

86 <http://www.cmamforum.org>.

87 The Minimum Reporting Package has been developed for supplementary feeding programmes but includes a component for management of SAM appropriate for use in emergency NGO implemented programmes.

Some gaps remain, such as advocacy tools to facilitate dialogue with national stakeholders to incorporate SAM management into wider development policies and additional tools to facilitate resource mobilization.

Training materials

In 2006, UNICEF collaborated in the development of global training materials for implementation of community-based programmes for management of SAM (FANTA/Valid/UNICEF/Concern 2008⁸⁸). This resource for country-level trainings focuses on practical experience in implementing protocols with minimal classroom time. The training materials highlight the need for follow-up and mentoring of trainees, which has proved to be effective in consolidating skills. UNICEF has also played a central role in developing the GNC Harmonized Training Package⁸⁹ and the UNICEF Nutrition in

88 FANTA, Valid, UNICEF, Concern; Training Guide for Community Based Management of Acute Malnutrition (CMAM) <http://www.fantaproject.org/focus-areas/nutrition-emergencies-mam/cmam-training>.

89 An initiative of the GNC and Nutrition Works to provide a standard package of resources for training on nutrition in emergencies. IASC, Global Nutrition Cluster, and Nutrition Works, 2011, 'Standing Committee on Nutrition (SCN) Harmonized Training Package', http://www.unscn.org/en/gnc_http/howto-htp#howtousehtp.

[Emergencies E-learning tool](#)⁹⁰, which provide up-to-date materials for training on emergency implementation of management of SAM. Recent developments in techniques for assessing coverage of programmes (see annex C) have resulted in new and updated training materials and initiation of global training events on these methods. Links to many available global training materials are given in annex E, including the tools mentioned in the following sections.

Information exchange and resource forums

Since the UN endorsement of CMAM, a number of international and regional conferences have been held to share experiences and lessons learned, document technical and implementation modalities, and, most recently, discuss the successes and challenges faced by countries attempting national scale-up. These are listed with links to their meeting reports in annex G.

- **CMAM forum** (www.cmamforum.org) was born of the need for a robust information-sharing mechanism covering implementation management of CMAM programmes in diverse contexts. The forum aims to consolidate the evidence base to document promising practices and lessons learned. It is directed at field-based staff throughout the health and nutrition sectors. The website covers training, advocacy and research as well as a range of resources. It presents monthly technical briefs summarizing the latest news on topics pertinent to management of SAM and MAM. For more information or to share resources, please contact cmamforum@gmail.com.
- A discussion group on **En-net** (www.en-net.org.uk/) on the prevention and treatment of SAM is also proving an active forum for debate on the management of SAM. This free and open resource provides field practitioners with prompt access to technical advice on operational challenges in nutrition. Additional

discussion threads cover other aspects of CMAM, including assessment, prevention and treatment of MAM, and management of acute malnutrition in infants less than 6 months.

- **MUAC community website** (<http://tng.brixtonhealth.com/node/164>) is a forum for dissemination of information and discussion of issues related to the use of MUAC (a key part of the CMAM approach), including debate on case definitions, surveys and patient monitoring.
- **Coverage monitoring network (CMN)** (www.coverage-monitoring.org/) is an inter-agency initiative led by ACF, Save the Children, Concern Worldwide, International Medical Corps and Helen Keller International. CMN aims to increase and improve coverage monitoring globally and, in particular, across Africa. It also aims to identify, analyse and share lessons learned to improve management of SAM policy and practice across the areas with a high prevalence of acute malnutrition. Technical tools, reports and information on trainings are among the resources that can be found on the website.

Other useful websites for finding and exchanging information and resources related to management of SAM programming and research are listed in annex G.

Costs and cost-effectiveness calculations

As mentioned above, a tool is available to calculate the costs in a given context of management of SAM programmes (see annex E; also see table 4 for estimates). Although good data on cost-effectiveness have been lacking ([ENN 2012a](#))⁹¹, globally this gap is now being filled. A growing number of cost-effectiveness studies using data from a variety of countries have found similar results, despite some methodological differences

90 UNICEF, Nutrition in Emergencies E-learning tool <http://www.unicef.org/nutrition/training/>.

91 ENN, 2012a, 'Government experiences of scale-up of Community-based Management of Acute Malnutrition (CMAM): A synthesis of lessons', www.cmamforum.org/Pool/Resources/CMAM-Conference-Synthesis,-Addis,-ENN-2012.pdf.

TABLE 4 Cost-effectiveness estimates of community-based management of SAM

Cost outcome	Bangladesh 2011	Ethiopia 2007	Malawi 2009	Zambia 2009	Global estimate 2013
Per recovery	\$180	\$145	--	--	-
Per case treated	\$165	--	--	\$203	-
Per DALY	\$26	--	\$42	\$53	-
Per life-year saved	-	-	-	-	\$125 (119-152)

Source: Sadler et al., Community Case Management of Severe Acute Malnutrition in Southern Bangladesh,

www.cmamforum.org/Pool/Resources/SAM-Bangladesh-Feinstein-Save-2011.pdf and Bhutta et al, Maternal and Child Nutrition 2: Evidence based nutrition interventions for improvement of maternal and child nutrition: what can be done and what will it cost. *The Lancet* Volume 382, Issue 9890, 3-9 August 2013, Pages 452-477. www.sciencedirect.com/science/article/pii/S0140673613609964#

(Bachmann 2009⁹²; Wilford et al. 2011⁹³; Puett et al. 2012⁹⁴; Tekeste et al. 2012⁹⁵). These studies find similar cost-effectiveness ratios for CMAM as for other priority child health interventions.⁹⁶ They also find it to be ‘highly cost-effective’ according to WHO’s definition.⁹⁷ It is worth noting here that, although the absolute costs of implementing CMAM are significant, the fact that treatment targets a group at very high risk of death means that it is as cost-effective as ‘cheaper’ but less targeted interventions.

These results offer the potential for CMAM to be reflected in decision-making tools and plans, though their implementation must reflect potential differences in context, such as SAM prevalence, population density and coverage. The authors suggest that the findings are relevant to a large number of settings where SAM is found. The World Bank has thus used the figure of around \$41 per disability-adjusted life year (DALY) averted for inclusion of CMAM in its analysis of the cost of scaled-up nutrition (Horton et al. 2010⁹⁸).

92 Bachmann, M., 2009, ‘Cost effectiveness of community-based therapeutic care for children with severe acute malnutrition in Zambia: decision tree model,’ <http://www.resource-allocation.com/content/7/1/2>.

93 Wilford, R., et al, 2011, ‘Cost-effectiveness of community-based management of acute malnutrition in Malawi,’ <http://heapol.oxfordjournals.org/content/early/2011/03/04/heapol.czr017.full.pdf?keytype=ref&iijkey=yZKpjA3rzdTRVyz>.

94 Puett, C., et al., 2012, ‘Cost-effectiveness of the community-based management of severe acute malnutrition by community health workers in southern Bangladesh’, <http://www.ncbi.nlm.nih.gov/pubmed/22879522>.

95 Tekeste, A. et al., 2012, ‘Cost effectiveness of community-based and in-patient therapeutic feeding programs to treat severe acute malnutrition in Ethiopia,’ <http://www.resource-allocation.com/content/10/1/4>.

96 These include measles vaccination (\$29-\$58), case management of pneumonia (\$73) (Edejer et al. 2005); integrated management of childhood illness (\$38), universal salt iodization (\$34-\$36), iron fortification (\$66-\$70) and insecticide-treated nets for malaria prevention (\$11 for sub-Saharan Africa) (Wilford 2011).

97 WHO categorizes interventions as cost-effective if they cost less per DALY than a country’s gross domestic income per capita. Using this comparison CMAM compares very favourably; for example, the gross domestic income per capita for Zambia is \$1,230 (Bachmann 2010).

Despite this progress, there has been no systematic initiative to code or capture programme spending for management of SAM in UNICEF, unlike the system to capture spending on RUTF. This is an important issue given that UNICEF and donors need to be able to predict, monitor and account for costs, both for continued support and to encourage governments to take a larger role in funding.

The 2013 UNICEF five-country CMAM evaluations adopted a cost analysis methodology.⁹⁹ It has three components and classifies costs as capital

98 Horton, S., et al., 2010, ‘Scaling Up Nutrition, What will it Cost?’ <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/Peer-Reviewed-Publications/ScalingUpNutrition.pdf>.

99 For more information on this method please contact nutrition@unicef.org.

or recurrent and external or domestic in order to assess spending on CMAM by UNICEF and governments. This method shows promise as a way to periodically evaluate spending and compare costs between regions or districts and countries. The components are:

- Comparison of costs among children with SAM or MAM and well-nourished children
- Percentage of costs associated with each aspect of the CMAM package (community outreach, counselling, provision of RUTF, etc.), allowing comparisons related to addressing the cycle of malnutrition
- Analysis of cost per beneficiary, which addresses the cost per cure through the CMAM programme

This methodology provides an overall picture of the total costs associated with CMAM, including all actors, and is not limited to the outpatient or inpatient treatment of SAM. It also aids understanding of how the proportion of domestic and external costs and capital and recurrent costs changes over time. This can be very useful for planning and for tracking progress towards integration of services. For example, the analysis for Nepal undertaken for the five districts where CMAM has been implemented since 2008 concludes that *“UNICEF’s share of capital costs far exceeds that of the Government of Nepal due to investment in capacity and protocol development and procurement of equipment. However, the Government of Nepal’s share of recurrent costs is higher (56 per cent versus 44 per cent). UNICEF’s share of all costs is around 53 per cent, but the Government of Nepal’s growing participation in cost sharing through integration of CMAM into the health system has reduced UNICEF’s contribution over time”* (UNICEF 2012c¹⁰⁰).

100 UNICEF. 2012c. Evaluation of Community Management of Acute Malnutrition (CMAM): Nepal case Study. <https://intranet.unicef.org/epp/evalsite.nsf/8e1ddc662803020785256ede00706595/f51e43862c8cb5a385257a52004e463d?OpenDocument>

Estimating SAM burden and targets

It is possible to make indirect estimates of the yearly burden of SAM at the national level for purposes of advocacy, capacity assessment and planning or for indirectly estimating coverage. This involves using the latest national SAM prevalence estimates, an incidence correction factor and population figures (see box 32 for definitions, and annex A). However, this should only be done as a rough estimate, and such figures should be interpreted with caution for a number of reasons:

- There is little evidence to indicate that SAM prevalence is uniform across a country or between densely and thinly populated areas. In fact, most evidence points to the opposite. Therefore the use of averages may lead to overestimates or underestimates.
- National SAM prevalence figures can be problematic: They are often outdated; the season in which national surveys were conducted can greatly affect estimates due to seasonal fluctuations in prevalence; and they may not accurately reflect all forms of SAM (i.e., cases identified by oedema and MUAC may be missing).¹⁰¹ Therefore, national figures may underestimate prevalence.
- Population figures used for the estimate are often outdated and based on projections.
- There is still much to be learned about the accuracy of incidence correction factors.

If national and subnational surveys (including multiple indicator cluster surveys (MICS) and Demographic and Health Surveys (DHS)) are to be used to calculate overall caseloads and programme targets, they must include accurate measurement of SAM according to the measurement criteria used nationally for treatment programmes.

101 MUAC and weight-for-height will not necessarily identify the same individual with SAM.

An adapted calculation (see annex A) can also help to estimate programme targets for planning purposes, with the same caveats as those mentioned above. Such a method is best used at the initiation of a SAM management programme, and the estimates should be revised based on admission patterns after the initial implementation phase, for example, after six months. For this adapted calculation, geographical and treatment coverage factors need to be factored into the estimated potential caseload based on realistic expansion plans. Treatment coverage of the service is never 100 per cent, so overestimates will occur unless more realistic targets are calculated.

An alternative method, preferable where management of SAM programmes are already established and collating admission data, is to extrapolate targets based on the previous year's admissions. This must take into account factors such as seasonality, geographical expansion plans, predicted increases in treatment coverage based on programme activities and adjustments, and completeness of reporting (also described in annex A).

Advocacy tools

Emerging data on cost effectiveness allows comparison of management of SAM with other interventions for the purposes of advocacy. This comparison can also be done through inclusion of the intervention in PROFILES¹⁰² and in the Marginal budgeting for bottlenecks¹⁰³ (MBB) tool and UNICEF advocacy toolkit¹⁰⁴.

PROFILES is a participatory advocacy process/tool that uses a spreadsheet-based computer software programme to quantify the impacts and costs of diverse nutritional problems on development

102 PROFILES - A Data Based Approach to Nutrition Advocacy and National Development <http://www.globalhealthcommunication.org/tools/18>

103 Marginal budgeting for bottlenecks http://www.devinfove.info/mbb/mbbsupport/knowledge.php?category_id=38

104 UNICEF, 2010a, Advocacy Toolkit; http://www.unicef.org/cbsc/files/Advocacy_Toolkit-2.pdf

BOX 32

Definitions: Prevalence of SAM

Prevalence: The proportion of children 6-59 months with SAM in a population at a point in time

Incidence: The occurrence of new cases of children 6-59 months with SAM in a population over a specific time period (usually a year)

Burden/need: The number of children 6-59 months with SAM present in a population at a certain point or over a period of time, based on prevalence and incidence

Target: The number of children 6-59 months with SAM that a programme expects to treat based on potential caseload and a coverage objective (geographical and treatment).

outcomes such as mortality, morbidity, fertility, school performance and labour productivity. It helps stakeholders in health, agriculture, education and finance to share a common understanding of nutritional problems and cost-effective solutions. Management of SAM can be included in the spreadsheets by adding:

- Estimates of national prevalence of SAM (from surveys)
- Costs for product and programming estimated using the FANTA costing tool (annex E)
- Relative risks for severe wasting (Black et al. 2008¹⁰⁵), though this may not be appropriate in countries with a high proportion of kwashiorkor.

The MBB tool, developed by UNICEF and the World Bank, takes a different approach. It starts with current implementation of approaches within the national health system and constraints to

105 Black, R. et al., 2008, "Maternal and Child Undernutrition: global and regional exposures and health consequences," *The Lancet*, http://www.who.int/nutrition/topics/Lancetseries_Undernutrition1.pdf.

their coverage and quality. The MBB tool aims to estimate the potential impact, resource needs, costs and budgeting implications of country strategies to remove implementation constraints of the health system. The tool estimates the marginal/incremental resources required to overcome those constraints and achieve better results and relates these resources to the country's macroeconomic framework. The MBB is intended to help formulate medium-term national or provincial expenditure plans and poverty reduction strategies that explicitly link expenditure to the Millennium Development Goals (MDGs) related to health and nutrition.

The [UNICEF Advocacy Toolkit](#) is a resource for building a structured approach for sustained advocacy. The Advocacy Toolkit provides a broadly accepted definition of advocacy and underscores UNICEF's unique position and experience in advocacy. The heart of the Toolkit provides detailed steps, guidance and tools for developing and implementing an advocacy strategy. The Toolkit also outlines eight foundational areas that can help strengthen an office's capacity for advocacy, and covers several crosscutting aspects of advocacy including monitoring and evaluating advocacy, managing knowledge in advocacy, managing risks in advocacy, building relationships and securing partnerships for advocacy, and working with children and young people in advocacy. Special focuses examine a variety of specific topics, including human rights and equity approaches to advocacy, theories of change, and conducting advocacy in humanitarian situations.

Coverage monitoring

Parallel to the development of the community-based approach to management of SAM has been the development of innovative methods to directly assess coverage (see box 33 for definitions).

As the objective of SAM management is to reach the majority of children in need, treatment/contact coverage (the proportion of those eligible for treatment who are actually receiving treatment)

has become one of the most critical indicators of programme success. With introduction of the community-based approach it quickly became clear that direct assessment of coverage was needed and that existing survey methods could not offer relevant or accurate results.

To fill this need, the Centric Systematic Area Sampling (CSAS) survey method was developed ([Myatt et al. 2005](#)¹⁰⁶). CSAS provides the ability to estimate and map coverage with precision within a given area, usually a district, and provides information about barriers to programme access. This method, though very useful for well-funded emergency programmes and evaluations, was found prohibitively expensive in the longer term and for routine monitoring purposes.

As community-based programmes have become more integrated into health systems and scale-up accelerated, additional demands on coverage methods have been developed. These methods needed to meet some criteria:

- Be cheaper and more easily integrated into existing systems
- Allow routine periodic monitoring by health teams
- Give broader estimations of treatment coverage (e.g., regional and national)

Further innovations have been made to address these needs ([Guevarra et al. 2014](#))¹⁰⁷. The CSAS method has been replaced by the Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) (a lower cost classification-based development of CSAS) and the Semi-Quantitative Evaluation of Access

106 Myatt, M., et al., 2005, "A field trial of a survey method for estimating the coverage of selective feeding programs," <http://www.who.int/bulletin/volumes/83/1/20.pdf>.

107 Guevarra, E., et al., 'Assessment of Coverage of Community-based Management of Acute Malnutrition, CMAM Forum July 2012 Technical Brief, Version 2: September 2014', <http://www.coverage-monitoring.org/wp-content/uploads/2014/10/Coverage-and-CMAM-2012-v2-sept2014.pdf>.

Definitions: Coverage

Treatment coverage: The proportion of all people needing or eligible to receive a service who actually receive that service. This can be either directly or indirectly estimated (see below) and can also be known as contact coverage.

Spatial coverage: The pattern of treatment coverage measured using a direct coverage method over the entire programme area. Spatial coverage should not be confused with geographical coverage.

Geographical coverage: There are two working definitions of geographical coverage. The first is the ratio of administrative units (e.g., districts) delivering treatment for SAM to the total number of districts in that programme area. The second is the ratio of health care facilities in an area (i.e., country) delivering treatment for SAM to the total number of health care facilities in that area. In its Global SAM Management Update for 2012, UNICEF used this second working definition. Geographical coverage is a proxy estimate of treatment coverage and can be interpreted as the maximum coverage a programme can achieve also referred to as potential or availability coverage). See annex A for how to estimate.

Direct treatment coverage estimate: An estimate of treatment coverage made by finding cases and ascertaining whether they are in a suitable treatment programme. This can be done using the assessment/investigation techniques detailed in annex C (CSAS, S3M, SLEAC, and SQUEAC are direct methods).

Indirect treatment coverage estimate: An estimate of treatment coverage made using secondary data. This is made by comparing numbers admitted into a programme with a predicted burden of SAM based on prevalence estimates found during nutritional anthropometry survey, multiplied by an estimate of the population in the programme area and adjusted (using informed guesses) for incidence, spontaneous recovery and death (see annex A).

Period coverage: Coverage estimated using both current and recovering cases. The rationale for using recovering cases is that they are children who should be in the programme because they have not yet met discharge criteria.

Point coverage: Coverage estimated using current cases only.

and Coverage (SQUEAC)- a semi-quantitative approach concentrating on detailed investigations of factors influencing coverage). The need to assess coverage of national programmes is being met by adaptations of the SLEAC method and a Simple Spatial Survey Method (S3M), an adaptation of the CSAS method that uses improved spatial sampling and uses data more effectively.

These methods are outlined in more detail in annex C, which provides guidance on which method to use in which context along with resource requirements. Country experiences in applying these methods are also described in a

special focus on coverage assessment in [Field Exchange Issue 42](#)¹⁰⁸.

These methods now offer the possibility to directly assess treatment coverage of the population in need at the district, regional and even national level; to show spatial distributions of coverage and to identify the main barriers to coverage. They include models that can be undertaken without extensive resources.

Even though these methods are being used more widely, UNICEF is now exploring the use

¹⁰⁸ ENN, 2012, Field Exchange (42), <http://www.enonline.net/fex/42>.

of routine data and information systems to monitor coverage and bottlenecks of coverage; this is being done in collaboration with the Coverage Monitoring Network and the Food and Nutrition Technical Assistance (FANTA), Helen Keller International and Action Against Hunger – International.

Programme and progress monitoring

A suggested monitoring and reporting format was circulated as a component of [UNICEF programme guidance in 2008](#)¹⁰⁹. The reporting format was part of efforts to help countries simplify basic treatment outcome monitoring requirements for management of SAM at the national level, and has been included in the 2008 [generic CMAM training materials](#) (see annex E)

UNICEF is also helping countries improve their management of SAM reporting systems at the national level by adapting best practices from other country offices and adopting innovative technologies. Depending on the context, this work involves better integration of management of SAM reporting into the health management information system or support for implementing partners to find a method for transferring information in the fastest and most efficient way possible.

Based on the lessons of the CMAM mapping exercise, UNICEF has developed a tool for data capture and analysis of the global situation. The Global SAM Management Update¹¹⁰ (see box 34), first used in 2011, will continue to be refined and used annually to map global progress on SAM programming.

Supplies

The online [supply catalogue](#) lists products needed for management of SAM implementation are available through Supply Division (e.g. MUAC

[tapes, scales, measuring boards, nutrition kits, therapeutic food and pharmaceutical products](#)).¹¹¹ Regular updates on these products are published as technical bulletins which are posted on the catalogue website.

- **RUTFs:** In 2010 the UNICEF Supply Division developed [manufacturing standards for RUTF production](#)¹¹². This reflected a recognition that growing numbers of companies were interested in manufacturing RUTF, thus increasing the importance of quality control. The standards were coupled with advocacy for more production by current suppliers and considerable efforts to diversify the supplier base. Competitive bidding exercises were also launched in 2008 and 2010 with the aim of having multiple suppliers provide forecast requirements of RUTF in subsequent years. The focus was on identifying both local and large-scale global suppliers, particularly in Africa, to bring the supply closer to the beneficiaries and reduce production and transportation lead times. Next, audits and inspections of various manufacturing facilities were carried out to certify them as UNICEF suppliers. UNICEF has established collaboration with Médecins Sans Frontières (MSF) and WFP to jointly review and approve audit reports for new suppliers, speeding up the approval process.

Currently approved suppliers and their prices are listed on the Supply Division website to assure transparency ([see RUTF Price Data from Supply Division](#)¹¹³). All peanut-based RUTF products approved by Supply Division comply with specifications of the Joint Statement on CMAM and can be used interchangeably

109 UNICEF, 2008, 'Programme Guidance Management of Severe Acute Malnutrition in Children,' [https://intranet.unicef.org/PD/Nutrition.nsf/0/9740CF29DC6FC854852579FA005399AA/\\$FILE/Management%20of%20SAM%20in%20Children%202008.doc](https://intranet.unicef.org/PD/Nutrition.nsf/0/9740CF29DC6FC854852579FA005399AA/$FILE/Management%20of%20SAM%20in%20Children%202008.doc).

110 <http://sammanagementdata.org>.

111 [https://supply.unicef.org/unicef_b2c/app/displayApp\(/layout=7.0-12_1_66_67_115&care=%24ROOT\)/do?rf=y](https://supply.unicef.org/unicef_b2c/app/displayApp(/layout=7.0-12_1_66_67_115&care=%24ROOT)/do?rf=y).

112 Reference of manufacturing standards to apply for therapeutic foods production (including RUTF) for children with severe acute malnutrition [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/Reference%20standard%20for%20Therapeutic%20Food.doc](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/Reference%20standard%20for%20Therapeutic%20Food.doc)

113 UNICEF Ready to Use Therapeutic Food Price Data http://www.unicef.org/supply/files/RUTF_Pricing_Data.pdf

The Global SAM Management Update Tool (Nutridash)

This tool uses key nutrition indicators collected at country level which are entered into an online system that collates, analyses and interprets the information at headquarters and the regional office level. For SAM, it generates a profile of each country with:

- Scale-up objectives/targets for management of SAM
- Quality and impact data (report uptake, outcome indicators, geographical and treatment coverage)
- Markers of integration into the health system

Using these key indicators, no further data collection should be required at the country level. At the same time, the indicators will be less detailed than the full range of indicators required for country level monitoring. The outputs of the system can help:

- Provide a current and reliable picture of the global situation for key stakeholders, including donors and governments, to increase political will and commitment to longer term investment
- Identify the support required to countries to improve quality and impact of programming
- Facilitate capacity development of UNICEF staff for implementation and scale-up of SAM management
- Assist in planning for technical, supply and financial resources
- Assist in coordinating and harmonizing data
- Provide a common global voice capable of advocating on the scale of the problem and unmet need
- Increase accountability to beneficiaries, communities and governments.

For more information on the tool and a report on 2011 SAM programming see 'UNICEF Global reporting update: SAM treatment in UNICEF supported countries', p. 37 in [Field Exchange issue 43](#), July 2012, Emergency Nutrition Network. For results from 2012 programming see www.cmamforum.org/Pool/Resources/Global-SAM-Management-Update-2013.pdf

(WHO/UNICEF/WFP/SCN 2007¹¹⁴). To avoid confusion resulting from the diversity of commercial names and packaging, UNICEF, MSF and WFP have initiated harmonized packaging and colour coding of nutritional products. Soon, commercial names will be replaced with generic names in all packaging and communications.

As yet the price of RUTFs has not fallen, despite growing competition.¹¹⁵ However, raw material prices have risen considerably in the past four years – the price of peanuts alone tripled between 2008 and 2012 – so it is

reasonable to conclude that competition helped to stabilize RUTF prices and prevented price hikes. UNICEF therefore continues to give priority to diversification of the supplier base, with more qualified manufacturers in countries and regions closer to end-users, and to focus on product quality and safety. This is viewed as an important step on the path to the eventual transfer of management of SAM with RUTF from UNICEF and NGOs to national authorities.

- **Therapeutic milk:** With the introduction of CMAM, the volume of therapeutic milk needed to manage children with SAM fell dramatically.¹¹⁶ F-75 and F-100 were supplied traditionally in sachets that produced 2.4 litres of milk each, which led to wastage, because

114 WHO, et al., 2007, 'A Joint Statement, Community Based Management of Severe Acute Malnutrition,' http://www.unicef.org/publications/files/Community_Based_Management_of_Severe_Acute_Malnutrition.pdf.

115 Weighted average RUTF price in 2011 was \$51.51 per carton for off-shore purchased product, \$57.56 per carton for locally produced product.

116 UNICEF purchased 2,100 MT of F-100 in 2003 but only 380 MT in 2011.

reconstituted milk must be used within three hours if not refrigerated. Sachet sizes are now one quarter of their original size and produce only 600 ml of milk, which better accommodates the needs of feeding centres (see [Therapeutic Milk](#)¹¹⁷ technical bulletin for more information).

- **Pharmaceuticals:** All pharmaceuticals provided by UNICEF for management of SAM must be sourced through the Supply Division. For locations lacking access to clean water, the Supply Division has introduced dispersible tablets to replace powders for suspensions, such as for amoxicillin (see [Dispersible Tablets](#)¹¹⁸ technical bulletin for more information). Similarly, reducing the number of bottles per package (from 1,000 count to 100 count) aims to ease the process of managing pharmaceuticals in health facilities.

Work is underway to include ReSoMal in the WHO Essential Medicine list. Recently the packaging of this product was changed, with a reduction in the size of sachets and cartons. ReSoMal is used for inpatient treatment which represents a smaller proportion of SAM treatment in comparison to community-based treatment of uncomplicated cases with RUTF (see [ReSoMal](#)¹¹⁹ technical bulletin for more information).

- **Equipment:** Nutrition kits (formerly Oxfam kits) were revised in 2009 to reflect the increased implementation of CMAM (see [Nutrition Kits](#)¹²⁰ technical bulletin). MUAC tapes were also modified to reflect the 2009 WHO/UNICEF

joint statement (see [MUAC Tapes](#)¹²¹ technical bulletin) to allow countries to order according to whether or not they were adopting the newly recommended cut-offs.

RUTF supply chain and forecasting

RUTF is a heavy, bulky, high-value product, and programmes need an uninterrupted supply of it to function effectively. A 2009 review of the supply chain for RUTF in the Horn of Africa ([Duke University 2009](#)¹²²) identified areas for improvement, reflecting desired increases in scale, and suggested indicators for monitoring performance (see box 35). A tool for conducting supply chain analysis developed by this project is available (see annex E). Some key developments as a result of the review are outlined below:

- **Pre-positioning of buffer stocks:** To reduce transportation lead times, RUTF stock is now prepositioned in areas closer to emergency prone countries (Cameroon and Ghana for the Sahel region, for example). Pre-positioning stock in Dubai, Johannesburg or Mombasa for the Horn of Africa, remains a priority.
- **Improved forecasting of RUTF need:** In 2009, the Supply Division, headquarters and regional offices developed a [Nutrition supplies forecasting tool](#)¹²³ to help countries project their yearly requirements of therapeutic supplies. The goal was to improve both country-level and global planning for supplies. The tool has undergone various improvements. It now (a) allows forecasting at subnational as well as national levels; (b) adds contingency emergency stocks based on predicted

117 UNICEF Technical Bulletin No. 15 Therapeutic Milk – New Sachet, Carton Sizes http://www.unicef.org/supply/files/Therapeutic_Milk.pdf

118 UNICEF, 'Dispersible Tablets' http://www.unicef.org/supply/files/Dispersible_Tablets.pdf

119 UNICEF 'Technical Bulletin No. 17 ReSoMal – New Sachet, Carton Sizes' <http://www.unicef.org/supply/files/Resomal.pdf>

120 Technical Bulletin No 12 (Revision 2 August 2013) Nutrition Kits http://www.unicef.org/supply/files/Nutrition_Kits.pdf

121 UNICEF Technical bulletin No. 13 revision 2 Mid Upper Arm Circumference (MUAC) Measuring Tapes, http://www.unicef.org/supply/files/Mid_Upper_Arm_Circumference_Measuring_Tapes.pdf

122 Duke University, 2009, 'A Supply Chain Analysis of Ready-To-Use-Therapeutic Foods for the Horn of Africa: The Nutrition Articulation Project,' UNICEF, http://www.unicef.org/supply/files/SUPPLY_CHAIN_ANALYSIS_OF_READY-TO-USE_THERAPEUTIC_FOODS_FOR_THE_HORN_OF_AFRICA.pdf.

123 UNICEF, Nutrition Supplies Forecasting Tool [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/Nutrition%20supply%20forecast%20sheet%202012%20final.xlsx](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/Nutrition%20supply%20forecast%20sheet%202012%20final.xlsx)

emergency admissions; and (c) calculates actual freight costs, based on yearly review of its usability and the accuracy of forecasts. Systematic annual supply forecasting is already helping to improve the prediction of needs and therefore prevent global shortages. However, predicting target caseloads, either extrapolated from previous years' admissions or indirectly from secondary data, remains challenging and can lead to over- or under-estimations of need. Furthermore, the influences of funding flows and unpredicted emergencies remain. The tool remains under regular review and is now incorporated into the global Nutridash data collection process, facilitating global analysis of supply needs and actual beneficiary reach to continue to improve forecasting.

- **Improved information flow:** The yearly forecast also provides a valuable management tool for identifying which countries need additional support to strengthen programme planning, monitoring and reporting. The estimates help improve communications about management of SAM programmes between the Supply Division, headquarters, regional offices and COs. At country level, initiatives using RapidSMS which takes advantage of mobile phone technology are also promising to improve reporting on both stock and programme admissions. Examples of the potential for using RapidSMS can be found at www.rapidsms.org/.

- **Global system for ongoing monitoring of lead time, landed cost and quality of and access to RUTF:** Supply Division has put in place information on performance monitoring of suppliers. Score cards on on-time deliveries are shared with suppliers regularly, and contract allocations take into consideration their past performance.

The results of these developments have been dramatic. In 2008, nearly 35 per cent of RUTF purchased by UNICEF had to be transported by air, at a cost of \$8.5 million, to reach beneficiaries

BOX 35

Main findings of Horn of Africa supply chain review (Duke University 2009)

1. The time between a CO placing an order and the order reaching the national port by surface transport varied from 40-120 days (on average 80 days, which is too long a delay during rapid-onset emergencies. Additional time must be allowed to clear customs and deliver RUTF to the office).
2. Shifting to air transport (the practice in emergencies) increased transportation costs from \$0.17 to \$2.40 per box of RUTF (representing a 100 per cent increase in the landed cost), which is not an acceptable solution.
3. Performance of the supply chain is hampered by:
 - Availability of funding (donor commitment is needed before a purchase order can be released)
 - Inaccurate assessment of need and demand for RUTF
 - Insufficient communication throughout the chain regarding order, in-transit and warehouse levels of RUTF.

on time. By 2010, less than 1 per cent of RUTF had to be transported by air, and the cost fell to less than \$400,000 (Komrska 2012¹²⁴).

In addition, WFP and a range of agencies engaged in nutrition, including UNICEF, collaborated on [guidelines for managing the supply chain of specialised nutritious foods](#)¹²⁵ (e.g. ready to use

124 Komrska, J., 2012, 'Increasing Access to Ready to Use Therapeutic Foods (RUTF)', <http://www.nutriset.fr/Downloads/PFE-RUTF-Increasing-access.pdf>.

125 WFP et al, 2014, 'Managing the Supply of Specialized Nutritious Foods', <http://www.wfp.org/aid-professionals/blog/blog/supply-chain-guide-nutritious-food>.

foods) for the prevention and treatment of under-nutrition. While the guideline does not cover RUTF, the general principles related to procurement, logistics, distribution and maintaining food quality are applicable (see annex E).

Integration and health systems frameworks and tools

A number of regional and global initiatives are underway to provide frameworks and tools to facilitate integrated planning and implementation of management of SAM and of health and nutrition programming in general (see page 8). These initiatives aim to help programmes identify bottlenecks and track progress towards integration.

UNICEF integration framework

The 2010 global CMAM mapping exercise ([UNICEF/Valid 2011](#)¹²⁶) identified a need for a more systematic approach to integrated management of SAM scale-up. In response, since January 2011, UNICEF has been developing and piloting a framework for institutional integration of management of SAM into national health systems. The objectives of the 'Framework for integration of management of SAM into national health systems' are to support countries in assessing coverage gaps, planning priority actions and guiding sustainable scale-up through the primary health care system.

The framework is structured around the six WHO health system building blocks (governance, financing, human resources, supply, service delivery and health information systems). The framework is also split into national, district and community levels of programming to facilitate planning at each level and guide the development of yearly or multi-year action plans.

The tool is geared for use as part of a participatory exercise involving a group of assessors

representing all partners who work with a facilitator. Areas of assessment are divided among participants according to expertise and experience. The exercise may be carried out annually or every several years as part of monitoring, evaluation and planning of national SAM management programmes. It can be integrated into national planning cycles. The exercise includes:

- Pre-assessment: Identification and mapping of stakeholders and identification of data sources.
- Assessment: Key informant interviews and site visits, using a matrix of benchmarks and based on literature review. The assessment grades progress against the benchmarks to identify gaps and bottlenecks.
- Analysis and validation: Analysis of the causes of the gaps and bottlenecks, involving review and comment by partners.
- Planning: Analysis of the feasibility of addressing the gaps and bottlenecks using a planning tool. Partners reach agreement on which gaps are to be addressed and a time frame for doing so, which is captured in an action plan.

The approach is being reviewed and it is hoped that it can link with similar approaches for other nutrition interventions and the wider health service package (see below). Following a technical meeting on integrating management of SAM in Brussels, September 2012, a task force was initiated, to be co-chaired by UNICEF and WHO. The task force is reviewing and documenting lessons learned and best practices from current integration models and develop a harmonized approach and/or recommend best options to support integration of management of SAM into national health systems.

District health systems strengthening approach

A four-step district health systems strengthening approach (DHSS) is being applied in an increasing number of countries. The approach

126 UNICEF and Valid International, 'Global Mapping Review Of Community-Based Management Of Acute Malnutrition With a focus on Severe Acute Malnutrition' [https://intranet.unicef.org/pd/pdc.nsf/0/A0D7BC73A4211EC985257A7E004C8312/\\$FILE/SHORT_CMAM%20Mapping%20Report%20April%2011.docx](https://intranet.unicef.org/pd/pdc.nsf/0/A0D7BC73A4211EC985257A7E004C8312/$FILE/SHORT_CMAM%20Mapping%20Report%20April%2011.docx)

operationalizes the equity agenda at the subnational level by identifying and resolving supply, demand and quality bottlenecks to achieve universal health coverage with equity. This DHSS approach can be adapted and used by COs, programme coordinators, partners and health management teams and can incorporate management of SAM into the relevant health package. The approach simultaneously provides:

- A structured and straightforward way to operationalize UNICEF’s equity-focused strategy to achieve the MDGs for young child survival and development
- A set of tools and indicators to improve monitoring, planning and implementation at the local level for programmes and their key interventions (e.g., community case management of childhood illness, CMAM, IYCF)
- An integrated, flexible and systematic way to improve the coverage and quality of effective health interventions for children and mothers while strategically strengthening the health system
- A quick and reliable set of common indicators to monitor progress frequently in underserved settings and to adjust partners’ assistance to countries in a coordinated fashion.

The approach is flexible and can be adapted to respond to diverse health systems, local needs and contexts. The aim is to identify subpopulations not being reached and address the bottlenecks they face in accessing proven lifesaving interventions. This is achieved by engaging with district management teams, stakeholders and civil society to foster participatory, evidence-based and equity-focused planning, implementation and monitoring in the health district. This process enables subnational managers to assess the root causes of bottlenecks. They can then prioritize and implement feasible solutions through annual plans that are monitored in real time by all stakeholders, allowing evaluation of the results obtained,

especially for poor and marginalized people. This four-step approach is often abbreviated as DIVA:

- **Diagnose/investigate:** A modified Tanahashi model identifies inequities and health system bottlenecks across different population subgroups, locations and geographic areas; proximate and contributory causes are analysed and prioritized; and evidence-based and context-sensitive solutions and strategies are developed to overcome bottlenecks that are amenable to subnational actions.
- **Intervene/implement:** Chosen solutions and strategies are integrated into the subnational plan to ensure full ownership; subnational management competencies and practices are enhanced to optimize performance; and community participation and stakeholder engagement are supported to ensure shared accountability for equitable results.
- **Verify/monitor:** Short-term systematic monitoring of progress towards resolving critical bottlenecks to universal health coverage is undertaken at least every six months, using process and outcome indicators based on available data as much as possible. This process also serves as a foundation for monitoring and accountability for equity-based universal health coverage.
- **Adjust/revise:** Solutions and strategies are adjusted through an iterative process based on the results from continuous monitoring. The goal is to improve efficiency, effectiveness and quality of progress towards universal health coverage with equity and to respond to emerging events that require recalibration of activities.

For more information on DIVA see [DIVA guidance and analysis tools](#)¹²⁷ and ‘[MoRES Toolkit: Indicator Selection Guidance – Health, HIV and Nutrition, 2012](#)’¹²⁸.

127 UNICEF, 2012c, ‘DIVA Guidance and Analysis Tools’, <https://intranet.unicef.org/PD/Health.nsf/bebddd2e89ddfb-685256fa500598afe/26c9a2067f46a8a585257a080059beef?OpenDocument>

128 UNICEF, 2012. <https://teams.unicef.org/sites/NYHQ01/OED/MoRES/SitePages/ToolkitPage.aspx>

Resource mobilization

Recent global initiatives are offering some promise of longer term funding to support scale-up of CMAM for agencies and NGOs as an integral part of high-priority direct nutrition interventions. Previously short-cycle emergency funds have been the major funding mechanism for SAM management. Unclear reporting on nutrition in the consolidated appeals process means that it is not possible to draw out any clear figures on trends (Webb 2009¹²⁹). In general, allocation of donor funds for nutrition has proved very hard to track (MSF 2009¹³⁰) as contributions are scattered across different activity sectors, including health, food aid and food security, and are often funded in a joint envelope with other activities. However, a recent analysis has shown that investments are significantly below what is needed, particularly for direct nutrition interventions (ACF 2012¹³¹). The main emergency donors continue to be the major funders for SAM management (European Community Humanitarian Office (ECHO), Office of US Foreign Disaster Assistance (OFDA), United Kingdom Department for International Development (DFID), Government of Japan, Irish Aid and UNICEF national committees).

- **DFID.** DFID has included management of SAM as a key direct nutrition intervention for infants and young children in its SUN position paper, the strategy that also informs UK support for SUN (DFID 2011¹³²). Northern Nigeria provides an example of this commitment translated into practice. There, DFID's programme to

improve maternal, newborn and child nutrition is providing £60 million over five years, divided between UNICEF, Save the Children and ACF, for delivery of nutrition interventions through routine health services funded by the Government. A significant portion of the funds is for CMAM. This represents a good example of long-term funding for management of SAM. However, none of these funds go directly to the Government to support the domestic costs involved in implementation.

- **United States Agency for International Development (USAID).** The Population Health and Nutrition Strategic Plan¹³³ states USAID's support for integrating SAM management into national health systems and facilitating the introduction and expansion of management of SAM through trainings and planning tools. Much of this support is channelled through FANTA, but other long-term funding is becoming available as part of wider nutrition packages. For example, USAID awarded \$50 million over five years to an NGO/university consortium for an integrated nutrition programme in Ethiopia, including a substantial amount for management of SAM. This award includes a focus on capacity development of the government health system for management of SAM, though no funds go directly to the Government. Similar awards are expected in other countries. USAID has also funded support to establish local production of RUTF, for example in Uganda.
- **ECHO and the European Union.** ECHO's recent consultation paper on undernutrition in emergencies (DG ECHO 2012¹³⁴) stresses the importance of maximizing the sustainability of nutrition interventions where possible by

129 Webb, P., 2009, 'Malnutrition in emergencies: The framing of nutrition concerns in the humanitarian appeals process, 1992 WHO, et al., 2007, 'Joint Statement on Community-Based Management of Severe Acute Malnutrition', www.unicef.org/nutrition/index_39468.html

130 MSF, 2009, 'Malnutrition: How Much Is Being Spent? An Analysis of Nutrition Funding Flows 2004 – 2007,' http://66.147.245.38/web/public/files/11-09_Report_NutritionHowMuchSpent.pdf

131 ACF and Aid For Nutrition, 2012, 'Can Investments to Scale Up Nutrition Actions be Accurately Tracked?', http://www.actionagainsthunger.org.uk/fileadmin/contribution/0_accueil/pdf/Aid%20for%20Nutrition%20low%20res%20final.pdf.

132 DFID, 2011, 'Scaling Up Nutrition; The UK's Position Paper on Undernutrition,' https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/67466/scal-up-nutr-uk-pos-undernurt.pdf.

133 USAID 'Multisectoral Nutrition Strategy 2014 – 2025' http://www.usaid.gov/sites/default/files/documents/1867/USAID_Nutrition_Strategy_5-09_508.pdf

134 ECHO, 2012a, (European Commission Directorate General for Humanitarian Aid and Civil Protection), 'External Consultation Paper on Undernutrition in Emergencies', http://ec.europa.eu/echo/files/policies/consultations/nutrition-consultation-paper_en.pdf

“promoting their integration into national policy frameworks and plans (e.g., in health policy, emergency response plans, national protocols for the treatment of undernutrition).” It also mentions ECHO’s role as an advocate for greater national and international mobilization and effective support in the long term as well as the emergency phase. ECHO and the European Union have been working together to smooth the transition from emergency to development in nutrition. European Union food facility funds (three-year funding) were set up in 2008 as a response to soaring food prices. CMAM was a key area funded under the objective of “dealing directly with the effects of volatile food prices on local populations”. In Mali the food facility funded UNICEF to help monitor nutrition status among children and women and manage treatment of SAM. The EU’s regional project on Maternal and Young Child Nutrition Security in Asia includes funding for management of SAM, covering five countries (Bangladesh, Indonesia, Lao People’s Democratic Republic, Nepal and the Philippines).

- **Global Fund to Fight AIDS, Tuberculosis and Malaria.** Following advocacy from various agencies, there is also a move to include CMAM along with other nutrition support in Global Fund proposals. Recent Global Fund information notes ([UNAIDS/WHO 2011](#)¹³⁵) inform countries that they can include management of SAM linked to HIV programming. FANTA/USAID has produced a toolkit to facilitate this process ([FANTA-2/WFP 2011](#)¹³⁶).

135 UNAIDS and WHO, 2011, ‘Technical Guidance Note for Global Fund HIV Proposals’, http://www.unaids.org/sites/default/files/en/media/unaids/contentassets/documents/programmes/programmeffectivenessandcountryssupportdepartment/gfresourcekit/20110905_Technical_Guidance_Food_Nutrition_en.pdf.

136 FANTA-2 and WFP, 2011, ‘Toolkit for Countries Applying for Funding of Food and Nutrition Programs Under the Global Fund to Fight AIDS, Tuberculosis and Malaria’, http://www.unaids.org/sites/default/files/en/media/unaids/contentassets/documents/programmes/programmeffectivenessandcountryssupportdepartment/gfresourcekit/20110905_Technical_Guidance_Food_Nutrition_en.pdf

- **UNITAID**¹³⁷. Specific funding for RUTF has been prioritized by UNITAID, a specialized organization that contributes to scaled-up access to treatment for HIV, malaria and tuberculosis through funding obtained from taxes on airline tickets. UNITAID supports nutrition activities as part of a joint project with the Clinton Foundation initiative on paediatric HIV/AIDS and prevention of mother-to-child transmission. It also provides RUTF to address malnourished patients’ nutritional needs. UNITAID allocated \$4.4 million for purchase of RUTF in 2007 and raised it to \$8 million in 2009 (MSF 2009). This mechanism provided a medium-term source of funding, though its future is unclear.
- **World Bank.** The International Development Association (IDA) is the part of the World Bank that helps the world’s poorest countries. Established in 1960, IDA aims to reduce poverty by providing loans (called “credits”) and grants for programs that boost economic growth, reduce inequalities, and improve people’s living conditions. IDA commitments from 2003 to 2013 provided more than 117 million people with a basic package of health, nutrition, or reproductive health services. The World Bank has joined with more than 100 partner agencies and organizations to endorse Scaling Up Nutrition: A Framework for Action, which sets forth principles and priorities for action to address undernutrition and help countries reach the Millennium Development Goals by 2015.

- **National governments.** There are very few examples of significant incorporation of SAM management into regular government budget programming. A number of governments purchase their own therapeutic milk for inpatient treatment and the routine drugs used for treatment. Recent UNICEF evaluations also show that a portion of capital and recurring costs are being met domestically in Chad, Ethiopia, Kenya, Nepal and Pakistan. However,

137 <http://www.unitaid.eu/en/>

only in Malawi has RUTF been purchased directly by the Government. Where allocations are made to programming they tend to be at district or regional level. There is clearly a long way to go in terms of national government funding.

- **Other initiatives.** A recent report recognizes the need to support greater domestic and external investment in direct nutrition interventions, including management of SAM ([ACF/IDS 2012](#)¹³⁸). It offers some ideas meriting further investigation on alternative mechanisms to fund the full direct nutrition intervention package. These include guarantees or bonds such as the mechanism behind the ‘International finance facility for immunization’ and international levies and taxes like the UNITAID mechanism described above. ENN also conducted a [review of financing arrangements](#) for programmes that address acute malnutrition at scale through the CMAM approach as a follow-up to the issues debated at the Ethiopia CMAM conference.¹³⁹

138 ACF, IDS, and Aid for Nutrition, 2012, ‘[Using Innovative Financing to end Undernutrition](#),’ http://www.actionagainsthunger.org.uk/fileadmin/contribution/pdf/ACF_Aid%20for%20Nutrition_Using%20Innovative%20Financing%20to%20End%20Undernutrition.pdf

139 Shoham, J et al. 2013. Managing acute malnutrition at scale : A review of donor and government financing arrangements. ODI Network Paper 75. <http://www.odihpn.org/hpn-resources/network-papers/managing-acute-malnutrition-at-scale-a-review-of-donor-and-government-financing-arrangements>

Indirectly estimating burden (need), targets and coverage

For programme planning purposes, the estimated annual burden of SAM at national and sub-national level among children 6-59 months can be calculated based on the latest SAM prevalence estimates, an incidence correction factor and population figures. Calculation of estimated SAM burden is critical, because it informs the target caseload and indirect coverage calculation. However, calculation of SAM burden should be understood as a rough estimate and such figures should be interpreted with caution. Furthermore, it is essential that **the process for calculating the burden figure, and target caseload, is undertaken in consultation with key stakeholders responsible for delivering the programme** (e.g. Government, UNICEF, nutrition cluster or sector partners etc.) and that **consensus is reached** on the final figures to be used.

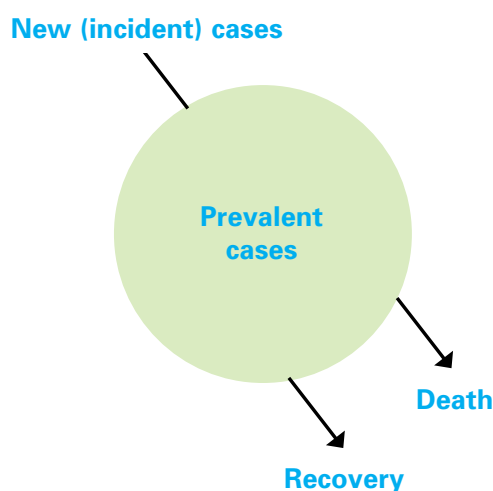
This annex is structured in three sections:

A1 outlines a process for estimating SAM burden. Responding to UNICEF staff feedback from the mapping of 2012 SAM programming, the concept of national and target area SAM burden is introduced to generate more appropriate burden estimates when the programme is not aiming for national coverage

A2 outlines options for defining the target number of beneficiaries for SAM programme in relation to the estimated SAM burden

A3 describes how to indirectly estimate and communicate coverage and programme performance, in particular in how to use different estimates of coverage to better reflect the status of the programme vis-a-vis the need.

FIGURE 6 Graphic definition of prevalent cases



A1. Estimating SAM burden (prevalent cases)

The number of individuals affected by SAM changes throughout the year. The total number of current cases (prevalent cases) will increase by the number of new (incident) cases, and will decrease by the number of individuals that either recover or die. The total annual SAM burden estimate aims to capture the total number of cases at one point in time (prevalent cases) and the total number of new (incident cases) that arise during the year.

Estimating prevalence of SAM

The proportion of malnourished children 6–59 months in a population at a given time is estimated through anthropometric population based surveys (SMART, MICS, DHS). Caseload estimates will vary depending on which nutritional index (weight-for-height or MUAC, with or without oedema) is used in generating the SAM prevalence. It is also important to be aware that prevalence within a population is likely to fluctuate over the year according to the season (lean or harvest). It is important that the prevalence used for the calculation of SAM burden is neither disproportionately high nor low and therefore the recommendation is to take an average of low and high season prevalence for the purposes of SAM burden calculation.

Estimating annual incidence of SAM

The use of prevalence allows estimation of the number of children with SAM at a given time by taking into account population size and proportion of children 6–59 months. Incidence refers to the proportion of new cases of SAM out of the total population of children under five that occur over a specific time period. There is often no country level data on incidence as it cannot be collected during cross sectional surveys. As a result, an incidence correction factor is needed to estimate the total cases occurring over the period of a year. Whether a standard incidence correction factor is appropriate and what that value might be is still under debate. Some

studies have tried to estimate incidence by looking at programme admissions over a year for CMAM programmes which maintained a high coverage, by reanalysing longitudinal studies that monitored episodes of malnutrition over time and by assessing the duration of untreated SAM (Garenne et al. 2009¹⁴⁰; Isanaka et al. 2011¹⁴¹).

An estimate of incidence may be obtained with the calculation below, but with two important caveats:

- The mean duration of a SAM episode is not easy to estimate and may vary from setting to setting. Available estimates vary widely.
- The method relies on an assumption of constant incidence. This assumption is unlikely to be true for a condition such as SAM which is strongly associated with infection and food availability which are usually seasonal.

$$\text{Incidence} = \frac{\text{Prevalence}}{\text{average duration of disease}}$$

A common estimate of the average duration of an untreated SAM episode is 7.5 months (Garenne et al. 2009¹⁴²). Using this to estimate incident cases over one year (i.e. 12 months) yields:

$$\text{Incident cases} = \text{Prevalence} \times 12/7.5 = \text{Prevalence} \times 1.6$$

1.6 is therefore used as the incidence correction factor to generate the annual burden (existing plus new incident cases) estimate based on prevalence. In the case where incidence correction factor is specifically known based on country level analysis, that figure can be used in place of 1.6 in the

140 Garenne, M., et al., 2009, 'Incidence and duration of severe wasting in two African populations', <http://www.ncbi.nlm.nih.gov/pubmed/19254427>.

141 Isanaka, S., et al., 2011, "Estimates of the Duration of Untreated Acute Malnutrition in Children From Niger," <http://aje.oxfordjournals.org/content/early/2011/03/03/aje.kwq436.full>.

142 Garenne, M., et al., 2009, 'Incidence and duration of severe wasting in two African populations', <http://www.ncbi.nlm.nih.gov/pubmed/19254427>.

calculation of annual SAM burden. In settings with effective programs, the correction factor should be higher.

Estimating the burden of SAM (Need)¹⁴³

The annual estimated SAM burden is defined as the number of children 6-59 months with SAM present in a population over a period of time, based on current (prevalent) and new (incident) cases. Calculation of both a national burden figure and a figure for the specific geographic area where SAM management programmes are operating is recommended in order to better understand the needs.

National burden:

The most accurate method (to date) that we can propose (still with many caveats) relies on having good quality regional/provincial breakdowns of SAM prevalence using the same methodology for **all** the regions/provinces in that country (i.e. [Method 1A](#) below). Most countries will not meet this criteria, however there are alternatives for calculating the national burden (i.e. [Method 2A](#) and [Method 3A](#)). The further the calculation is from the preferred method, the more inaccurate the calculations are likely to be. Choosing between [Methods 2A and 3A](#), will depend on the country context and what is known about the quality of the data from the surveys conducted in the country.

¹⁴³ Burden may also be referred to as 'Universal caseload' by OCHA and others

Method 1A (the preferred method): utilizing standardized sub-national data

Standardized sub-national data may be available in the case where a national SMART (or good quality MICS) survey has been conducted (and ideally two SMART surveys for that year – one pre and one post-harvest, from which the average prevalence would be used). The regional/provincial SAM prevalence with the regional/provincial 6-59m population and the incidence correction factor (see calculation below) would then be used to calculate regional/provincial burdens, which would then be added together to generate the national burden estimate.

NOTE: This approach is most accurate where the data quality is good and valid population estimates are available.

National Burden = sum of regional (or provincial) burdens

Which refers to:

Regional Burden = prevalent cases + incident cases

Which can be calculated by:

Regional Burden = regional population 6-59m x [regional prevalence + (regional prevalence x 1.6)]

Which can be simplified to:

Regional Burden = Population 6-59m x regional prevalence x 2.6

Example of calculation in Country X using Method 1.A

	Population	Population 6-59m (using 17% of total population as standard*)	SAM Prevalence	Burden (pop 6-59m x prevalence x 2.6)	Target caseload Burden x coverage (e.g. 70%)
Province A	6,000,000	1,020,000	2.1	55,692	38,984
Province B	3,000,000	510,000	2.8	37,128	25,990
Province C	15,000,000	2,550,000	3.8	251,940	176,358
Province D	10,000,000	1,700,000	2.3	101,660	71,162
Province E	11,000,000	1,870,000	2.9	140,998	98,699
Total	45,000,000	7,650,000	2.8	587,418	411,193

* or relevant country level percentage if available.

Method 2A: Mixing/matching data sources (e.g. SMART and MICS).

The caveat up front is that data from different sources will be derived from different methodologies and will likely be from different time periods (in a good harvest year; pre/post-harvest etc.) so comparability is problematic. Nevertheless, for planning purposes, this information can be of use. For instance, in Country X, out of a total of 8 provinces, SMART surveys were conducted in 3 provinces while MICS was available for the other 5 provinces. The burden by province could still be calculated using the different SAM prevalence (from SMART and MICS) with the incidence correction factor and 6-59m populations for each province. The burden for each province would then be added together to generate a national burden estimate (as per the calculation in Method 1.A).

Method 3A: Use aggregated national figures.

If a country has an aggregated national level SAM prevalence figure (e.g. the aggregated figure of 2.8 in the example from Method 1) it can be used in the following calculation:

$$\text{National Burden} = \text{national population 6-59m} \times [\text{national prevalence} + (\text{national prevalence} \times 1.6)]$$

Which can be simplified to:

$$\text{National Burden} = \text{National population 6-59m} \times \text{national prevalence} \times 2.6$$

Target area burden:

In the case of national programmes, the national burden and target area burden will be the same, so there will be no need for further calculation. In the case of programmes that do not aim to be national, the target area burden should also be calculated. To calculate the burden in the area targeted for SAM programmes, the following methods can be used, which are similar to Methods 1A, 2A and 3A for national burden calculation.

Method 1B (the preferred method): utilizing standardized sub-national data

As above for the national calculation, use the standardized regional/provincial SAM prevalence estimates for the programme target area (e.g. the SMART data per province/region) with the province/region 6-59m population.

$$\text{Target Area Burden} = \text{sum of target area regional (or provincial) burdens}$$

Which can be simplified to:

$$\text{Regional Burden} = \text{regional population 6-59m} \times \text{regional prevalence} \times 2.6$$

NOTE: If regional or local SMART survey data are used to calculate the prevalence of the SAM burden in the programme target area but a mix of different surveys (e.g. MICS and SMART) are used to calculate the national burden, there may be a noticeable discrepancy in the figures since the methodology is not the same. If there is a noticeable discrepancy, the likely reasons should be noted in programme planning documents and reporting.

Method 2B: Mixing/matching data sources (e.g. SMART and MICS).

For instance, in Country X with 8 provinces, programmes are operating in 4 provinces. SMART surveys were conducted in 3 provinces and SAM prevalence data from MICS is available for the other province. The target area burden would be calculated by province using the different SAM prevalence (from SMART and MICS) with the incidence correction factor and 6-59m populations for each province. The province level burden would then be added together to generate the national estimated burden.

Method 3B: Use aggregated target area figures.

The aggregated target area SAM prevalence figure (e.g. the aggregation of the different SAM prevalences figures from different regions/provinces as per the example above) would be used with the total target area population, as follows:

$$\text{Target Area Burden} = \text{target area population 6-59m} \times \text{aggregate target area prevalence} \times 2.6$$

A2. Estimating programme targets for SAM

It is often not possible to reach all estimated cases of SAM. A specific target needs to be set, based on capacity and context. There are several ways of doing so depending on whether it is a new or existing programme.

Method 1: Setting targets for SAM programming in new areas/country

Estimating programme targets for operations in a new area or country needs to take account of planned geographical target area for service delivery and intended target treatment coverage.

$$\text{Target} = \text{Population 6–59m in geographical target area}^{**} \times \text{Prevalence} \times 2.6 \times \text{treatment coverage (\%)}$$

** Calculated from total population in the geographical target area (n) x estimated proportion of children 6–59m in the population (%)

Depending on the stage of the programme, the target treatment coverage may be based on Sphere standards,¹⁴⁴ experiences documented in well-run CMAM programmes in a similar context or on a gradual building up from existing health facility coverage. For example, a target of 50 per cent may be used for the first six months of the programme, rising to 70 or 80 per cent at the end of the first year in line with levels documented to be achievable in well-run CMAM programmes. It may be possible in some contexts to use known treatment coverage if this has been measured directly in other areas of operation, which can be extrapolated to take into account expansion plans and support capacities.

In subsequent years, where a recent survey has generated an updated SAM prevalence estimate, the same equation can be used. If there is no recent survey, the result may not reflect the situation on the ground at that time. In this case, Method 2 is advised.

Method 2: Setting targets for existing SAM programming

An alternative method for estimating programme targets for already established CMAM programmes where admission reports are being collated is to extrapolate from the previous year's admissions figures. The previous year's collated admissions figures can be used by taking account of the following:

- Adding on target estimates calculated in Method 1 for areas of expansion not covered in the previous year
- Percentage reporting, i.e., if 75 per cent of facilities with CMAM services submit reports giving a total admissions of 3,620 children, a very rough estimate for 100 per cent of facilities would be $(3,620/75) \times 100$
- Adding an estimated number of cases for any predictable surges in coverage and therefore admissions due to mobilization events, or further decentralization of services. The numbers to add on could be based on previous experiences of similar surges.
- Any predicted increases in prevalence (and therefore estimated caseload) compared to the previous year (e.g., where early warning indicators predict higher than usual seasonal increases)

The result will of course only be an estimate but one that is based on the reality of what programmes are achieving in terms of numbers of children reached.

NOTE: There should be a consensus between all stakeholders (cluster or sector coordination level) and on the trends, figures from last years as well as actual capacity.

A3. Indirectly estimating coverage

Estimating geographical coverage

There are two ways of defining geographical coverage.

144 70 per cent in urban areas, 50 per cent in rural areas and 90 per cent in camps.

Geographical coverage: health facility definition

Geographical coverage is commonly defined as the ratio of health facilities¹⁴⁵ in a programme area that deliver CMAM services to the total number of health facilities in the programme area:

$$\text{Geographical coverage} = \frac{\text{Health facilities delivering CMAM services}}{\text{total health facilities}}$$

Geographical coverage can be interpreted as the maximum coverage that a programme can achieve (also referred to as potential coverage or availability coverage). Geographical coverage calculated at facility level should be the “headline” figure reported for geographical coverage. Geographical coverage is referred to as “Geographic access” in UNICEF’s internal bottleneck analysis determinants framework (monitoring of results for equity strengthening [MoRES])

Geographical coverage: administrative unit definition

There can be benefits to assessing geographical coverage at other levels i.e. by districts or regions. Geographical coverage by administrative unit is calculated as:

$$\text{Geographical coverage} = \frac{\text{Districts (or regions) delivering treatment for SAM}}{\text{Total districts (or regions)}}$$

Table 5 shows a simplified example of a nation with three regions, each with three districts. Geographical coverage (GC) has been assessed for all levels of the service delivery hierarchy. Geographical coverage defined in both ways (facility definition and administrative unit definition) for the three levels of the service delivery hierarchy can

¹⁴⁵ ‘Health facilities’ refers to primary health care facilities as well as secondary and tertiary facilities offering either outpatient or inpatient care for the treatment of SAM

TABLE 5 Simplified example of a national CMAM program

	REGIONS	DISTRICTS
Nation $GC_{Regions} = \frac{3}{3} = 67\%$ $GC_{Districts} = \frac{5}{9} = 56\%$ $GC_{Facilities} = \frac{33}{79} = 42\%$	Region 1 CMAM services available $GC_{Districts} = \frac{2}{3} = 76\%$ $GC_{Facilities} = \frac{10}{27} = 37\%$	CMAM at 4 of 10 facilities $GC_{Facilities} = \frac{4}{10} = 40\%$
		CMAM at 0 of 9 facilities $GC_{Facilities} = \frac{0}{9} = 0\%$
		CMAM at 6 of 8 facilities $GC_{Facilities} = \frac{6}{8} = 75\%$
	Region 2 CMAM services available $GC_{Districts} = \frac{3}{3} = 100\%$ $GC_{Facilities} = \frac{23}{28} = 82\%$	CMAM at 8 of 8 facilities $GC_{Facilities} = \frac{8}{8} = 100\%$
		CMAM at 6 of 9 facilities $GC_{Facilities} = \frac{6}{9} = 67\%$
		CMAM at 9 of 11 facilities $GC_{Facilities} = \frac{9}{11} = 82\%$
	Region 3 CMAM services not available $GC_{Districts} = \frac{0}{3} = 0\%$ $GC_{Facilities} = \frac{0}{25} = 0\%$	CMAM at 0 of 8 facilities $GC_{Facilities} = \frac{0}{8} = 0\%$
		CMAM at 0 of 9 facilities $GC_{Facilities} = \frac{0}{9} = 0\%$
		CMAM at 0 of 7 facilities $GC_{Facilities} = \frac{0}{7} = 0\%$
	Program (A) (from table 1)	Program (B) (mother pregnant)
GC _{Regions}	67%	100%
GC _{Districts}	56%	100%
GC _{Facilities}	42%	8%

more fully reflect the progress of roll-out of CMAM services in a nation.

In the above example, programme (A) is rolling-out on a region-by-region basis and is achieving considerable geographical coverage at the facility level. While national and district coverage may be lower than Programme (B), almost half of the facilities are providing SAM treatment in Programme (A). Programme (B) is rolling-out on a national basis but has achieved very little geographical coverage at the facility level. SAM treatment is available in all of the regions and districts, but is only being provided by very few facilities hence access at community level is limited. The analysis of geographical coverage using the two definitions is able to highlight these patterns and can promote clarity in reporting (e.g., by ensuring that district geographical coverage is not reported as facility based geographical coverage).

Mapping coverage indicators can also be helpful in planning and monitoring SAM programming. Figure 7 presents an example where geographical coverage at the facility level is mapped. Regional level differences are readily apparent, and patterns more easy to identify than they might otherwise be if presented in a table.

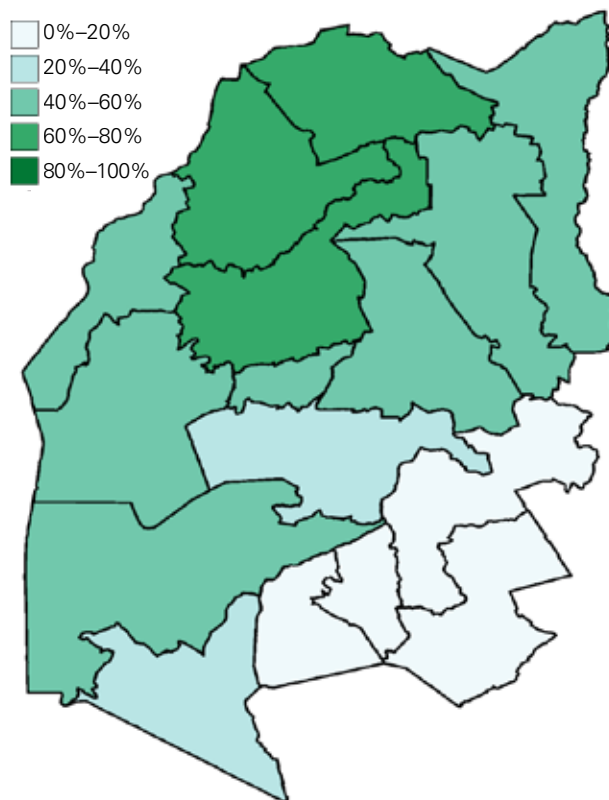
Interpretation geographical coverage

Geographical coverage represents the maximum contact coverage that a programme can achieved. This means that it will always overestimate treatment coverage.

There are many issues which can bias the geographical coverage indicator at the facility level:

- **Improper numerators.** The numerator is the number of facilities delivering CMAM services. This requires strict definition of what it means to deliver CMAM services. This is also related to issues of RUTF supply. A clinic with an inconsistent supply of RUTF should not be classified as delivering CMAM on a continuous basis.

FIGURE 7 Map of classes of facility-level geographical coverage by region



- **Improper denominators.** The correct denominator for facilities geographical coverage is **all** (primary) healthcare facilities.
- **Incomplete spatial coverage of facilities.** It may be useful to correct the indicator for spatial coverage of healthcare facilities. For example, if 75 per cent of the population lives within 15 km of a functioning healthcare facility, then geographical coverage may be revised downwards (i.e., by multiplying by 0.75). This improves the indicator by bringing it closer to treatment coverage. It may be useful to provide both the availability and accessibility coverage indicators.
- **Misspecification of catchment areas.** This is linked to the issue of denominators and spatial coverage. Some programmes implement CMAM in, for example, 20 per cent of facilities

and expand the catchment area of each of the facilities delivering CMAM services and claim 100 per cent coverage. This does not actually expand catchment areas but it does bias the indicator.

More work is required to identify potential sources of bias. Potential bias can then be countered by robust definition of numerators and denominators and by correction, for e.g., RUTF stock-outs, clinic closures and spatial coverage.

A2.2 Estimating treatment coverage

One approach to estimating treatment coverage is to estimate burden/need as above and compare it to numbers of SAM cases admitted. This is an *indirect* approach. It is capable of providing only very approximate treatment coverage estimates and does not provide information on barriers/bottlenecks.

$$\text{Treatment coverage} = \frac{\text{cases admitted within a given period}}{\text{burden for the same period}}$$

NOTE: admissions are defined as cases newly admitted (otherwise defined as number of new SAM admissions). This is different from 'cases treated'.

It is recognized that many countries do not have programmes covering the whole country, nor are they aiming for nationwide coverage. The recommendation is to use a number of different but complementary ways to calculate the coverage to better reflect coverage and programme progress.

i. National treatment coverage

National treatment coverage looks at the number of new admissions in relation to the estimated national burden.

$$\text{National treatment coverage} = \frac{\text{new admissions}}{\text{national burden}}$$

ii. Target area treatment coverage

For programmes that are not national, the target area treatment coverage should be calculated according to the area targeted (e.g. where SAM programmes are operating). Where countries are

A worked example of indirect calculation of coverage

A SMART survey undertaken just over twelve months ago reported a prevalence of SAM (defined as MUAC <115 mm or bilateral pitting oedema) of 1.34% (95% CI = 0.69% – 2.33%) in a district with a total population of 121,400 people of which 17.3% are aged between 6 and 59 months. SAM centres in the surveyed district report admitting 248 cases of SAM in the previous twelve months.

Target area burden can be estimated as:

$$\begin{aligned} \text{burden} &= \text{population 6-59m} \times \\ & \quad (\text{prevalence} + \text{prevalence} \times 1.6) \\ &= (121400 \times 0.173) \times (0.0134 + 0.0134 \times 1.6) \\ &= 732 \end{aligned}$$

Target area treatment coverage can be estimated as:

$$\begin{aligned} \text{coverage} &= \text{cases admitted/burden} \\ &= 248/732 \\ &= 0.34 \\ &= 34\% \end{aligned}$$

Confidence intervals on coverage may be calculated using the 95% confidence limits of the SAM prevalence estimate to calculate 95% confidence limits on the estimate of burden.

Target area treatment coverage (lower confidence limit)

$$\begin{aligned} &= 248 / (0.0233 + 0.0233 \times 1.6) \times (121400 \times 0.173) \\ &= 19\% \end{aligned}$$

Target area treatment coverage (upper confidence limit)

$$\begin{aligned} &= 248 / (0.0069 + 0.0069 \times 1.6) \times (121400 \times 0.173) \\ &= 66\% \end{aligned}$$

operating countrywide, the target area treatment coverage will be exactly the same as the national treatment coverage:

$$\text{Target area treatment coverage} = \frac{\text{new admissions}}{\text{target area burden}}$$

iii. Programme implementation progress

Another measure of success is to calculate the progress of the programme against the targets set, as per the following:

$$\text{Programme implementation progress} = \frac{\text{admissions}}{\text{target caseload}}$$

Confidence intervals on coverage may be calculated using the 95 per cent confidence limits of the SAM prevalence estimate to calculate 95 per cent confidence limits on the estimate of burden.

The methods outlined above have problems with both accuracy and precision. This does not mean that they should never be used. Bias can be minimized. For example, bias in geographical coverage estimates can be countered by robust definition of numerators and denominators and by correction for e.g., RUTF stock-outs, clinic closures and spatial coverage.

A biased indicator may be of most use in tracking roll-out over time. If bias is reasonably small and consistent over time, then an indicator's estimated value will track the indicator's true value. Bias can also be corrected for if it is possible to estimate the direction and magnitude of the bias. This could be done by comparison of indirect estimates with direct estimates of coverage made using direct (e.g., CSAS, SQUEAC, SLEAC) methods. Such calibration exercises may also be useful for programming planning purposes as they could be used to calibrate the prevalence to incidence correction factor (*k*) which is also used to decide programme resource requirements.

How to use and communicate coverage and performance data

In order to fully capture and communicate the scale of SAM programming to a range of audiences, it is important to have a common understanding of how best to use these different figures. Each figure helps show how the programme has performed against the need. Where possible, it is best to present all of the figures.

- i. The national treatment coverage estimate presents the nationwide progress in relation to national burden, which ensures that the overall SAM burden and need within the country is not forgotten or overlooked. This can be important for advocacy purposes to promote further scale up of programming efforts.
- ii. The targeted area treatment coverage figure demonstrates the progress achieved within the areas that SAM management programmes are operating, and the remaining gap in these areas. This can be important for showing success where we/partners work, but also point to the need for further scale-up.
- iii. Geographical coverage (national and target area) represents a crucial starting point for developing and monitoring SAM management scale-up strategies, identifying where there is an unmet need for SAM management at national or subnational levels, and advocating with ministries of health and other partners to fill these gaps.
- iv. The final figure for programme progress lends itself more to communicating the success against agency/partner aspirations which takes into account capacities in place in the country. This figure can be important for showing success in both the planning and delivering of programmes of UNICEF/partners as per the capacities in place.

Assessments that feed into bottleneck analysis

Assessment of capacities is a critical part of bottleneck analysis and must be undertaken on a variety of levels including technical (available staff, skills and expertise); service provision (including public and private service providers and short- and long-term support provided through agencies); service uptake (i.e., community demand, participation and compliance); and resources. Current as well as potential future capacities and the geographical distribution of different capacities should be taken into account in the assessment.

B1. Assessing health system capacities

Health system capacity assessment for SAM management should cover all aspects of the approach spanning the enabling environment, access to supplies, quality of services, access to services and competencies for CMAM. Capacity within these areas should be considered at the national, district, facility and community level (e.g., community health workers). A suggested [framework](#)¹⁴⁶ to guide this assessment has been developed and key questions for the capacity analysis based on this framework are given on the next page.

146 Ghos K et al, Framework for integration of management of SAM into national health systems, <http://www.enonline.net/fex/43/framework>.

B2. Assessing community capacities

Assessment of community capacities linked to service uptake takes the form of a community enquiry. This looks at the systems, structures and communication channels at the community level that can be used to create and sustain demand for (admissions) and client compliance (attendance) in the programme. The methods recommended to conduct this community enquiry are detailed in [Module 3](#)¹⁴⁷ of the FANTA/Valid/UNICEF CMAM training modules.

This kind of enquiry is particularly important because whom to involve in CMAM and how at the community level cannot be prescribed. Conducting investigation of possible community agents and channels, and engaging in a process of sensitizing them about the programme and eliciting their involvement are critical steps for formulating a community mobilization component of the programme at the local level and therefore of achieving programme coverage.

147 FANTA, et al., 2008, 'Community Outreach Training Manual. Module 3', www.cmamforum.org/resource/973.

TABLE 6 Key questions for health system capacity analysis

Category	Determinant	Key questions
Enabling Environment	Politics and policy	<ul style="list-style-type: none"> • What nutrition, health and development policies and strategies are in place? • How is management of SAM already reflected in and supported by them/or not?
	Coordination and management	<ul style="list-style-type: none"> • What are the current nutrition coordination mechanisms – remits and reach? • How good is participation across the sectors?
	Social norms	<ul style="list-style-type: none"> • What are the beliefs and norms of behaviour associated with malnutrition?
	Costing and financing	<ul style="list-style-type: none"> • What are the main funding sources for management of SAM and for other related nutrition and health programmes? • Are funds allocated at central, regional or district levels? • What is the funding cycle and process? • Are there possibilities to mobilize funds from elsewhere? • How reliable is funding (short- or long-term)?
Supply	Supply chain	<ul style="list-style-type: none"> • What are the sources of supplies (e.g., local and offshore) and what potential is there for increase in production/supply? • How are therapeutic supplies ordered and managed? • Are there any structures in place for other commodities that could have capacity to store therapeutic supplies? • How is information on the supply chain communicated between levels? • What storage capacity is in place at central, regional, district and facility levels? • What systems for quality control are in place?
	Service delivery/ availability	<ul style="list-style-type: none"> • What structures and systems are in place for implementation of outpatient and inpatient therapeutic care (public and private)? • How are they staffed and managed? • What structures, equipment and supplies do they have? • What systems are in place for free health care? • How the different services are managed (i.e., division of roles, days, facilities)?
Human resources	Competencies for CMAM	<ul style="list-style-type: none"> • Who is currently responsible for management of SAM at each level and what potential is there for adding to existing workloads? • How are health facilities staffed and vacancies filled and what is staff turnover like? • What skills are available for the management of SAM at all levels (treatment, programme management, information management, supplies and logistics, coordination)? • Are there nutritionists in place, at what levels, and who supervises them? • Are there community-level health staff in place, are they paid, what are their roles?
	Training and mentoring	<ul style="list-style-type: none"> • How is training for management of SAM conducted currently? • Are institutions involved in nutrition training? • What institutions train health staff? • What trainers are available and what is their level of experience? • Where would pre-service training for management of SAM need to occur? • Are any structures in place to support in-service training?
Service Quality	Guidance	<ul style="list-style-type: none"> • What national or subnational guidance and protocols are in place for management of SAM? • What are the gaps?
	Reporting	<ul style="list-style-type: none"> • How is data on SAM management captured? • What information is captured, where does it go to, in what time frame and how is it used? • Who is involved? • Are there feedback systems? • Is there any link with the Health Management Information System and those managing it? • What capacity is there at each level for data analysis?
	Supervision and monitoring	<ul style="list-style-type: none"> • What are the structures and systems for supervision, monitoring? • Who is responsible for supervision and monitoring of management of SAM? • How often are they able to conduct supervision and monitoring visits? • What tools do they have?
	Information and research	<ul style="list-style-type: none"> • Are there any fora for information exchange on experiences and research related to CMAM? • What operational research (if any) is being done? • What national institutions are involved? • Are there any potential examples in the country of innovative technologies being used for information management?

Skipping this step often results in insufficient or misguided attention to the community component of CMAM. Neglect of the community enquiry has been recognized by a number of countries as a key bottleneck to achieving coverage and therefore impact (ENN 2011¹⁴⁸). The reasons given for skipping this step include not understanding the importance of the community component, lack of expertise and leadership in the area, concerns about overburdening the system and lack of funds. With appropriate support, these issues can be addressed. In cases where the community enquiry hasn't been considered at the beginning of scale-up, the use of coverage assessments to identify barriers to access can help to rectify the problem.

Two things should be noted in addition. First, insufficient community engagement can result in a large number of ineligible people attending the programme due to poor understanding of the programme admission criteria. Second, a programme with poor coverage does not reach the children in most need and is also an expensive programme in terms of cost per treatment. The resources expended to put SAM services in place are most efficiently utilized when the number of children treated is high i.e., where health facilities achieve high coverage, overall cost effectiveness improves.

B3. Assessing local understanding

Any bottleneck assessment for CMAM in a country needs to take into account the target communities and health systems perceptions and concerns around SAM. At the community level, this can be assessed during the community enquiry, and for the health system within the capacity assessment (see B1 and B2).

Information collected on local understanding should include the following:

- Local disease classification for severe forms of acute malnutrition: What terms are used, and what are the beliefs about causality?
- How severe forms of acute malnutrition are dealt with: What are the beliefs about treatments? What are the paths to treatment? How do they differ from health problems?
- Attitudes toward formal health services: What is the community's experience and perception of formal health services?
- Alternative services: What alternative services/ measures do communities use (e.g., home remedies, pharmacies, traditional healers)? How significant is their role and how do they/ are they perceived to, interact with the formal health services?
- Community homogeneity/heterogeneity: What are the various identity designators (e.g., language, ethnicity, religion, politics) which can define communities, which are necessary to provide information and services equitably or to make special efforts to reach excluded or marginalized groups?
- What are the health staff's beliefs and understanding about public health, the importance of, causes, progression and treatment of SAM?
- What are the health staff's attitudes towards communities and families with children with SAM in particular?

B4. Additional assessments

The above should be complemented by more in-depth analysis of the **supply chain** (see Articulation tool, annex E), **coverage and barriers to coverage** (see annex C), **quality of care** (see performance indicators, section 2.5) and **management systems** (see DIVA tool, annex E).

148 ENN, 2011, 'Conference on government experiences of scaling up the Community-based Management of Acute Malnutrition (CMAM) and lessons for the Scaling Up (SUN) movement,' <http://www.ennonline.net/ourwork/ennmeetings/cmamconference2011>.

Fact sheet on Direct Coverage Assessment

This annex provides an overview of the current direct coverage assessment methods as well as resources for further information.

C1. Initiating a coverage survey

Coverage surveys can be extremely important for providing data to guide key programmatic decisions. At the same time, it is critical to think through the reasons for conducting a survey in the first place. Experience has shown that there are several aspects to take into consideration when deciding whether or not to implement a coverage survey. The enabling environment, objective, maturity of the programme and likelihood of the utilization of results are priority factors. Surveys need to be well timed to feed into the programme cycle (planning or review stage). Quality and capacity of data systems are also important for supporting the implementation of a survey. The size of the programme may not be a primary determining factor since the aim is to improve all programmes, but this factor may play a role in the decision. Surveys need to be in-depth enough to yield detailed and new findings on the bottlenecks and barriers. It is especially important that a survey adds value to prompt action and improvement, even if some challenges exist such as those related to capacity, budget or political will.

C2. Overview of direct Coverage Assessment Methods¹⁴⁹

Active and adaptive case-finding is used in the majority of cases for all the coverage methods discussed below. It is based on two principles

1. The method is active: SAM cases are specifically targeted. Case finders do not go house-to-house in the selected villages measuring all children aged between 6–59 months. Instead, only houses with children with locally understood and accepted descriptions of malnutrition and its signs are visited.
2. The method is adaptive: At the outset key informants help with case finding in the community but other sources of information found during the survey are used to improve the search for cases.

¹⁴⁹ Information drawn from Guevarra, E., et al., 'Assessment of Coverage of Community-based Management of Acute Malnutrition, CMAM Forum July 2012 Technical Brief, Version 2: September 2014', <http://www.coverage-monitoring.org/wp-content/uploads/2014/10/Coverage-and-CMAM-2012-v2-sept2014.pdf>.

The method is tailored to the context for each assessment through community and beneficiary level investigations to ascertain the following:

1. The appropriate case finding question according to the terminology used by the population to describe the signs of SAM
2. The most useful key informants to assist with case-finding: those who are likely to be able to identify cases, who know about the health of children in the community or who people consult when their child is sick
3. Any context-specific factors affecting the case-finding process such as cultural norms, daily and seasonal activity patterns, general structure of villages

The method, described in detail in the [FANTA coverage manual](#)¹⁵⁰ is used exhaustively until only children already measured are identified. It has been found to be 100 per cent effective in identifying children with SAM when assessed alongside house to house methods in most contexts.

CSAS

CSAS was developed in 2002 as part of the community therapeutic care (CTC) research programme. It was used for programme M&E for several years. However, it was deemed too expensive to be used routinely and has now been superseded by the less resource intense SQUEAC and SLEAC methods for routine M&E purposes.

Design

CSAS uses a two-stage sampling design. The first stage is a systematic spatial sample of the entire programme area to select the communities to survey. The sample is therefore representative of the whole programme area. The second stage is an active and adaptive case finding (also called

snowball or chain referral) method that find all or nearly all SAM cases in the communities being surveyed. Hence, the sample is representative of the communities surveyed.

Results

CSAS yields the following results:

- Overall coverage estimate
- Local coverage estimates which can be represented as a coverage map
- Ranked list of barriers

Figures 8 and 9 show typical CSAS outputs from a coverage assessment using CSAS of an NGO-delivered CMAM programme undertaken in two neighbouring health districts in Niger.

The resource list below provides guidance and tools for CSAS.

C2.2 Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)

SQUEAC is a semi-quantitative method that provides in-depth analysis of barriers and boosters to

FIGURE 8 Map showing the spatial distribution of point and period coverage in a CMAM programme produced using the CSAS method



150 FANTA, 2012, 'Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)/Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) Technical Reference' <http://www.fantaproject.org/monitoring-and-evaluation/squeac-sleac>.

coverage. It is designed as a routine programme monitoring tool through the intelligent use of routine monitoring data complemented by other relevant data that are collected on a 'little and often' basis.

Design

SQUEAC is more an investigation than a survey. SQUEAC is made up of three stages:

- *Stage 1:* Semi-quantitative investigation into factors affecting coverage using the SQUEAC toolkit
- *Stage 2:* Confirmation of areas of high and low coverage identified in stage 1 through small studies and small-area surveys
- *Stage 3:* Estimation of overall coverage using Bayesian techniques. Likelihood survey is conducted as part of this stage. This survey utilises a systematic spatial sample as with all the other coverage survey methods. Stage 3 of SQUEAC is optional and is done if the reporting of an overall coverage estimate is a key information requirement in addition to the rich information

on barriers and boosters to coverage already gained from Stages 1 and 2.

Results

SQUEAC provides the following results:

- Mapping of coverage using small area surveys through a risk mapping approach
- Estimation of coverage using Bayesian techniques
- Concept map of barriers and boosters to coverage

Figure 10 shows the relations between factors influencing coverage and effectiveness in an MoH-delivered CMAM programme in Sierra Leone. Figure 11 shows coverage mapping through a risk mapping approach.

Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC)

SLEAC is a rapid low-resource survey method that classifies coverage at the service delivery unit (SDU) level such as the district. A SLEAC survey identifies the category of coverage (e.g., low coverage, moderate coverage or high coverage) that describes

FIGURE 9 Barriers to service access and uptake in a CMAM programme reported by carers of non-covered cases produced using the CSAS method

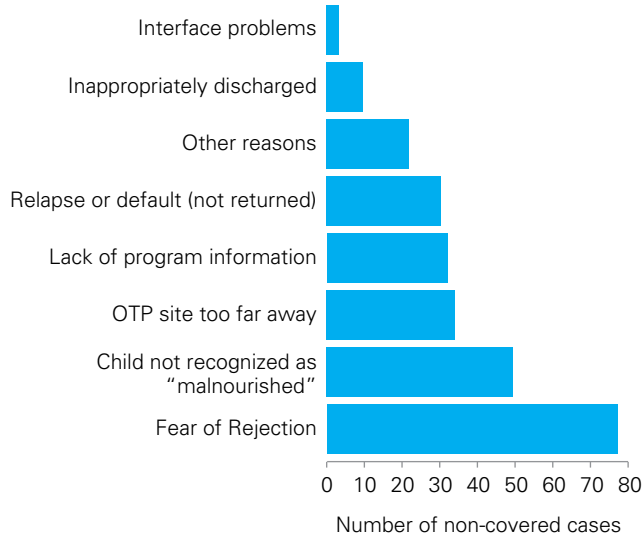


FIGURE 10 Relations between factors influencing coverage and effectiveness produced by a SQUEAC assessment

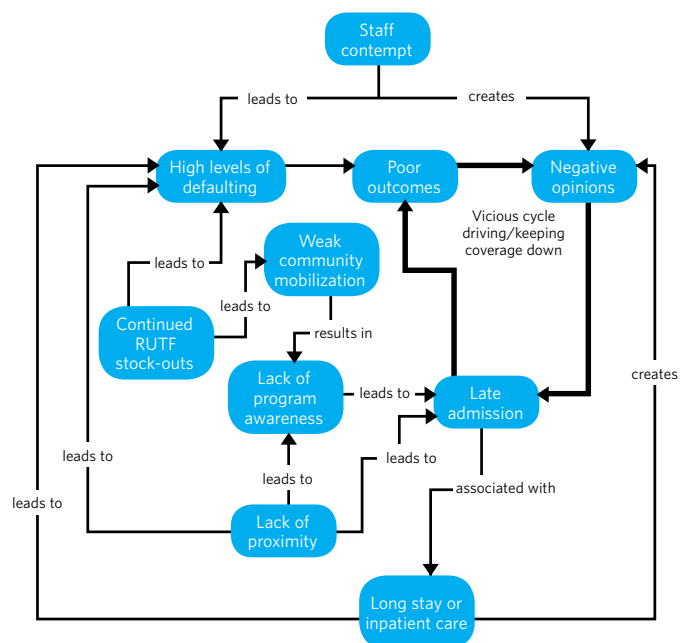
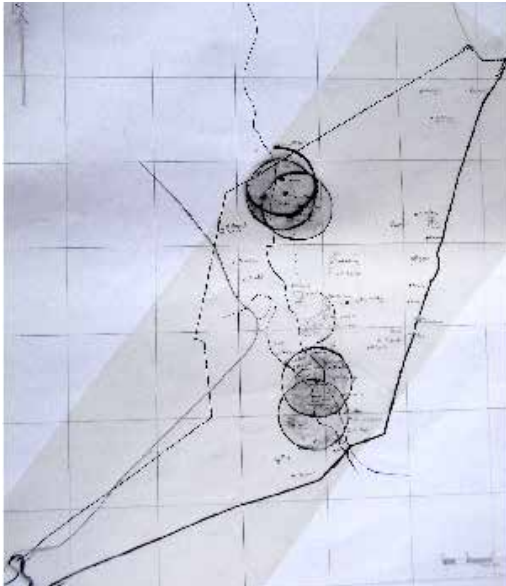


FIGURE 11 Coverage mapping by risk mapping



the coverage of the service delivery unit being assessed. The advantage of this approach is that relatively small sample sizes (e.g., $n \leq 40$) are required in order to make an accurate and reliable classification.

SLEAC can also estimate coverage over several service delivery units, hence it is ideal for coverage survey of wide areas. Coverage is still classified for individual service delivery units. Then, data from individual service delivery units are combined and coverage for this wider area is estimated from this combined sample.

SLEAC was originally developed as a companion method for SQUEAC but has recently been used for mapping of coverage classes in service delivery units over very wide areas.

Design

SLEAC uses a systematic spatial sample similar to that used in CSAS. Only small sample sizes ($n \leq 40$) are required for each service delivery unit in which coverage is being classified.

Results

SLEAC yields the following results:

- Overall coverage classification

- Can be used over wide areas to provide local coverage classifications with a coverage map and a wide area estimates
- Ranked list of barriers

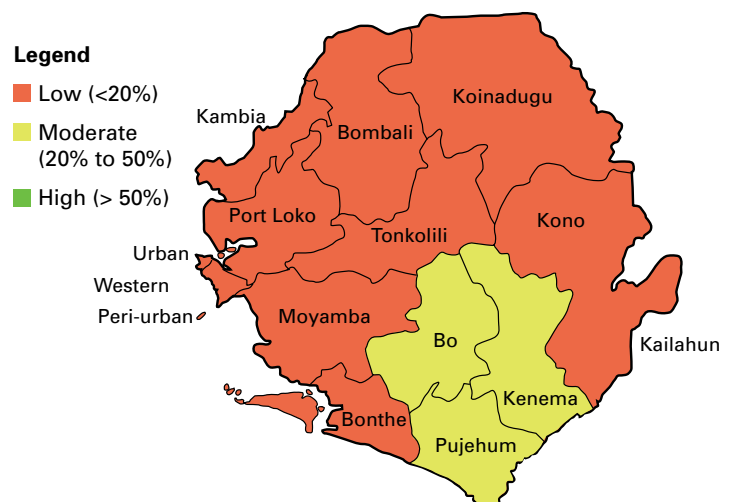
Figure 12 shows a map of coverage class for all administrative districts in an MoH-delivered CMAM programme in Sierra Leone. SLEAC also provides output similar to figure 9. It is typical to use SLEAC to identify areas for further investigation using the SQUEAC method (figures 13 and 14)

Simple Spatial Survey Method (S3M)

S3M is a development of CSAS for very wide area usage. The key features of S3M are:

- Triangular irregular network rather than a grid sample
- Highly efficient use of sample (c. 6x reuse of data)
- Lower cost than CSAS (10 x area of 2 x cost)
- Maps a 'coverage surface'

FIGURE 12 Map of per-district coverage produced by the SLEAC method



- Automatic smoothing of data
- Simple to understand
- Simple enough for NGOs/MoHs to do

Design

S3M uses a two-stage sampling design. First stage is a systematic spatial sample using triangular irregular network rather than a grid to identify communities to sample. The second stage is active and adaptive case finding to find all or nearly all SAM cases within the communities selected.

Results

S3M provides the following outputs:

- Coverage map similar to that of CSAS
- Overall estimate of coverage
- Ranked barriers

Figure 15 shows a map of coverage in a MoH-delivered CMAM programme in Niger produced using the S3M method. S3M also provides output similar to figure 15.

FIGURE 13 Using SLEAC and SQUEAC in failing service delivery units

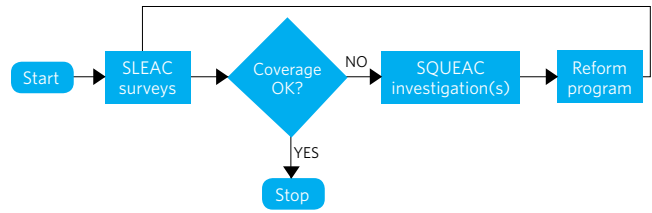


FIGURE 14 Using SLEAC and SQUEAC in succeeding and failing service delivery units

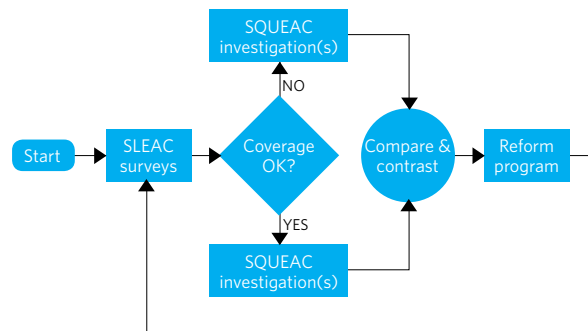
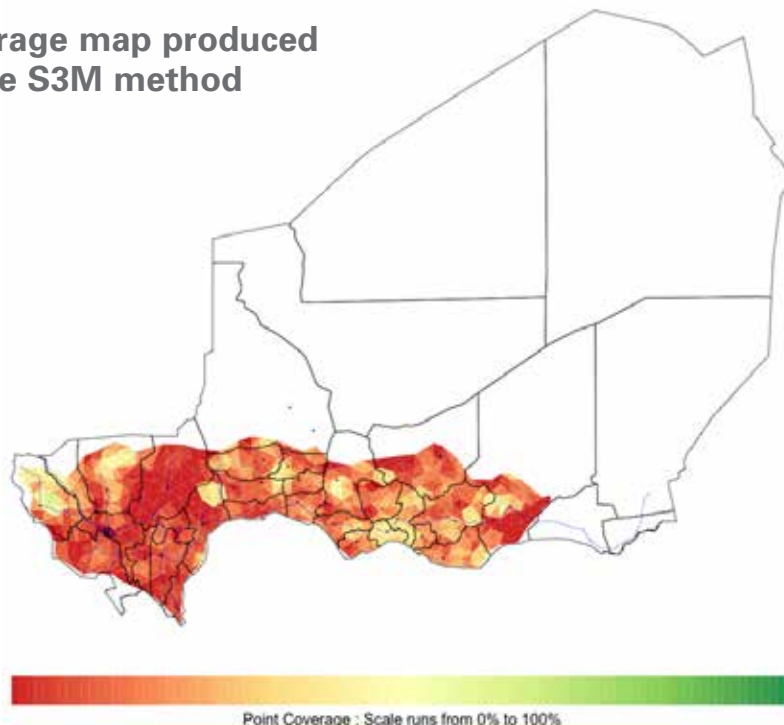


FIGURE 15 Coverage map produced by the S3M method



C2.5 Summary of parameters to consider when selecting the appropriate method

Programme considerations	CSAS	SQUEAC	SLEAC	S3M
Size of programme (local, district, regional or national)	<ul style="list-style-type: none"> Local area method for programme site catchment areas up to district-level programmes 	<ul style="list-style-type: none"> Local area method for programme site catchment areas up to district-level programmes 	<ul style="list-style-type: none"> Wide area method used to classify and map survey results of district-level up to regional and national programmes 	<ul style="list-style-type: none"> Large-scale area sampling method used to estimate and map survey results of regional up to national programmes
Survey results reported (estimate or classification)	<ul style="list-style-type: none"> Estimate of coverage 	<ul style="list-style-type: none"> Estimate or classification of coverage 	<ul style="list-style-type: none"> Classification of coverage for each service delivery unit with the possibility of reporting overall estimates depending on sample size reached and homogeneity of results 	<ul style="list-style-type: none"> Classification and estimate of coverage (small area up to overall)
Area level by which survey results are applicable (overall, service delivery units, catchment area of programme site)	<ul style="list-style-type: none"> Local areas (grids on map) and overall for the district 	<ul style="list-style-type: none"> Catchment area of programme site and overall for the district 	<ul style="list-style-type: none"> Service delivery units and overall for the district, region or country 	<ul style="list-style-type: none"> Local areas (grids on map) and overall for the region or the country
Component methods	<ul style="list-style-type: none"> Area sampling methods using quadrats Snowball sampling (active and adaptive case finding) and other high-sensitivity case finding methods Sample size calculation with finite population correction Data mapping principles and methods Data collection using simple tally sheets and questionnaires Data analysis using simple estimators 	<ul style="list-style-type: none"> Use of existing qualitative and quantitative data as part of the investigation process of indicator of interest Mixed qualitative and quantitative approaches to data collection and analysis Hypothesis testing Snowball sampling (active and adaptive case finding) and other high sensitivity case finding methods Lot quality assurance sampling (LQAS) methods Spatial mapping principles and methods Bayesian analysis 	<ul style="list-style-type: none"> Area sampling methods using either quadrats or systematic sampling using lists Snowball sampling (active and adaptive case finding) and other high sensitivity case finding methods Lot quality assurance sampling (LQAS) methods Sample size calculations using hypergeometric probability distribution principles Data mapping principles and methods Data collection using simple tally sheets and questionnaires Data analysis using simple estimators 	<ul style="list-style-type: none"> Area sampling methods using triangles Snowball sampling (active and adaptive case finding) and other high sensitivity case finding methods Sample size calculation with finite population correction Data mapping principles and methods Data collection using simple tally sheets and questionnaires Data analysis using simple estimators
Baseline information requirements	<ul style="list-style-type: none"> Detailed map showing each programme site and villages/locations is <i>a must</i>. Estimates of population size for all populations and 6–59 month age group of each catchment area of programme site 	<ul style="list-style-type: none"> At least a complete list of villages/locations within each catchment area of programme sites (ideally good detailed maps but optional) Routine programme monitoring data Additional data from patient record cards 	<ul style="list-style-type: none"> At least a complete list of villages/locations within each service delivery unit (detailed maps optional) Rough estimates of population size (all populations and 6–59 month age group) of each service delivery unit Prevalence estimate (ideally estimate for each service delivery unit but aggregate figure acceptable) 	<ul style="list-style-type: none"> Detailed maps showing each service delivery unit and villages/locations are <i>a must</i>. Estimates of population size for all populations and 6–59 month age group of each service delivery unit
Expected deliverables	<ul style="list-style-type: none"> Estimate of coverage at level of local areas (grids on map) and overall for the district Mapping of coverage estimate at level of local areas (grids on map) List of barriers to coverage 	<ul style="list-style-type: none"> Classification or estimate of overall coverage List of boosters and barriers to coverage with detailed information on how they affect coverage 	<ul style="list-style-type: none"> Classification of coverage at level of service delivery unit and overall Mapping of classification of coverage at level of service delivery unit List barriers to coverage 	<ul style="list-style-type: none"> Estimate of coverage at level of local areas (grids on map) and overall Mapping of coverage estimate at level of local areas (grids on map) List of barriers to coverage

C2.5 Summary of parameters to consider when selecting the appropriate method (continued)

Programme considerations	CSAS	SQUEAC	SLEAC	S3M
Approximate time and resource requirements (figures are for guidance only – these will vary according to programme size)	<ul style="list-style-type: none"> • Approx. 28 days (7+ field) including design, training, data collection and analysis • Three or four teams of two to three people • Local language speakers • One vehicle per team 	Up to district level <ul style="list-style-type: none"> • Approx 14-20 working days (two or three field) including design, training, data collection and analysis • Two or three teams of two to three people (to include small number of programme staff for early stages, additional enumerators can be added for later stages) • Local language speakers • One vehicle per team 	Length depends on number of districts, logistics, size of the districts, population, SAM prevalence and resources available. <p>National</p> <ul style="list-style-type: none"> • Minimum eight weeks (e.g., Sierra Leone) for design, preparation, training, data collection and analysis <p>District</p> <ul style="list-style-type: none"> • First district will take longer due to on the job training and close supervision to ensure quality. • Approx 10 -16 working days (6-10 field) including preparation, training, data collection and analysis • Five or six teams of two plus three or four ad hoc supervisors • Local language speakers • One vehicle per team and for supervision • Subsequent districts can be covered in approx. three to seven days each. 	<p>National</p> <ul style="list-style-type: none"> • Length depends on number of districts, logistics, size of the district, population, SAM prevalence and resources available • Approx. five months (four field) for design, training, data collection and analysis • Seven teams of three plus four supervisors • Local language speakers • One vehicle per team and for supervision

C3. Coverage resources list

The Coverage Monitoring Network, which has a range of up to date information on coverage assessment, can be accessed at <http://www.coverage-monitoring.org/>. In addition, some resources are listed below.

READING MATERIALS:

CSAS

Myatt, M., et al., 2005, 'A field trial of a survey method for estimating the coverage of selective feeding programmes', *Bulletin of the World Health Organization* (83): 20-6, <http://www.who.int/bulletin/volumes/83/1/20.pdf>.

Myatt, M., 2004, "New Method for Estimating Programme Coverage," *Field Exchange* 21, p. 11, <http://fex.ennonline.net/21/coverage.aspx>.

Myatt, M., 2006, 'A brief introduction to the CSAS coverage survey method', Valid International, <http://www.brixtonhealth.com/CSASCoverageMethodSimple.pdf>.

Myatt, M., 2006, 'Notes on required sample sizes for CSAS and similar coverage surveys', Valid International, <http://www.brixtonhealth.com/SampleCSAS.pdf>.

Myatt, M., 2006, 'Notes on using capture-recapture techniques to assess the sensitivity of rapid case-finding methods', Valid International, <http://www.brixton-health.com/CRCCaseFinding.pdf>.

Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) and Simplified LQAS Evaluation of Access and Coverage (SLEAC)

Myatt, M., 2008, 'SQUEAC: Low resource method to evaluate access and coverage programmes', *Field Exchange* 33, p. 3, <http://fex.ennonline.net/33/low.aspx>.

Myatt, M., et al., 'SQUEAC & SLEAC: Low resource methods for evaluating access and coverage in selective feeding programs', Valid International, <http://www.validinternational.org/demo/reports/SQUEAC.Article.pdf>.

Schofield, L., S. Gizaw Lalcha, and T. Getachew, 2008, 'SQUEAC in routine monitoring of CMAM programme coverage in Ethiopia', *Field Exchange* 38, p. 35, <http://fex.ennonline.net/38/routine.aspx>.

Other

Guerrero, S., M. Myatt, and S. Collins, 2010, 'Determinants of coverage in Community-based Therapeutic Care programmes: towards a joint quantitative and qualitative analysis', *Disasters*, 34(2): 571-585, <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7717.2009.01144.x/abstract>.

Guevarra, E., et al., 'Assessment of Coverage of Community-based Management of Acute Malnutrition, CMAM Forum July 2012 Technical Brief, Version 2: September 2014', <http://www.coverage-monitoring.org/wp-content/uploads/2014/10/Coverage-and-CMAM-2012-v2-sept2014.pdf>

SOFTWARE:

OpenCSAS

A simple data-entry and reporting tool for CSAS coverage surveys that can be downloaded at <http://www.brixtonhealth.com/opencsas.html>.

CSAS coverage calculator

A spreadsheet (Microsoft Excel '95 format) for calculating coverage estimates and drawing plots and maps from coverage survey data collected using the CSAS methodology. The spreadsheet also provides capture-recapture estimates of the sensitivity of a case-finding procedure, and can be downloaded at <http://www.brixtonhealth.com/CSASCoverEmpty.xls>. A spreadsheet

containing example data is available at <http://www.brixtonhealth.com/CSASCoverExample.xls>.

Bayes SQUEAC calculator

A simple calculator for performing Bayesian beta-binomial conjugate analysis designed for use in SQUEAC assessments. Available for Windows, Linux and Macintosh platforms at <http://www.brixtonhealth.com/>.

LQAS Sampling Plan Calculator

A simple LQAS sampling plan calculator for use in SQUEAC and SLEAC assessments. There are two versions of this calculator. The first (available at www.brixtonhealth.com/hyperLQAS.html) is used for finding sample size required and corresponding decision threshold (d) given population and desired α (alpha) and β (beta errors). The second (available at www.brixtonhealth.com/hyperLQAS.findD.html) is used for finding d given achieved sample size. Both implementation of the software can be made to run online from the links provided. For offline use, the HTML file can be saved onto your computer's hard disk or USB drive and open locally using any web browser.

Xmind

Open source mind mapping software downloadable at www.xmind.net.

Benchmarks for scale-up of SAM management at national level

Component	Advocacy and planning	Pilot and early implementation	Scale-up	Indicators. See UNICEF L3 indicator document for more guidance
ENABLING ENVIRONMENT				
Policy setting	<ul style="list-style-type: none"> National policies reviewed 	<ul style="list-style-type: none"> Ongoing policy development 	<ul style="list-style-type: none"> Incorporation of CMAM into nutrition/health/development policy 	<ul style="list-style-type: none"> National health and nutrition policies support management of SAM
Coordination and management	<ul style="list-style-type: none"> Mapping of partners conducted Situation and capacity analysis conducted (of health system & community) Technical working group set up including key national stakeholders 	<ul style="list-style-type: none"> MoH leadership and coordination established at national level (coordination structure, focal point and management assigned) Review meeting convened to evaluate early experience Stakeholder meeting develops scale-up plan 	<ul style="list-style-type: none"> MoH leadership and coordination institutionalized at national, regional and district level (coordination structure, focal point and management assigned) Regular stakeholder coordination meetings established Membership of coordination meetings spans sectors Annual reviews of progress and bottlenecks 	<ul style="list-style-type: none"> Proportion of coordination groups for SAM which have met within the last 3 months
Social Norms	<ul style="list-style-type: none"> Community investigation of beliefs about SAM and care seeking behaviour within initial situation analysis. Above analysis informs community sensitisation strategy and identification of community agents for mobilisation 	<ul style="list-style-type: none"> Community mobilisation strategy developed Identification and investigation of areas and/or population groups where uptake of the service is poor (coverage assessment) Review of barriers to coverage 	<ul style="list-style-type: none"> System in place of the periodic review of spatial coverage and barriers to coverage Above informs review of community mobilisation strategy for scale-up 	<ul style="list-style-type: none"> Proportion of reasons for non-attendance (measured during coverage assessment) that are linked to social norms
Costing and financing	<ul style="list-style-type: none"> Costing estimate based on all service delivery requirements made Financial mechanisms for supplies and programme costs identified/secured 	<ul style="list-style-type: none"> Analysis of funding gaps completed Some MoH investment in management of SAM secured 	<ul style="list-style-type: none"> Long-term strategy for sustainability and financial viability (resource mobilisation) developed MoH investment sustained 	<ul style="list-style-type: none"> Costed plan exists and is updated annually
COMPETENCIES				
Human resources	<ul style="list-style-type: none"> Community agents identified Roles of MoH staff, and community agents defined by community structures and MoH. 	<ul style="list-style-type: none"> Role and expectations of health staff and community agents clarified to community and health staff Motivation plan for community agents implemented 	<ul style="list-style-type: none"> Health and nutrition staff terms of reference incorporate management of SAM responsibilities Roles, responsibilities and motivation plans reviewed and revised as necessary Additional recruitment where gaps identified 	<ul style="list-style-type: none"> Active health staff in programme areas trained in CMAM per population Proportion of community agents still active after three months per population

ANNEX D (continued)

Component	Advocacy and planning	Pilot and early implementation	Scale-up	Indicators. See UNICEF L3 indicator document for more guidance
COMPETENCIES (continued)				
Training and exchange	<ul style="list-style-type: none"> In-service training plan developed for all components (tools, training modalities & teams, follow-up & monitoring) Motivation plan for community agents developed 	<ul style="list-style-type: none"> In service training and follow-up mentoring of MoH staff and community agents In-service training and follow-up mentoring of programme managers (monitoring, reporting, supervision, supply chain) Exchange visits and sharing of good practices 	<ul style="list-style-type: none"> CMAM integrated into pre-service training of health and nutrition staff 	<ul style="list-style-type: none"> Proportion of medical/nursing schools who have integrated CMAM training into their curricula
SERVICE QUALITY				
Guidance	<ul style="list-style-type: none"> National guidelines and tools developed Referral mechanisms developed between components (community, outpatient, inpatient) 	<ul style="list-style-type: none"> Review and modify guidelines and tools based on pilots Development of job aids for implementation and programme management 	<ul style="list-style-type: none"> Finalise guidelines and tools and disseminate widely Provide feedback mechanism on use of guidelines and tools through coordination structures 	<ul style="list-style-type: none"> Proportion of facilities using national guidelines and tools
Supervision	<ul style="list-style-type: none"> Appropriate supervision tools developed and disseminated to sub-national and districts Supervision plan agreed (national, sub-national and districts) including defined supervision responsibilities within health teams and roles of different stakeholders Supervision modalities agreed for community agents. 	<ul style="list-style-type: none"> Regular supportive supervision conducted by district level for facilities according to tools developed and including review of programme data. Regular supervision/feedback meetings between health facility staff and community agents held 	<ul style="list-style-type: none"> CMAM supervision included in performance review of supervisors Supervision plans modified based on support needs identified by coverage assessment and supervision visits 	<ul style="list-style-type: none"> Proportion of health staff that have received at least one supervisory contact in the last three months Proportion of community agents who have experienced at least one supervisory visit within the last three months
Monitoring & reporting	<ul style="list-style-type: none"> Draft monitoring and reporting formats and system developed 	<ul style="list-style-type: none"> Roles for monitoring and reporting within health system at different levels defined Review of monitoring and reporting formats and systems Systems for feedback to facilities put in place 	<ul style="list-style-type: none"> Adaptation of monitoring and reporting formats Institutionalisation of monitoring and reporting by government Definition of support roles for monitoring reporting and supervision among stakeholders CMAM indicators of performance included in district targets 	<ul style="list-style-type: none"> Percentage of reports reaching national level for compilation Proportion of districts/regions that conducted review meetings including CMAM reports within the last three months
Effectiveness of treatment	<ul style="list-style-type: none"> Agreement on parameters and standards for performance monitoring 	<ul style="list-style-type: none"> Effective treatment of SAM by health staff according to standard Timely identification of cases at community level 	<ul style="list-style-type: none"> Sustained effective treatment of SAM by health staff Sustained timely identification of cases at community level 	<ul style="list-style-type: none"> Treatment outcomes within Sphere standards (recovery, death, default)

Component	Advocacy and planning	Pilot and early implementation	Scale-up	Indicators. See UNICEF L3 indicator document for more guidance
SERVICE QUALITY (continued)				
Information exchange and research	<ul style="list-style-type: none"> • Fora developed/agreed for sharing of CMAM experiences nationally 	<ul style="list-style-type: none"> • Stakeholder meeting to review pilot experiences and lessons • Identification of operational research questions in the country context to facilitate scale-up 	<ul style="list-style-type: none"> • Conduction and dissemination of operational research to answer identified scale-up questions 	<ul style="list-style-type: none"> • Active fora in place for information exchange
SUPPLY				
Supply chain	<ul style="list-style-type: none"> • RUTF included in essential supply lists • Supply needs quantified (milks, RUTF, medicines, equipment) • Procurement plan developed • Inventory control and logistic system developed 	<ul style="list-style-type: none"> • Therapeutic supplies procured according to national plan • Logistics system implemented and reviewed • Quality assurance measures in place 	<ul style="list-style-type: none"> • Stocks of therapeutic supplies at all levels monitored • National logistics system (with inventory control and resupply mechanisms) implemented for therapeutic supplies with no substantial stock-out periods. • Annual forecasts made and reviewed 	<ul style="list-style-type: none"> • Proportion of sites which did not go below minimum stock levels of therapeutic supplies within the last three months.
Service delivery (availability)	<ul style="list-style-type: none"> • Development of plan with stakeholders for introduction and scale-up • Agreement on criteria for selection of sites for expansion • Agreement on modalities for expansion • Agreement sought for provision of a service free for the client for the management of SAM 	<ul style="list-style-type: none"> • Expansion of service to all facilities in selected implementation areas • Free provision of service to the client (or explore mechanisms to achieve this) • Review of service delivery (achievements and challenges) 	<ul style="list-style-type: none"> • Revision of expansion plan based on pilot experiences • Assessment of accessibility of population to health facilities and need for additional measures to bring the service to the population • Phased Geographical Expansion of service nationally according to plan • Referral facility for inpatient care in each district • Agreement between government and stakeholder on support roles • Agreement between government and stakeholders on thresholds and support modalities for emergency. 	<ul style="list-style-type: none"> • Proportion of districts offering full geographical coverage of management of SAM (i.e., service offered in all facilities) • Proportion of districts with emergency contingency plans in place
DEMAND (ACCESS & UPTAKE)				
Community mobilisation	<ul style="list-style-type: none"> • Stakeholders within other sectors identified • Community mobilization strategy developed based on assessment of social norms and social capital • Roles and responsibilities for community components agreed 	<ul style="list-style-type: none"> • Review of strategy based on pilot experiences and coverage assessment 	<ul style="list-style-type: none"> • Scale-up plan incorporates further assessment and development of strategies for different cultural contexts/areas • Roles and responsibilities for community component written into terms of reference of relevant district and facility level health staff and other sectors 	<ul style="list-style-type: none"> • Proportion of caregivers surveyed who know about the programme and understand who is eligible
Coverage	<ul style="list-style-type: none"> • Plan for periodic treatment coverage assessment developed 	<ul style="list-style-type: none"> • Review of spatial coverage and barriers to coverage • Additional investigation and measures put in place to address coverage issues • Compliance is maximized (low default) 	<ul style="list-style-type: none"> • Mechanism in place for periodic coverage assessment and community feedback to the programme. • Above information triggers action 	<ul style="list-style-type: none"> • Proportion of districts attaining treatment coverage within agreed standard after six months of implementation. • Default rates within standards

continued

Annotated list of tools for management of SAM

Tool (with link)	Developed by	Use
POLICY/ADVOCACY		
Joint Statement: Community-based management of severe acute malnutrition. 2007. English, French¹⁵¹	WHO/SCN/WFP/UNICEF 2007	Provides background to and UN endorsement of CMAM for use in advocacy for the adoption of the approach.
Joint Statement: WHO child growth standards and the identification of severe acute malnutrition in infants and children. English, French ¹⁵²	WHO/UNICEF 2009	Provides background to and UN endorsement of WHO standards and MUAC <11.5cm for identification of SAM for use in advocacy for their adoption. The publication also recommends the 2006 WHO growth standards for use in programmes.
MBB Marginal budgeting for bottlenecks ¹⁵³	UNICEF and World Bank 2007	A tool that estimates the marginal/incremental resources required to overcome constraints and achieve better results and relates these resources to the country's macroeconomic framework that starts current implementation of approaches within the national health system and constraints to their coverage and quality. The MBB tool aims to estimate the potential impact, resource needs, costs and budgeting implications of country strategies to remove implementation constraints of the health system.
PROFILES - A Data Based Approach to Nutrition Advocacy and National Development ¹⁵⁴	USAID BASICS 1998	A tool to help demonstrate the contribution that improved nutrition can make to human and economic development in order to influence the way policy makers think about public health nutrition issues and the priority they give to investing in nutrition programs. Tool includes computer models that translate nutrition data and scientific analyses into terms and arguments that make sense to non-experts.
UNICEF, Advocacy Toolkit ¹⁵⁵	UNICEF 2010a	The Toolkit provides detailed steps, guidance and tools for developing and implementing an advocacy strategy. The Toolkit also outlines eight foundational areas that can help strengthen an office's capacity for advocacy, and covers several crosscutting aspects of advocacy.
PLANNING		
Framework for integration of management of SAM into national health systems ¹⁵⁶ .	UNICEF ESAR 2012	An approach and tool to facilitate the assessment of gaps/bottlenecks to plan priority actions and to guide successful and sustainable scale up of management of SAM through the primary health care system.
DHSS/DIVA ¹⁵⁷	UNICEF 2012c	An approach, tools and indicators to improve monitoring, planning and implementation of programmes at local level, operationalising UNICEF's equity strategy and improving coverage and quality of interventions.
UNICEF Programme Guidance, management of severe acute malnutrition in children. ¹⁵⁸	UNICEF 2008	Internal document providing guidance on introducing the community based approach at national level and detailing supply aspects of the approach.

151. WHO, et al., 2007, 'A Joint Statement, Community Based Management of Severe Acute Malnutrition,' http://www.who.int/maternal_child_adolescent/documents/a91065/en/.
152. WHO, 'Child Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children. A Joint Statement by the World Health Organization and the United Nations Children's Fund,' http://www.who.int/maternal_child_adolescent/documents/9789241598163/en/.
153. UNICEF and World Bank, 2007, 'Marginal Budgeting for Bottlenecks Toolkit', http://www.devinfo.org/mbb/mbbsupport/knowledge.php?category_id=38.
154. USAID (BASICS), 1998, 'PROFILES- A Data Based Approach to Nutrition Advocacy and National Development', <http://www.globalhealthcommunication.org/tools/18>.
155. UNICEF, 2010a, 'Advocacy Toolkit', http://www.unicef.org/cbsc/files/Advocacy_Toolkit-2.pdf.
156. Ghos K et al, Framework for integration of management of SAM into national health systems, <http://www.enonline.net/fex/43/framework>.
157. UNICEF, 2012c, DIVA Guidance and Analysis Tools, <https://intranet.unicef.org/PD/Health.nsf/beb9db2e89d9dfb685256fa500598afe/26c9a2067f46a8a585257a080059beef?OpenDocument>
158. UNICEF, 2008, 'Programme Guidance Management of Severe Acute Malnutrition in Children,' [https://intranet.unicef.org/PD/Nutrition.nsf/0/9740CF29DC6FC854852579FA005399AA/\\$FILE/Management%20of%20SAM%20in%20Children%202008.doc](https://intranet.unicef.org/PD/Nutrition.nsf/0/9740CF29DC6FC854852579FA005399AA/$FILE/Management%20of%20SAM%20in%20Children%202008.doc).

Tool (with link)	Developed by	Use
PLANNING (continued)		
Programming Guide: Infant and Young Child Feeding & other programme aids and tools ¹⁵⁹	UNICEF 2012	Detailed programming information on IYCF, including breastfeeding, complementary feeding and infant feeding in general and in especially difficult circumstances including in the context of HIV and in emergencies. The document provides strategic programme recommendations for priority IYCF actions and their operationalization.
Integrating ECD activities into Nutrition Programmes in Emergencies. Why, What and How. ¹⁶⁰	UNICEF/WHO 2012	Written for local and international staff running nutrition programmes in emergencies, and for local, regional and national authorities and donors involved in such programmes. The note explains why nutrition programmes need to include ECD activities and provides practical suggestions as to what simple steps are necessary to integrate ECD into nutrition programmes (including for management of SAM) in situations of famine or food insecurity and HOW such integrated programmes have been established in other situations.
GUIDELINES AND PROTOCOLS		
Updates on the management of severe acute malnutrition in infants and young children ¹⁶¹	WHO 2013	This document provides global, evidence-informed recommendations on a number of specific issues related to the management of severe acute malnutrition in infants and children, including in the context of HIV.
CTC manual. ¹⁶²	Valid International 2005	Provides the technical protocols for community-based management of acute malnutrition. Useful for the development of national guidelines.
Guidelines for the inpatient treatment of severely malnourished children. 2003 English, French, Spanish, Turkish. ¹⁶³	WHO 2003	Provides the specific technical protocols and training materials for inpatient management of SAM. Useful for the development of national guidelines.
Management of Acute malnutrition in infants (MAMI): Current evidence, policies, practices and programme outcomes ¹⁶⁴	ENN/CIHD/ACF 2010	Provides key recommendations for the management of acute malnutrition in infants. Useful for the development of national guidelines and research priorities.
Government of South Sudan: Interim guidelines integrated management of severe acute malnutrition ¹⁶⁵	MoH South Sudan 2009	Some useful examples of national and regional guidelines for management of SAM. Others can be found on the CMAM Forum website.
Government of Uganda: Integrated management of acute malnutrition guidelines ¹⁶⁶	MoH Uganda 2010	
République du Niger Protocole national de prise en charge de la malnutrition ¹⁶⁷ (National Protocol for treatment of acute malnutrition)	Ministere de la sante publique (Ministry of Public Health) Niger 2009	
Government of Malawi: Interim guidelines for the management of acute malnutrition through community-based therapeutic care ¹⁶⁸	MoH Malawi	

159. UNICEF, 2012b, 'Programming Guide: Infant and Young Child Feeding,' www.unicef.org/nutrition/files/Final_IYCF_programming_guide_2011.pdf.

160. UNICEF et al., 2012, 'Integrating Early Childhood Development (ECD) activities into Nutrition Programmes in Emergencies: Why, What and How,' www.who.int/mental_health/emergencies/eecd_note.pdf.

161. WHO, 2013, 'Updates on the management of severe acute malnutrition in infants and young children,' http://www.who.int/nutrition/publications/guidelines/updates_management_SAM_infantandchildren/en/.

162. VALID International, 2005, 'CTC Manual', <http://www.validinternational.org/demo/ctc/reports.php>.

163. WHO, 2003, 'Guidelines for the inpatient treatment of severely malnourished children', <http://www.who.int/nutrition/publications/severemalnutrition/9241546093/en/>

164. ENN, CIHD, ACF, 2010, 'Management of Acute malnutrition in infants (MAMI): Current evidence, policies, practices and programme outcomes', <http://www.ennonline.net/mamitechnicalreview>.

165. Government of South Sudan, 2009, 'Interim guidelines integrated management of severe acute malnutrition' [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/GOSSudan%20-%20IMSAM%20Guidelines%20interim%20version%20December2009\(April2010\).pdf](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/GOSSudan%20-%20IMSAM%20Guidelines%20interim%20version%20December2009(April2010).pdf)

166. Government of Uganda, 2010, 'Integrated management of acute malnutrition guidelines' [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/Uganda%20IMAM%20Guidelines%20Edit%202011.pdf](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/Uganda%20IMAM%20Guidelines%20Edit%202011.pdf)

167. République du Niger, 2009, Protocole national de prise en charge de la malnutrition [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/NIGER_Protocole%20National%20PEC%20Malnut.pdf](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/NIGER_Protocole%20National%20PEC%20Malnut.pdf)

168. Government of Malawi, 'Interim guidelines for the management of acute malnutrition through community-based therapeutic care' [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/Malawi%20CMAM%20Guidelines.pdf](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/Malawi%20CMAM%20Guidelines.pdf)

continued

Tool (with link)	Developed by	Use
PLANNING (continued)		
Adapted IMCI chart booklet to include MUAC assessment for identification of SAM ¹⁶⁹	WHO 2008a	Adapted tool for community-based management of childhood illness, replacing assessment of 'visible wasting' with MUAC. Useful for similar adaptation of national IMCI charts.
Moyo weight for height chart – boy/girl split sex version. 2012 ¹⁷⁰	TALC 2012	A low-cost job aid to help front line health workers correctly assess acute malnutrition based on weight and height using the WHO standards.
MONITORING AND REPORTING		
Suggested reporting formats for management of SAM	UNICEF 2008	Suggested minimum reporting formats for use in integrated CMAM programmes (inpatient and outpatient together). Useful for the development/amendment of national reporting systems.
Nutridash ¹⁷¹	UNICEF 2012a, 2013	A specific tool for data capture and analysis of the global situation for the management of SAM. It uses a simple set of key indicators collected at country level and entered into a web-based system of collation, analysis, and interpretation at HQ and regional office level.
The Minimum Reporting Package ¹⁷²	SCUK 2012	A monitoring and reporting tool developed for NGO emergency SFPs (which includes modules on management of SAM on an inpatient and outpatient basis where those SFPs are delivered as part of CMAM programmes). It contains reporting categories, definitions and indicators and the package includes guidelines, software and a software manual.
Therapeutic Feeding Programme. Performance monitoring scorecard assessment. ¹⁷³	Government of Ethiopia and partners	Developed in Ethiopia in partnership with UNICEF, NGOs and regional authorities, to guide joint field supervision which includes a system for grading sites according to support needs.
TRAINING (For use at country level, content should be crosschecked with standards and guidelines developed subsequently, including the updated 2013 WHO recommendations for SAM treatment)		
Training guide for community-based management of acute malnutrition (CMAM). Nov 2008. English & French ¹⁷⁴	FANTA/Valid International/ UNICEF 2008	A resource for planning and running CMAM trainings for health care managers and health care providers who manage, supervise and implement services for the management of SAM.
Training course on the management of severe malnutrition (with 2009 update) ¹⁷⁵	WHO 2002 & 2009	A resource for the planning and running of training on the inpatient management of SAM for health care providers.
Integration of IYCF support into CMAM. Training facilitators guide and handouts. 2009. English, French ¹⁷⁶	IASC/IFE/ENN 2009	A resource for the planning and delivery of training for health care personnel and community workers in the integration of counselling on recommended IYCF practices within CMAM. It comprises facilitator notes and handouts for a 1.5 day training which is best conducted as part of a refresher training of experienced CMAM staff
Harmonised training package (HTP): Module 13. Management of severe acute malnutrition. May 2011 ¹⁷⁷	GNC/ENN 2011	A training resource and technical reference document for the management of severe acute malnutrition in emergency contexts. Forms part of a wider resource for nutrition in emergencies.
Nutrition in Emergencies elearning package ¹⁷⁸	UNICEF 2011	This course covers basic concepts around the humanitarian system and reform, undernutrition and response in emergencies, individual assessment and micronutrients. The package aims to increase the accessibility of information within key modules of the HTP to strengthen the technical knowledge of individuals working in or aspiring to work in emergency nutrition.
COSTING		
CMAM costing tool. Version 1.1. ¹⁷⁹	FANTA 2012	A Microsoft Excel-based tool to estimate the costs of implementing CMAM at the national, sub-national, and district levels. Useful for calculating the inputs and financial resources required to establish, maintain, or expand CMAM services to help managers develop feasible and effective plans for CMAM and forecast resources required. Available in English and French

169. WHO, 2008a, 'Adapted IMCI chart booklet to include MUAC assessment for identification of SAM' [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/IMCI%20tool%20Feb%202008.pdf](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/IMCI%20tool%20Feb%202008.pdf)

170. Moyo Weight for Height Chart – boy/girl split sex version 2012 <http://www.talcuk.org/accessories/moyo-weight-for-height-chart-boy-girl-split-sex-version.htm>

171. Nutridash tool: <https://unicefnutridash.org/>

172. Save the Children UK., The Minimum Reporting Package (2012) <http://mrp-sw.com/>

173. Government of Ethiopia, Therapeutic Feeding Programme. Performance Monitoring Scorecard Assessment, [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/Ethiopia%20TFP%20Monitoring%20scorecard%20July2010.pdf](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/Ethiopia%20TFP%20Monitoring%20scorecard%20July2010.pdf)

174. FANTA, Valid, UNICEF, Concern; Training Guide for Community Based Management of Acute Malnutrition (CMAM) <http://www.fantaproject.org/focus-areas/nutrition-emergencies-mam/cmam-training>

175. Training Course on the Management of Severe Malnutrition (with 2009 update), http://www.who.int/nutrition/publications/severemalnutrition/training_inpatient_MSM/en/

176. Integration of IYCF support into CMAM. Training facilitators guide and handouts 2009. <http://www.enonline.net/integrationiycfintocmam>

177. Global Nutrition Cluster (GNC) Harmonized Training Package, http://www.unscn.org/en/gnc_http/howto-htp.php#howtousehtp

178. UNICEF Nutrition in Emergencies E-learning tool <http://www.unicef.org/nutrition/training/>

179. CMAM costing tool. Version 1.1 <http://www.fantaproject.org/tools/cmam-costing-tool>

Tool (with link)	Developed by	Use
COVERAGE		
Guidance and open source software for implementation of CSAS (coverage) surveys ¹⁸⁰	Valid International	Explanation of and tools for implementing a survey for the direct estimation of spatial and overall coverage of CMAM programmes. Useful for programme managers wanting to assess the actual coverage of their programmes and obtain information on barriers to coverage
Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) guidance and software ¹⁸¹	Valid International	Explanation and tools for implementing low resource methods for evaluating coverage of CMAM programmes.
Summary of coverage assessment methods ¹⁸²	Valid international	Summary explanation of the different direct treatment coverage assessment methods
SUPPLIES		
Nutrition therapeutic supplies forecast sheet ¹⁸³	UNICEF 2012	A Microsoft Excel-based tool to estimate annual supply needs for therapeutic care based on caseload and future plans. An updated version is incorporated into the Nutridash tool, and will be made available as an updated excel based tool. Update will be available on request to nutrition@unicef.org
Articulation guideline for supply chain analysis ¹⁸⁴	Duke University/ UNICEF	A web-based articulation guideline that aims to aid future supply chain analyses in the nutrition sector by describing each step in a supply chain analysis, identifying the strategic issues associated with that step, and providing examples from the RUTF supply chain analysis for each step
Managing the Supply of Specialized Nutritious Foods ¹⁸⁵	WFP et al 2014	These guidelines aim to support the field operations of humanitarian organisations across the globe in better managing their supply chain of these products, consolidating best practices and providing practical guidance in a user friendly guide with answers to the most common questions.
Technical bulletin No. 12: Nutrition Kits ¹⁸⁶	UNICEF Supply Division	Gives the breakdown and target caseload for nutrition kits appropriate for emergency CMAM programmes. Useful for programme managers developing contingency plans and responding to emergency needs
Technical Bulletin No 13. Revision 2 Mid-Upper Arm Circumference (MUAC) Tapes ¹⁸⁷	UNICEF Supply Division	This bulletin explains the changes made to the cut-offs and colour coding of the MUAC tapes. The changes were done in response to the adoption of the WHO child growth standards that recommended admission of children with MUAC <11.5 cm into OTP for treatment of SAM.
Technical Bulletin No. 15 Therapeutic Milk ¹⁸⁸	UNICEF Supply Division	Provides an update on the changes made to the packaging of F-75 and F100 which are designed to reduce wastage and ensure correct proportions of water are used in preparation of the therapeutic milk.
Technical Bulletin No. 17 ReSoMal ¹⁸⁹	UNICEF Supply Division	Explains the rationale for the change in packaging made to ReSoMal which now has a smaller sachet size with fewer sachets per carton. This was in response to the reducing number of children treated on inpatient basis with the scale up of CMAM.
RESOURCE MOBILIZATION		
Toolkit for countries applying for Funding of Food and Nutrition Programs Under the Global Fund to Fight AIDS, Tuberculosis and Malaria (Round 11) ¹⁹⁰	FANTA-2/ WFP 2011	Provides evidence to inform current programme activities and proposes a series of activities to be undertaken during the Global Fund application process, from coalition building to budgeting and M&E. The toolkit can be used by countries considering inclusion of food and nutrition activities for the first time and by experienced countries that want to scale up their response or broaden the range of their food and nutrition support activities to address emerging problems.

180. Guidance and open source software for implementation of Centric Systematic Area Sample (coverage) surveys, <http://www.brixtonhealth.com/>

181. Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) Guidance and software <http://www.validinternational.org/demo/coverage/reports.php>

182. Myatt M. et al. Summary of Coverage Assessment Methods., <http://www.validinternational.org/coverage/summaryCoverage.pdf>

183. UNICEF, 'Nutrition Supplies Forecasting Tool' [https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/\\$FILE/Nutrition%20supply%20forecast%20sheet%202012%20final.xlsx](https://intranet.unicef.org/pd/pdc.nsf/0/F417F9D4A4D33D7A85257A7E004DA073/$FILE/Nutrition%20supply%20forecast%20sheet%202012%20final.xlsx)

184. Duke University, 'The Nutrition Articulation Project, A Supply Chain Analysis' <http://sites.duke.edu/ghtaprogram/research-policy-work/ia-for-global-health/ready-to-use-therapeutic-foods/>

185. WFP et al, 2014, 'Managing the Supply of Specialized Nutritious Foods', <http://www.wfp.org/aid-professionals/blog/blog/supply-chain-guide-nutritious-food>.

186. UNICEF, Technical Bulletin No 12 (Revision 2 August 2013) Nutrition Kits http://www.unicef.org/supply/files/Nutrition_Kits.pdf

187. UNICEF Technical bulletin No. 13 revision 2 Mid Upper Arm Circumference (MUAC) Measuring Tapes, http://www.unicef.org/supply/files/Mid_Upper_Circumference_Measuring_Tapes.pdf

188. UNICEF Technical Bulletin No. 15 Therapeutic Milk – New Sachet, Carton Sizes http://www.unicef.org/supply/files/Therapeutic_Milk.pdf

189. UNICEF 'Technical Bulletin No. 17 ReSoMal – New Sachet, Carton Sizes' <http://www.unicef.org/supply/files/Resomal.pdf>

190. FANTA. Toolkit for Countries Applying for Funding of Food and Nutrition Programs Under the Global Fund to Fight AIDS, Tuberculosis and Malaria. http://www.unaids.org/sites/default/files/en/media/unaids/contentassets/documents/programmes/programmeffectivenessandcountrysupportdepartment/gfresourcekit/20110905_Technical_Guidance_Food_Nutrition_en.pdf

Management of SAM in other groups

This annex provides an overview of issues related to treatment of SAM in age groups other than children 6-59 months. Information is valid at the time of writing but further updates may be available.

F1. Infants (under six months)

Infants under six months are being admitted to therapeutic and supplementary programmes in many contexts (ranging from 1.2 per cent to 23.1 per cent of admissions)¹⁹¹ and attention and resources should be used to ensure that their needs are met.

Though treatment of infants with SAM in inpatient care is included in CMAM guidance and protocols, infants with SAM are primarily identified at the facility level and not community level. Currently there are no agreed upon nor reliable tools for screening for SAM in infants at community level. (MUAC has not yet been recommended for this group). Coverage for this age group within CMAM is therefore likely to be very poor.

The main findings and recommendations emerging from The Management of Acute

Malnutrition in Infants (MAMI) project and requiring consideration when designing CMAM programmes and scale-up are below:

Identification

- According to analysis conducted by the MAMI project, infants identified as wasted using either WHO or NCHS growth norms are not predominantly those that were born with low birth weight and the age distribution of wasting is fairly even. This indicates that wasting in

The MAMI project

The MAMI project was begun in 2008 to investigate the management of acutely malnourished infants under six months of age in emergency programmes, in order to improve practice by contributing to evidence-based, better practice guidelines. The specific objectives were:

- To establish the infant burden of disease
- To establish what is currently advised in the form of guidelines, policies and strategies
- To determine what is carried out in practice
- To make recommendations for future practice and research

¹⁹¹ ENN, CIHD, ACF, 2010, 'Management of Acute malnutrition in infants (MAMI): Current evidence, policies, practices and programme outcomes', <http://www.ennonline.net/mamitechnicalreview>

infants is a prevalent public health problem in its own right.¹⁹² A recent publication ([Kerac et al. 2012](#))¹⁹³ estimates that there are about 8.5 million wasted infants worldwide at any point in time (based on WHO growth standards).

- The perception that infants are often still breast-fed and are therefore satisfactorily nourished in contexts where acute malnutrition is identified as an issue in older children is incorrect.
- The use of WHO growth standards z-scores (as opposed to NCHS) results in higher prevalence estimates for infants to a greater degree than change in prevalence for children 6–59 months when using the WHO versus NCHS reference.¹⁹⁴ For younger, shorter infants under six months of age, there is a large discrepancy between WHZ-NCHS and WHZ-WHO <-2 cut-off values. WHO- growth standard cut-off values are consistently higher, increasing the numbers of infant under six months diagnosed as wasted. These differences narrow as infants approach one year of age. The patterns for moderate and severe wasting are similar.
- There is wide variation in how infant acute malnutrition is assessed and a higher level of errors and missing measurements for this age group and MUAC is often used though not recommended for this age group. Greater clarity and accompanying guidance is needed on anthropometric criteria, cut-offs and age assessment for infants under six months.
- Without population prevalence data it is difficult to effectively tackle infant malnutrition.

192 21 DHS national datasets from nutritionally vulnerable countries were analysed (163,228 children including 15,534 infants). They were selected from a reference population of 36 counties identified in the 2008 *Lancet* 'Maternal and Child Undernutrition' series as accounting for over 90 per cent of global malnutrition.

193 Kerac, M., et al., 2012, "Prevalence of wasting among under 6-month-old infants in developing countries and implications of new case definitions using WHO growth standards: a secondary data analysis (2010)", <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3195296/pdf/adc-96-11-1008.pdf>

194 Severe wasting increases over threefold in infants under six months and moderate wasting 1.4 fold. This compares to 1.7 fold and 0.86 fold differences for children 6-59m.

Nutrition surveys should therefore wherever possible include infants under six months to establish local burden. This requires specific training and equipment (including scales with 10-20g divisions). As a stop gap measure infant wasting prevalence can be very roughly estimated (questions remain on reliability and precision) from 6–59m wasting prevalence using the regression equations generated during the MAMI analysis ([ENN/CIHD/ACF 2010](#))¹⁹⁵; [Kerac et al 2012](#))¹⁹⁶.

Further research is also needed into the prevalence of SAM in oedematous infants under six months, whether weight for height is the best indicator for this age, how well different anthropometric indicators predict mortality, and the clinical profile of malnourished infants under six months.

Guidance

- There is wide variation in the inclusion of infants in treatment guidelines though all recommend inpatient care and focus on restoring breastfeeding.
- At the time of the study, best protocols/guidance for the management of malnutrition in infants were based on the WHO 1999 management of severe malnutrition and include IYCF/ breastfeeding support, medical treatment (including HIV, LBW) and maternal factors (including nutritional and psychosocial support).¹⁹⁷ These were:
 - [MSF Nutrition guidelines](#)¹⁹⁸, 2006

195 ENN, CIHD, ACF, 2010, 'Management of Acute malnutrition in infants (MAMI): Current evidence, policies, practices and programme outcomes', <http://www.ennonline.net/mamitechnicalreview>

196 Kerac, M., et al., 2012, "Prevalence of wasting among under 6-month-old infants in developing countries and implications of new case definitions using WHO growth standards: a secondary data analysis (2010)", <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3195296/pdf/adc-96-11-1008.pdf>

197 Thirty-seven Guidelines were reviewed using AGREE (Appraisal of Guidelines for Research and Evaluation) criteria

198 MSF Nutrition Guidelines <http://medmissio.de/proxy/alfresco-system/api/node/content/workspace/SpacesStore/87c2cbe3-8663-4afb-a56d-33a07d9c0557/test>

- ACF Assessment and Treatment of Malnutrition, 2002
- Infant Feeding in Emergencies Module 2¹⁹⁹, Infant Feeding in Emergencies (IFE) Core Group 2007
- Strategies to improve SAM management in infants under six months include routine kangaroo care for all 'complicated' cases of malnourished infants under six months managed in inpatient settings,²⁰⁰ 'breastfeeding corners' (separate mother and baby areas where skilled breastfeeding support is available) and peer-to-peer support.
- Options for outpatient based care in infants under six months should be considered/ designed as they offer the potential to reach more infants and manage them in the more appropriate and safer home environment. Evidence needs to be gathered on their practicality, effectiveness and safety.
- Further research is needed to determine the efficacy of supplementary suckling, the best therapeutic milk to use.
- No current breastfeeding assessment tool is sufficiently sensitive for community use and at the same time sufficiently specific for use in inpatient settings.²⁰¹ New tools are needed. In the interim, UNICEF b-r-e-a-s-t,²⁰² the UNICEF 2006 breastfeeding observation aid²⁰³ and the

aids described in IFE Module 2²⁰⁴ should be used to assess breastfeeding in programmes managing infants under six months.

Implementation

(This is based on analysis of programme data from 25,195 children, which included 4,002 infants).

- Infants treated in therapeutic and supplementary programmes had similar cure rates to children 6–59 months old; however, mortality was significantly higher.
- Staff training (integrated into existing courses) and appropriate equipment are needed to improve the quality of anthropometric assessment and treatment of infants under six months.
- Standardization in reporting is needed, including database structure, case definitions, outcome coding and variable formatting, to facilitate future research and routine audit.
- Routine indicators of feeding status on entry and exit to programmes are necessary.
- There is little information on coverage of infants as they are not routinely included in assessments/surveys

Standards

Current Sphere indicators to correct malnutrition have their limitations with regard to infants under six months and require updating.

- It is not clear whether Sphere exit indicators for children under five years include infants under six months or should be applied to these infants.
- While a Sphere indicator is included on the importance of breastfeeding and psychosocial

199 Infant Feeding In Emergencies Module 2 <http://www.enonline.net/ourwork/capacitydevelopment/ycfemodule2>

200 Kangaroo care is a technique where the infant is held in continuous skin-to-skin contact with an adult, usually the mother. It facilitates temperature regulation, reduces infant stress, and helps establish and maintain breastfeeding.

201 Fifteen were reviewed.

202 Body position, Responses, Emotional Bonding, Anatomy, Suckling, Time suckling. Also see WHO and UNICEF, 'Breastfeeding counselling a training course. Participants Manual', 1993, p.21. WHO/CDR/93.5 UNICEF/NUT/93.3.

203 UNICEF, 2000, 'Baby-Friendly Hospital Initiative', Revised, Updated and Expanded for Integrated Care, Section 3.2, p.91.

204 IFE Core Group, 2007, 'Infant feeding in emergencies', Module 2. Version 1.1. Developed in collaboration with ENN, IBFAN, Terre des Hommes, UNICEF, UNHCR, WHO and WFP, for training, practice and reference.

support in SAM treatment, there is no clear guidance on how to measure this.

- Staff: patient ratio recommended for children (1:10) may not be sufficient for infants under six months.

Current guidance

In 2013, WHO released updated recommendations on the management of SAM in infants and children²⁰⁵. Recommendation 8 deals with identifying and managing infants who are less than 6 months of age with SAM and covers:

- Criteria for admission into inpatient care
- Medical care
- Establishment or re-establishment of effective exclusive breastfeeding
- Treatment recommendations
- Criteria to transfer from inpatient to outpatient care
- Criteria for discharge
- Options for those that do not require inpatient care or whose caregivers decline admission

F2. Adults and adolescents

CMAM programmes may encounter and include significant numbers of adults and adolescents with SAM particularly in contexts where there is high prevalence of HIV. In some contexts older people may be particularly affected. There is a lack of international consensus and evidence for the criteria for classifying acute malnutrition and for therapeutic treatment in these groups though some guidance does exist for the emergency setting and is listed below.

205 WHO, 2013, 'Updates on the management of severe acute malnutrition in infants and young children,' http://www.who.int/nutrition/publications/guidelines/updates_management_SAM_infantandchildren/en/.

- IASC/GNC/Nutrition Works, 2011, Harmonized Training Materials Package. Module 13: Management of Severe Acute Malnutrition and Module 23: Nutrition of Older People in Emergencies²⁰⁶
- UNHCR/WFP, Guidelines for selective feeding: The management of malnutrition in emergencies²⁰⁷, January 2011
- Navarro-Colorado, 2006, Adult Malnutrition in Emergencies²⁰⁸: An overview of diagnosis and treatment ACF
- MSF Nutrition guidelines²⁰⁹, 2006
- Woodruff and Duffield, 2009, Adolescents: Assessment of Nutritional Status in Emergency Affected Populations²¹⁰, UN ACC/SCN

Assessment

The IASC/GNC/NutritionWorks 2011 guidance, while stressing the need for diagnosis taking into account clinical signs particularly for these groups and recognizing the lack of consensus and evidence, gives the following summary (Table 7) based on the little available evidence and common practice:

For older people, MUAC, is recommended as the nutritional status assessment tool. Generally, social and psychosocial factors assume greater significance in the diet, food choices, food intake and nutritional and functional profiles of older people, as compared to other population

206 GNC, 2011, http://www.unscn.org/en/gnc_http/howto-http.php#howtousehttp

207 UNHCR and WFP, 2011, Guidelines for Selective Feeding: The Management of Malnutrition in Emergencies (2011), <http://www.unhcr.org/4b7421fd20.pdf>

208 Navarro, C., Adult Malnutrition in Emergencies; An Overview of Diagnosis and Treatment – Field Guidelines', http://www.actionagainsthunger.org.uk/fileadmin/contribution/0_accueil/pdf/Adult%20malnutrition%20in%20emergencies%20-%20An%20overview%20of%20diagnosis%20and%20treatment%20-%20Guidelines%20Version%203.pdf.

209 MSF, 2006, 'Nutrition Guidelines' <http://medmissio.de/proxy/alfresco-system/api/node/content/workspace/SpacesStore/87c2cbe3-8663-4afb-a56d-33a07d9c0557/test>

210 Collins S. et al, Adolescents: Assessment of Nutritional Status in Emergency Affected Populations (2000). <http://www.unscn.org/layout/modules/resources/files/AdultsSup.pdf>.

TABLE 7 Summary of suggested criteria for admission for SAM used in children five years or older, adolescents and adults

Age group	Criteria for therapeutic admission
Children 5 – 9 years	MUAC < 129mm, and / or BMI for age < -3 z-score, and /or Bilateral pitting oedema
Adolescents 10 – 18 years	MUAC < 160mm and / or BMI for age < -3 z-score, and /or Bilateral pitting oedema
Adults >18 years	BMI < 16 (kg/m) and / or MUAC < 185mm‡ and / or Bilateral pitting oedema

Note: ‡ There is no international agreement on the MUAC cut-off for adolescents and adults. Available published data for adults suggests <160mm, but this is currently considered too low in non-famine contexts (including in the context of HIV/AIDS) and cut-offs of <180 or <185mm are most widely used by agencies.

‡‡ For details on suggested criteria see Collins, Duffield, and Myatt 2009; UN, ACC, and SCN 2000; WHO 2008; and Woodruff and Duffield 2009.

groups. Checklists and conceptual flow diagrams are available for the assessment of nutritional vulnerability in older people, and should always be adapted to the local context (see Module 23 of the Harmonized Training Package).

For pregnant and lactating women and for older people, no specific criteria for assessment of SAM have been agreed on in addition to the above. For adults the importance of clinical assessment for diagnosis has been highlighted and clinical diagnosis models proposed (Collins, Myatt, and Golden 1996²¹¹).

Treatment

Nutrition treatment for adults (including pregnant and lactating women and older people) and adolescents follows similar protocols as for children. Though with adjustment made for the lower kcal/kg body weight needs for initial stabilization for this group according to published evidence and WHO protocols (WHO 1999; Collins et al. 1998). Treatment for adults and adolescents often begins with inpatient care as there has been more experience documented there; however, where there is some evidence of appetite, RUTF can be considered.

For summary guidance on treatment see pp. 35-37 of IASC/GNC/Nutrition Works, Harmonized Training Materials Package. Module

211 Collins, S., M. Myatt, and B. Golden, 1998, "Dietary treatment of severe malnutrition in adults," <http://www.ncbi.nlm.nih.gov/pubmed/9665114>.

13. Management of Severe Acute Malnutrition²¹², May 2011.

F3. HIV-positive children (and other groups)

Provider-Initiated Testing and Counselling (PICT) for HIV in all children with SAM and their parents is advised in areas with generalized and high HIV prevalence. HIV-positive children with SAM present a particular subgroup that require special considerations.

Assessment and treatment

HIV-positive children are at higher risk of acute malnutrition and take longer to recover when they become acutely malnourished. There is therefore a rationale for providing nutrition support earlier in the onset of acute malnutrition. Evidence is being collected on the inclusion of HIV-infected children with MAM into therapeutic programmes as a group requiring this additional nutritional support; however, current alternatives would be supplementary feeding with an appropriate product (UNHCR/WFP 2011²¹³). In general, nutrition activities in areas with high HIV prevalence must provide a wide and comprehensive approach if they are to prevent

212 Standing Committee on Nutrition (SCN) Harmonized Training Package, http://www.unscn.org/en/gnc_http/howto-htp.php#howtousehtp

213 UNHCR and WFP, 2011, 'Guidelines for Selective Feeding: The Management of Malnutrition in Emergencies', <http://www.unhcr.org/4b7421fd20.pdf>

acute malnutrition and/or improve nutrition status of infected individuals.

The 1999 WHO SAM guidelines did not recommend HIV testing of children with SAM. At that time, there was poor availability and little experience of treating children with antiretroviral drugs. Current evidence shows that antiretrovirals significantly increase survival of children with HIV, and access to these drugs is improving. The [2013 WHO recommendations for SAM management](#) recommend that children with SAM in countries where HIV is common be routinely tested for the virus, and those who are positive should start on antiretroviral drugs as well as special foods and antibiotics to treat SAM. [Specifically](#)²¹⁴:

- all HIV-exposed infants and children (including those with SAM) should be tested for HIV status;
- in settings where HIV infection is common (HIV prevalence more than 1%), children with SAM should be tested for HIV, in order to establish their HIV status and to determine their need for antiretroviral drug treatment;
- ART should be initiated in all children infected with HIV below five years of age, regardless of WHO clinical stage or CD4 cell count. ART should be initiated in all HIV-infected children five years of age and older with CD4 cell count < 500cell/mm³, regardless of WHO clinical stage; ART should be initiated in all children infected with HIV with severe or advanced symptomatic disease regardless of age and CD4 cell count;

- ART should be initiated in any children younger than 18 months of age who has been given a presumptive clinical diagnosis of HIV infection;
- children living with HIV who have any one of the following symptoms – poor weight gain, fever, current cough or contact history with a TB case – may have TB and should be evaluated for TB and other conditions.

The above new recommendations were published in June 2013²¹⁵;

HIV-infected children should also be assessed for other opportunistic infections such as thrush or cryptosporidiosis. On discharge it is important to ensure referral to appropriate support services for HIV though criteria for discharge from SAM treatment are the same for individuals, regardless of HIV status.

214 WHO, 2013, 'Updates on the management of severe acute malnutrition in infants and young children,' http://www.who.int/nutrition/publications/guidelines/updates_management_SAM_infantandchildren/en/

215 WHO, 2013, Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. <http://www.who.int/hiv/pub/guidelines/keypopulations/en/>

CHECKLIST FOR DETERMINING HIV STATUS FOR CHILDREN 0-59 MONTHS WITH SEVERE ACUTE MALNUTRITION

CHILD'S HIV STATUS	FURTHER TESTING	SCENARIO-1	SCENARIO-2
IF HIV POSITIVE:			
ASK: is the child receiving treatment for HIV?		<p>If child receiving treatment for HIV:</p> <ul style="list-style-type: none"> Follow nutrition protocols for SAM; Ensure continuity of services for SAM; Counsel on ART adherence 	<p>If child not receiving treatment for HIV:</p> <ul style="list-style-type: none"> Provide cotrimoxazole as prophylaxis; Ensure continuity of prophylaxis once child is stabilized nutritionally; Refer patient to services for HIV treatment if available; Follow nutrition protocols for SAM; Ensure continuity of services for SAM; Counsel on ART adherence
IF HIV NEGATIVE:			
ASK: Is the child still breastfeeding?	<p>If yes:</p> <ul style="list-style-type: none"> Ask what is/was the HIV status of the mother <p>If mother is HIV positive:</p> <ul style="list-style-type: none"> Follow nutrition protocols for SAM; Ensure continuity of services for SAM <p>If mother is/was positive, retest child for HIV</p>	<p>If mother is negative:</p> <ul style="list-style-type: none"> Follow nutrition protocols for SAM; Ensure continuity of services for SAM 	<p>If child is HIV positive</p> <ul style="list-style-type: none"> Refer to instructions in first row
	<p>If no (child not breast-feeding)</p>	<ul style="list-style-type: none"> Follow nutrition protocols for SAM; Ensure continuity of services for SAM 	
IF STATUS OF MOTHER AND / OR CHILD IS UNKNOWN:			
Check: is testing available at this facility? Or can you refer for HIV testing at near-by site	<p>If yes*:</p> <ul style="list-style-type: none"> Test/refer child for HIV <p>* Start SAM treatment and refer child to site where testing is done, once stable enough to travel to the referral site. Start HIV treatment immediately unless there is a medical complication.</p>	<p>If child is HIV negative:</p> <ul style="list-style-type: none"> Follow nutrition protocols for SAM Ensure continuity of services for SAM 	<p>If child HIV positive:</p> <ul style="list-style-type: none"> Provide cotrimoxazole as prophylaxis; Ensure continuity of prophylaxis once child is stabilized nutritionally; Refer patient to services for HIV treatment if available; Follow nutrition protocols for SAM; Ensure continuity of services for SAM; Counsel patient and mother on ART adherence

ASK:
WHAT IS THE
CHILD'S HIV
STATUS?

Information exchange and resource forums

Meeting reports:

- FANTA, International workshop on the integration of Community-based management of acute malnutrition. Washington D.C., USA, 28–30 April, 2008²¹⁶
- UNICEF and WCARO, 2010, Report of a Meeting to Harmonize the Criteria for Monitoring and Evaluation of the Treatment of Acute Malnutrition in West and Central Africa²¹⁷
- ENN, Government experiences of scale-up of community-based management of acute malnutrition (CMAM), Addis Ababa, Ethiopia, 14–17 Nov, 2011²¹⁸

Discussion forums

- Emergency Nutrition Network discussion group En-net (<http://www.ennonline.net/resources>): Prevention and treatment of severe acute malnutrition discussion group
- The MUAC community website at <http://tng.brixtonhealth.com/node/164>
- The Coverage Monitoring Network at <http://www.coverage-monitoring.org/>

Resource websites

- CMAM forum²¹⁹.
- The ENN technical resource library²²⁰ pages for prevention and treatment of SAM which includes reports and resources developed both internationally and nationally.²²¹

216 FANTA and ENN, 2008, 'International workshop on the integration of community-based management of acute malnutrition', <http://www.ennonline.net/ourwork/othermeetings/cmamintegration2008>.

217 UNICEF and WCAR, 2010, 'Report of a Meeting to Harmonize the Criteria for Monitoring and Evaluation of the Treatment of Acute Malnutrition in West and Central Africa,' <http://www.cmamforum.org/Pool/Resources/Meeting-report-on-M-E-IMAM-West-and-Central-Africa-Dakar-Golden-et-al-ENG-2010.pdf>.

218 ENN, 2012a, 'Conference on government experiences of scaling up the Community-based Management of Acute Malnutrition (CMAM) and lessons for the Scaling Up (SUN) movement,' <http://www.ennonline.net/ourwork/enmeetings/cmamconference2011>

219 <http://cmamforum.org>

220 <http://www.ennonline.net/resources>

221 The ENN was set up in 1996 by a group of international humanitarian agencies to accelerate learning and strengthen institutional memory in the emergency food and nutrition sector. It aims to improve effectiveness of emergency food and nutrition interventions through identification and dissemination of lessons learnt in the course of operational practice and through research and evaluation.

- The [malnutrition forum](#)²²² of the International Malnutrition Task Force.²²³ This forum houses a number of current online discussions on malnutrition including the management of SAM, and contains links to resources and to published and current research.
- The [Maternal and Child Health and Nutrition and Nutrition in Emergencies and Management of Acute Malnutrition sections](#)²²⁴ of the FANTA III website.
- The [Mother and child nutrition](#)²²⁵ site of the Mother and Child Health and Education Trust aims promote a greater understanding of best practices, including new technologies and available resources, while also freely sharing information and experiences. It has lists of resources on management of SAM including those developed for particular countries and a series of videos for use in trainings.²²⁶
- WHO pages on [severe acute malnutrition](#)²²⁷ and [moderate malnutrition](#)²²⁸.

222 <http://www.imtf.org/page/resources/>

223 The IMTF was launched at the International Union of Nutritional Sciences (IUNS) International Congress of Nutrition in 2005. It is governed through a committee comprising representatives from the IUNS, International Paediatric Association, UNICEF and WHO, has a steering committee of international technical experts and collaborates with a range of partners including the Latin American Nutrition Network, Regional Centre for Quality of Health Care in Africa and the paediatric association of Tanzania. It aims to raise the profile of malnutrition and build capacities to prevent and treat malnutrition.

224 <http://www.fantaproject.org/focus-areas>

225 Mother and child Health and Education Trust Resources <http://motherchildnutrition.org/resources/videos-training-programme.html>

226 The Trust is a charity which aims to employ all communications technologies to reach and transfer health and nutrition knowledge directly from and to the whole community.

227 http://www.who.int/nutrition/topics/severe_malnutrition/en/

228 http://www.who.int/nutrition/topics/moderate_malnutrition/en/

Questions, knowledge gaps and research needs in SAM management

Assessment

1. Develop community-based survey techniques to measure programme coverage with regard to coverage of screening as well as treatment.
2. Examine new and feasible reporting tools (e.g., RapidSMS) to strengthen M&E in a timely manner.
3. Assess the usefulness of MUAC as an indicator for treatment response in settings with different levels of wasting.
4. Develop tools that can improve reliability of anthropometric measures (e.g. better scales, length/height boards, more appropriate MUAC tapes).

SAM

5. Antibiotic treatment in children with SAM
6. Assessing outcomes of children with oedema treated as outpatients
7. The care of HIV-infected children with SAM
8. The care of children with diarrhoea in community-based management of SAM
9. Fluid management of children with dehydration without shock and SAM
10. Feeding of children with severe acute malnutrition and persistent diarrhoea
11. Transition phase feeding of children with severe acute malnutrition as inpatients

12. The use of intravenous blood and/or plasma infusions in severe dehydration and shock
13. Vitamin A supplementation in the treatment of children with severe malnutrition
14. Admission and discharge criteria for the management of SAM in infants under six months (including research into the use of MUAC for infants)
15. Inpatient treatment of severe acute malnutrition in infants aged under six months (e.g., efficacy of supplemental suckling, best therapeutic milk options)
16. Development of generic tool for use at the community and facility level for assessment of breastfeeding
17. Practicality, effectiveness and safety of options for outpatient treatment of severe acute malnutrition in infants aged under six months
18. Screening for acute malnutrition in children under six months of age
19. Discharge criteria for acute malnutrition in children under six months of age (percentage weight gain, MUAC, fixed length of stay, etc.)
20. Further efficacy testing of local therapeutic diets

Sources:

- WHO, Geneva HQ, Third Nutrition Guidance Expert Advisory Group meeting of the Subgroup of Nutrition in the Life Course and Undernutrition - Area Acute Malnutrition, 13 February 2012. Meeting report
- Conference on government experiences of community-based management of acute malnutrition, scaling up nutrition. Addis Ababa, 14-17 November, conference report [ENN 2012a](#)²²⁹
- 'Management of Acute malnutrition in infants (MAMI): Current evidence, policies, practices and programme outcomes (ENN/CIHD/ACF 2010)

MAM

Treatment

21. Define response to treatment of children admitted on MUAC and clarify discharge percentage weight gain.
22. Document duration of treatment and duration of MAM episode from various contexts.
23. Clarify spontaneous recovery of MAM cases from available datasets.
24. Continue defining nutritional requirements of MAM cases.
25. Define appetite test for MAM cases.
26. Define nutritional, microbiological, chemical and other specifications for foods aimed at treating MAM.
27. Measure effectiveness (outcomes, impact, coverage etc.) and efficacy (physiological, clinical etc.) of new products filling MAM specifications in various contexts.
28. Measure effectiveness of 'non food' approaches in preventing and treating MAM in contexts where MAM determinants are not food related.
29. What is the most effective way to target cash transfer programmes in order to have an impact on MAM? Cash transfer programmes

may be a part of poverty reduction, social protection programmes or emergency responses.

30. What specific types of cash transfer programmes contribute to food and nutritional status in children under five years?
31. What is the most effective approach to monitor the impact of cash impact on the nutritional status of children under five years?

HIV

32. Do HIV+ MAM children need a different food to recover from MAM compared with HIV–MAM children?
33. Do HIV+ mothers need a different food to recover from MAM compared with HIV–mothers?
34. What would be the ideal timing of starting ARVs in HIV+ infected children with MAM (and SAM) in the absence of other signs requiring ARV treatment?
35. Could the identification and treatment of diarrhoea pathogens on admission improve treatment of MAM in HIV+ children (faster recovery, higher weight gain etc.)?
36. Develop and pilot the use of linear programming in the formulation of dietary recommendations for moderately wasted children.

Infants

37. Do anthropometric criteria for MAM in children over six months apply equally to infants under six months?
38. How should infants under 67cm but under six months be managed?
39. For infants with no access to breast milk, what feeding option poses the least risk in a given individual context? Research is needed to investigate how to achieve this in programmes in resource limited settings.
40. Review current experiences on the safety, effectiveness and tolerance of RUF in MAM infants under six months.
41. The impact of support to IYCF in CMAM.
42. Review breastfeeding assessment tools in field settings for individual level assessment.

229 ENN, 2011, 'Conference on government experiences of scaling up the Community-based Management of Acute Malnutrition (CMAM) and lessons for the Scaling Up (SUN) movement,' <http://www.ennonline.net/ourwork/ennteammeetings/cmamconference2011>

43. Field tests of WHO growth velocity tables in the context of infants <6m that are moderately malnourished, to investigate expected weight gain by age in treatment
44. Studies are needed to explore which psychosocial support activities for different settings are most effective.
45. Study the interpretation of WHO-GS growth charts by health workers.

Sources:

WHO, UNICEF, WFP and UNHCR, Consultation on the Programmatic Aspects of the Management of Moderate Acute Malnutrition in Children under five years of age, 24-26 February, 2010, Geneva

Websites listing recent research in these areas:

1. The CMAM forum www.cmamforum.org has a research section which includes a compilation of ongoing and current research projects related to the management of acute malnutrition.
2. [iLiNS Network](http://www.ilins.org)²³⁰: The International Lipid-Based Nutrient Supplements (iLiNS) Project is a research collaboration that grew out of a shared commitment to accelerate progress in preventing malnutrition. It conducts research projects in Burkina Faso, Ghana, and Malawi. Previous work with lipid-based nutrient supplements (LNS) in Ghana and Malawi indicated that such supplements could improve child growth and development in low-income populations.
3. IMTF: The International Malnutrition Task Force [malnutrition forum](http://www.imtf.org)²³¹ contains links to published and current research. The IMTF was launched at the International Union of Nutritional Sciences (IUNS) International Congress of Nutrition in 2005. It is governed through a committee comprising representatives from the IUNS, International Paediatric Association, UNICEF and WHO, has a steering committee of international technical experts and collaborates with a range of

230 <http://ilins.org/ins-research-network>

231 <http://www.imtf.org/page/resources/>

- partners including the Latin American Nutrition Network, Regional Centre for Quality of Health Care in Africa and the paediatric association of Tanzania. One of its aims is to publish and disseminate findings and experiences related to the management of acute malnutrition.
4. ENN: The ENN [technical resource library](http://www.ennonline.net/resources)²³². ENN was set up in 1996 by a group of international humanitarian agencies to accelerate learning and strengthen institutional memory in the emergency food and nutrition sector. It aims to improve effectiveness of emergency food and nutrition interventions through identification and dissemination of lessons learnt in the course of operational practice and through research and evaluation.
 5. WHO pages on [severe acute malnutrition](http://www.who.int/nutrition/topics/severe_malnutrition/en/)²³³ and [moderate malnutrition](http://www.who.int/nutrition/topics/moderate_malnutrition/en/)²³⁴ and the WHO e-library of evidence for nutrition actions ([eLENA](http://www.who.int/elena/)²³⁵) which has sections for evidence including current research for a number of relevant intervention areas such as the following:

- [Treatment of severe acute malnutrition in HIV-infected children](http://www.who.int/elena/titles/hiv-sam/en/)²³⁶
- [Food supplementation for children with moderate acute malnutrition](http://www.who.int/elena/titles/moderate_mam/en/)²³⁷
- [Micronutrient supplementation in children with severe acute malnutrition](http://www.who.int/elena/titles/micronutrients_sam/en/)²³⁸

232 <http://www.ennonline.net/resources>

233 http://www.who.int/nutrition/topics/severe_malnutrition/en/

234 http://www.who.int/nutrition/topics/moderate_malnutrition/en/

235 <http://www.who.int/elena/intervention/en/>

236 WHO e-Library of Evidence for Nutrition Actions (eLENA) Management of HIV-infected children under 5 years of age with severe acute malnutrition. <http://www.who.int/elena/titles/hiv-sam/en/>

237 WHO e-Library of Evidence for Nutrition Actions (eLENA) Supplementary foods for the management of moderate acute malnutrition in children, http://www.who.int/elena/titles/food_children_mam/en/

238 WHO e-Library of Evidence for Nutrition Actions (eLENA) Micronutrient intake in children with severe acute malnutrition. http://www.who.int/elena/titles/micronutrients_sam/en/

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