

Review Article

Community-based management of acute malnutrition (CMAM) in India: a position paper

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ABSTRACT

Considering the burden of Severely Acute Malnutrition (SAM) in India and the availability of SAM treatment at facility level, it is operationally not feasible to treat all SAM children. The community-based approach involves timely detection of severe acute malnutrition in the community and the provision of treatment for those without medical complications with ready-to-use therapeutic foods or other nutrient-dense foods at home. Community based Management of Acute Malnutrition (CMAM) is an integrated approach which on one hand focuses on treatment and on the other prevention. CMAM has a key component of community mobilization which is crucial for prevention. The present paper emphasizes the position of CMAM in India in terms of preventive vs curative, integrative approach, multi sectoral engagement, mental health perspective as per the facts available through secondary sources in India and also experiences of CMAM-I phase implemented in Rajasthan. A CMAM programme can be an ideal and well established programme considering the inclusion of different aspects such as alternative feasible solution, convergent action, multi-stakeholders roles and accountabilities.

Keywords: Acute Malnutrition, Community based management, Position paper

INTRODUCTION

Treatment of severe acute malnutrition (SAM) has undergone a paradigm shift over the past decade through the introduction of community-based management of acute malnutrition (CMAM) in over 60 countries. Under this approach, treatment has moved away from expensive, resource-constrained hospital settings towards the community-based management. The data evidence of CMAM is encouraging and it points toward the achievement of significant mortality reductions in a cost-effective manner.¹ However, the burden of childhood malnutrition in India has remained significantly high with few years in hand to reach the global targets set by the World Health Assembly (WHA). India shares the bulk of the burden of childhood stunting globally with an

estimated 44 million stunted children, according to the rapid survey on children.² Hence, reducing stunting among Indian children is considered imperative to achieve the global target set by the WHA to reduce the number of stunted children to 40% by 2025. Nearly 75% of the total burden of childhood stunted children in eight study states is concentrated in just four States- Bihar, Karnataka, Madhya Pradesh and Maharashtra.³

According to UNICEF, nearly half of all deaths among children under five are attributable to under nutrition.⁴ This translates into the loss of about 3 million young lives in a year. Malnutrition continues to be a significant health problem for children in India. Though there has been declining in the percentage of children who are underweight from 42.5 % in NFHS-3 (2005-06) to 35.7

% in NFHS-4(2015-16), the magnitude of malnutrition is still high. It was surprising that children under-five years those were affected by wasted and severely wasted had increased to 21 percent and 7.5 percent which was 19.8 and 6.4 percent respectively earlier as per NFHS-3.⁵

Internationally, SAM has been treated in institutional (Hospital based) settings with the use of therapeutic foods using the F-100 formula which is applicable conventionally in Government of India's (GOI) response to management of children. In the year 2011, the GOI also produced its own operational guidelines on facility-based management of children with severe acute malnutrition with support of National Rural Health Mission, Ministry of Health and Family welfare. Considering the burden of SAM in India and the availability of SAM treatment at facility level, it is operationally not feasible to treat all SAM children. The community-based approach involves timely detection of severe acute malnutrition in the community and the provision of treatment for those without medical complications with ready-to-use therapeutic foods or other nutrient-dense foods at home. If properly combined with a facility-based approach for those malnourished children with medical complications and implemented on a large scale, community based management of severe acute malnutrition could prevent the deaths of hundreds and thousands of children.

REVIEW OF LITERATURE

CMAM in India: a snapshot

In India, the community-based management of acute malnutrition started as an emergency response in Bihar during the Kosi floods in 2009. This pilot was led by Médecins sans Frontières with support from the Bihar government where it successfully achieved a cure rate of 88.4% for non-defaulting cases by Burza et al.⁶ This was the first conventional CMAM programme in India and has achieved low mortality and high cure rates among non-defaulting children. Then different development organizations initiated in different states (Madhya Pradesh, Maharashtra, Odisha, Chhattisgarh and Rajasthan) some CMAM programmes in both preventive and curative approaches.

Of the ten pilot projects analysed in this paper, six had engaged in CMAM with the support of the Governments and three pilots were implemented independently. Rajasthan is the only state of India where the CMAM programmes was implemented in 13 districts in a large scale and led by the state government themselves with the support of development partners. Proactive and optimum care of children through social-household approach for nutrition (POSHAN), of Rajasthan is a unique CMAM programme which uses an innovative strategy to manage uncomplicated cases of severe acute malnutrition (SAM) among children within the community through extensive follow-up by frontline health workers and parental

counselling on care practices.⁷ An analysis of the pilot projects mentioned here shows 90% of pilots concentrated on both preventive and curative approach to deal with malnourished children but the POSHAN programme implemented by the Government of Rajasthan was for treatment only. Though most of the pilots tried to maintain sustainability in their own way for a short-term basis but the UMANG programme by world vision was focused on community and resource mobilization along with promotion of nutrition garden.⁸ Similarly, Action Against Hunger-India is also promoting kitchen gardens to maintain the nutritional aspects of families in Baran district of Rajasthan.

Evidence shows that the services of the Anganwadi centres were also utilized through the Integrated Child Development Scheme (ICDS) to manage children at the village level by 'Save the Children' which were excluded in another pilot by MSF. The study conducted by valid International emphasized on community based management and energy dense nutrient rich food rather than hot cooked meals and facility based treatment. Sneha organization adopted holistic approach through prevention and treatment to reduce malnutrition in Dhruvi slums.⁹ The uniqueness of the pilot programme was growth monitoring of pregnant and children under three, behavioral change on feeding and care practices of caregivers through home-based and group counselling, timely referral to public health care systems for children in need of medical attention and treatment.

Although all these pilots were unique in themselves, there were some components which were common in most of them and seem to form an integral part in the CMAM programme. Screening and monitoring of the children are essentially a prerequisite of the programme. Along with these regular referrals of complicated SAM children to the facilities are also noted. All pilots had different success rates but that also depends on a number of factors and confounders. While the variant CMAM programmes across the nation has seen multiple components, some more inevitable core components (Figure 1) of community based management of acute malnutrition identified through these pilots and which would form an ideal CMAM strategy are:

- Curative, preventive or both curative and preventive
- Ready to use therapeutic foods (RUTF)/energy dense nutritional supplements /therapeutic foods
- Screening and monitoring (MUAC/height for weight)
- Malnutrition treatment centres or nutrition rehabilitation centres
- Community mobilization including awareness generation and referrals
- Guidelines/Policies for CMAM
- Scaling up of programme
- Emergency vs development setting
- Convergence approach: ICDS and health.

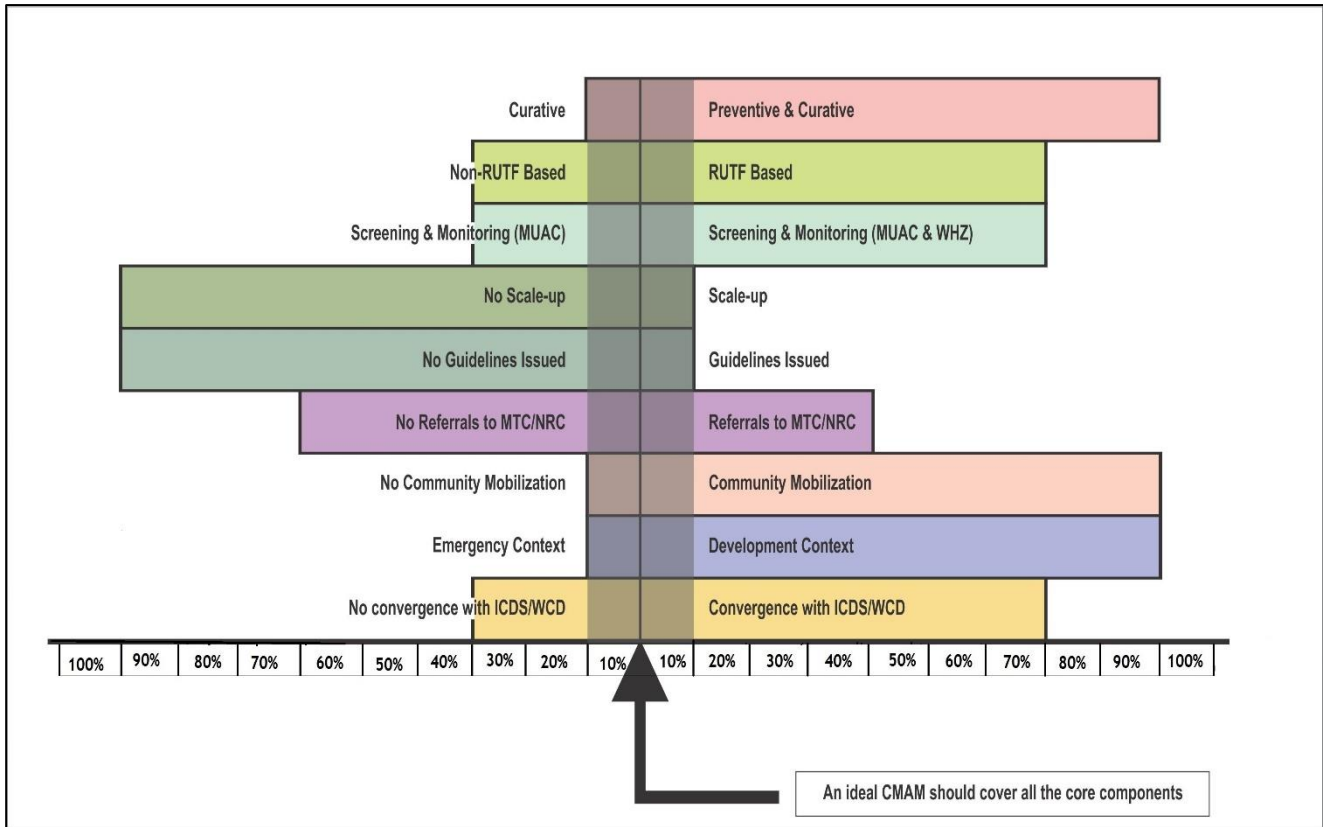


Figure 1: Coverage of different core components for an ideal CMAM programme.¹⁰

DISCUSSION

Below is an assessment of all the 10 pilots analyzed for the core components that would form an ideal CMAM strategy.

In the context of ready to use therapeutic foods/energy dense nutritional supplements /therapeutic foods, data reveals that of the ten pilot programme, 70 percent organization extensively prioritized the importance of therapeutic food in the community level for the SAM children and the remaining thirty percent were fully involved in supplementary food provided by ICDS and locally available foods including dry rations provided to the families.

Similarly, an equal percentage (70%) of CMAM pilot programmes followed anthropometric measurement such as MUAC measurement or height for weight for identifying SAM children.

Forty percent of these CMAM programme emphasized treatment of complicated SAM cases in MTC/NRC apart from the community based treatment whereas valid International was engaged exclusively on community based management and treatment.

Community mobilization is an essential component to implement a successful CMAM programme. Data shows that 90 percent of the pilots were strengthened to generate awareness and refer cases in the community itself.

Apart from all these components that the pilots covered in some way or the other, all organizations suggested that a more inclusive approach bearing cost effectiveness of implementing CMAM at the community level to eradicate malnutrition should be a prerequisite for a CMAM strategy.

Considering all these aspects during implementation of pilots, few lacunas are found in terms of technicalities and operational point of view. These gaps may be addressed within a CMAM strategy for improved desired results.

Guidelines and policy were not formulated and released during the pilot implementations in 90% of the cases.

The POSHAN programme was the only one where a set of guidelines were issued for effective implementation of the programme. National Health Mission, Rajasthan first time initiated and launched POSHAN guidelines for proper implementation of POSHAN/CMAM programme.

Likewise, the POSHAN programme is the only one which was planned for a scale-up.

Poor follow-up of cases in the community as well as MTC/NRC cases, lack of convergence approach among ministries and departments, poor networking among health and ICDS officials due to confusion and clarity and not emphasizing on sustainability are some other aspects that need serious attention.

Broadly, in India, there are key challenges around a lack of recognition of the problem and the scale of acute malnutrition at federal government level, a lack of policies and guidelines (as of today) to address both treatment and prevention as well as governance mechanisms are inadequate to address the issue and there is insufficient financing too.

A CMAM programme can be an ideal and well established programme considering the inclusion of different aspects such as alternative feasible solution, convergent action, multi-stakeholders roles and accountabilities and other details which are discussed below.

Debate on CMAM: is it a feasible solution?

Debates around the need for CMAM in India have been going on for long. A different school of thought and dimension like CMAM is an expensive option, it increases dependency on RUTF thus replacing breastfeeding and family food, which are usually dominant. CMAM does not undermine breastfeeding in treatment for SAM, with the use of RUTF. International protocols clearly state that no RUTF should be given to infants below 6 months and for children aged 6-24 months, breastfeeding is actively encouraged before the child is offered RUTF. The CMAM protocols promote the integration of IYCF promotion within treatment.

Although the price of RUTF could seem expensive compared to a wide range of food commodities, it has been recommended by the WHO and UN agencies dealing with global Health and Nutrition as well as by the scientific community for its effectiveness and for its cost-effectiveness in curing children with SAM.¹¹ It should, therefore, be compared with the wide range of expensive medical products whose procurement and use is required to save lives. Indeed, one should remember that much more than a simple food commodity, RUTF is a type of nutritional support which is a key component of a medical treatment, whose efficacy and effectiveness has been demonstrated in a wide range of settings including the POSHAN programme of Government of Rajasthan.

The cost per life-year saved of a child below 5 years due to SAM is \$125.¹² This means an investment of \$125 is required to save the life of 1 child for 1 year. (For India: There are 9300000 SAM children in India. To save the lives of all those in 1 year, an investment of

\$11,625,000,000 (9300000X125) is required for 1 year (Table 1).

Table 1: Estimated number of SAM children in selected states and india based on calculation from NFHS 4 data for children under-5 years along with the investment required.

State	Number of SAM children*	Investment required
Rajasthan	700000	\$87,500,000
Maharashtra	1000000	\$125,000,000
Madhya Pradesh	1000000	\$125,000,000
Jharkhand	510000	\$63,750,000
India	9300000	\$11,625,000,000

The cost of discounted life-years saved which at the maximum can be 59 years and with a minimum of 32 years for low and middle income countries is 1.84 times the estimate cost per life-year saved. In case of SAM this would be \$230 (125X1.84), meaning, there is an additional cost of \$105 (\$230-\$125=\$105) per life per year in loss for as long as he lives, which implies that the cost of \$105 is the loss of a state/country in terms of potential life-years which could have economic implications too.

As such cost-effectiveness of SAM management programmes including out-patient management using RUTF has been shown to largely surpass the cost-effectiveness of inpatient SAM management without RUTF. However, costs can be reduced with local production of RUTF using local ingredients and alternative recipes suiting local conditions also. Production and procurement of adapted therapeutic foods for acutely malnourished children will ensure that SAM children without medical complications could be treated at the community level and SAM children with medical complications discharged from MTCs/NRCs after hospitalization will continue to receive proper therapy until their complete recovery.

CMAM as an integrated approach

The CMAM approach aids to create long-term community-based therapeutic care programme, decentralizes malnutrition care and treatment, increases the coverage and ensures that timely and appropriate care is easily accessible to all malnourished children residing even in isolated areas. Also, one needs to clearly understand that the CMAM is an integrated approach which on one hand focuses on treatment and on other prevention. CMAM has a strong component of community mobilization which is a key for prevention. One might argue that the case load of wasting and in particular SAM and total load of under-nutrition is minuscule than is it worth to invest resources in treating this situation. Apparently, the case load may be small but the mortality risk is very high. SAM children are 11.6

times more at higher risk to die early as compared to normal children, from a condition, which is easily treatable, and preventable.¹³

Prioritize high burden areas

The selection of the areas where a CMAM project is to be implemented is critical as it directly influences the implementation and outcome of the project. The most recent available data, usually at the national level is considered to be the base for the selection of the areas. However, CMAM needs to be prioritized in areas with high prevalence of acute malnutrition and where risks and aggravating underlying factors are known or are anticipated to have a strong influence on under-nutrition locally. Specific attention is to be laid to localized pockets of under-nutrition in larger geographic areas. Nutritional surveys, like the Standardized Monitoring and Assessment of Relief and Transition (SMART) survey, is considered as a great tool to collect good quality and accurate information on nutrition status that produces a representative, accurate and precise estimate of acute malnutrition (wasting), chronic malnutrition (stunting), underweight and retrospective mortality.

SMART survey methodology is a simplified and rigorous method to assess levels of malnutrition in any geographic area (Developed by Action Against Hunger and Centre for disease control and prevention). Subsequently, these indicators help in proper planning and designing of the programme by clearly giving the caseloads based on which proper resource allocation can be done in terms of the procurement, logistic and HR support resulting in better budgeting and programming. The SMART survey can also serve as an evaluation to reflect the change in prevalence of malnutrition and under-5 mortality in the area as an impact of the programme and take an informed decision on the need to continue the programme. Therefore the indicators gathered through the SMART methodology provide the best available validated data that can be used for effective decision-making and resource allocation (Note: There were SMART surveys conducted in Odisha, Madhya Pradesh and Rajasthan by Action Against Hunger (ACF)/Fight Hunger Foundation (FHF), in Jharkhand by MSF and UNICEF, in Maharashtra by UNICEF and FHF and in Kerala by UNICEF and technically supported by ACF/FHF).

CMAM programing based on the multi-sectoral nutrition sensitive analysis

Although tackling acute under-nutrition (wasting) is a priority under CMAM, however, programming should also look at all forms of under-nutrition in a particular setting, understand their relationships, and when possible addresses under-nutrition comprehensively. Therefore, in addition to prioritizing the areas, it is important to base the CMAM on the critical analysis of key causal factors of under-nutrition, such as how they interact together, and the identification of the most “at-risk population”. The

Nutritional Causal Analysis (NCA) approach can be instrumental in getting an insight into the causes suggesting possible pathways in addressing the issue.

A Mid-course correction is critical

A mid-course correction is imperative as it allows one to track the progress of the programme. It helps the implementer to make necessary adjustments to the activities for better results. Measuring coverage of a CMAM programme through a Semi-Qualitative Evaluation of Access and Coverage (SQUEAC) survey helps in determining the effectiveness of a CMAM project in a given area. The methodology is a semi-quantitative method, i.e. a mixture of quantitative (numeric) data collected from routine activities, as well as qualitative data collected from informal group discussions and interviews. The SQUEAC methodology helps assess the barriers and boosters related to the CMAM implementation which is a very useful tool to guide and facilitate mid-course correction, ensuring the success of the programme.

Dual Criteria of diagnosis is vital

An early and a correct detection enable one to provide timely and appropriate care, based on the nutritional status of the children determined by anthropometric measures are used as proxy indicators. The most commonly used indicators to assess acute malnutrition are Mid Upper Arm Circumference (MUAC) and Weight for Height Z-score (WHZ) (i.e. standard deviations from a reference population median for a given sex); however, they do not always identify the same children and the proportions identified using both methods vary between regions and countries.¹⁴ Screening based on the MUAC and Weight for Height (WFH) criterion for admission and discharge from a CMAM programme is critical for the success of programme which also ensures that maximum SAM children are targeted. As per studies conducted by Grettley and Das in India at least 60-70% of the children acknowledged as being SAM (definition endorsed by the WHO as well as the Indian Paediatrics Association-IPA) are not identified with MUAC<115mm. This means that the vast majority of this public health issue/caseload will be missed if we are only using MUAC at such a cut-off to identify SAM cases and refer them to treatment. Also, the WHO and UNICEF clearly identifies the equal mortality risk with low WFH and low MUAC. IPA in its consensus statement and The WHO is still recommending the use of WHZ<-3 as an independent criterion to identify SAM cases, together with other independent criteria such as MUAC<115mm and bilateral pitting oedema.

Prevention is imperative

Going by the causal framework for malnutrition; it mandates that the treatment essentially is complimented with a prevention approach. Considering the multi-causal nature of malnutrition and the risk; it is important to have

a multi-sectoral response. Clinical treatment is important to reduce the mortality but has to be integrated with prevention to avert adding numbers of SAM children. Not only do the Health and WCD departments need to work together to ensure this, but other departments such as Public Health Engineering, Education, Rural Development, Panchayati Raj, PDS, and Agriculture should as well too.

Community mobilization: A key to successful CMAM

Lately, a lot of emphasis is being given to community mobilization at all the sectors as community mobilization has been proved to be an effective mandate to optimize outcomes of a programme and create sustainability afterwards. It reinforces a sense of ownership by the community and their involvement results in the greater good of the programme as well. Many best practices from within the community create opportunities for sustainability and prevention of malnutrition at large.

Mental health perspectives on continuum of care

A child's nutrition and growth are contingent upon a continuum of care afforded by caregivers, usually mothers as primary caregivers and other family members as caretakers of both the mother and the child. Re-nourishing children with SAM using extensive protocols of CMAM approach should equally invest in re-establishing emotional affective links between the child and the parents. Inadequate family resources, maternal depression, or difficulties in finding time to devote to the child may affect the quality of care provided. As a result, the child's health is undermined by severe weight loss and developmental setbacks with reference to sensory-cognitive and psychomotor abilities.

An in-depth assessment of beliefs, practices, psychological status, and socio-cultural relations within the community helps design appropriate participatory interventions that optimize maternal and child well-being. Programmes supporting adequate educational practices pertaining to early child stimulation and basics of responsive parenting emphasize upon bridging cognitive and motor deficits accompanied alongside malnutrition in the child. It's more about thriving than merely surviving, which could further prevent the child getting into the vicious cycle of malnutrition. Such programmes focus on the mother-child dyad, but also include members of the family or the community, enhancing mother's support networks.

A Convergent action is obligatory

Involving all government departments and development partners that relate to malnourished children and their families is essential so that efforts can be coordinated.

All feeding programmes such as the PDS, Anganwadis and State programmes that address malnutrition should

be well coordinated in order to ensure food and care reach the neediest children.

Community action and involvement are necessary. Involving caregivers in planning processes for identification, treatment, and prevention of malnutrition is important. Without this, there will be no change in the statistics.

Involving media constructively can be a very good platform not only to create dialogue around the issue but built a momentum and engage public and policy makers positively.

Media sensitization workshops and workshops with policy maker during a POSHAN programme and subsequently with the active involvement of media have been influential to take the agenda forward and create a push for scaling up of the programme.

Multi-stakeholder roles and accountabilities

This is an era of consortiums and coalitions and truly the need of the hour for creating the enabling environment towards larger development issues. The focus is to bank on the strengths of relevant stakeholders and partners for catering to the larger global or a regional need so as to scale and replicate sustainable solution being demonstrated as best practices or pilots across the globe or through a specific geographical lens. In times like these, consolidation, universal knowledge management and a cohered effort to bring about political willingness, accountability and commitment are the epitome need while defining the success metrics on any effort or interventions at a large-scale, evidence-based advocacy and research play a vital role to put pieces of the puzzle together.

The need for all the actors pertinent to integrated management of severe acute malnutrition and the Right to Food campaigns along with critical decision makers in the government and the governance system should work towards and push for:

- A strategic partnership, collaboration, alignment, and action on common shared goals and objectives through well-defined process and protocols so as to avoid bias and preconceived notions
- Well-defined and sustained political commitment at global, regional, national and subnational levels.

Institutionalize mechanisms for knowledge management for:

- Creating learnings from already successful models under practice demonstrating impacts
- Collective knowledge sharing on replication and scalability of successful models cutting across themes and sectors
- Technical support and advisory

- Process documentation on best practices and their dissemination for replication and scale
- Hand holding for efficient and quality assured operations and management
- Universalize, uniform impact and outcome driven model for application and redress
- Creating a platform for dialogue, interaction, sharing, and redress
- Create a structured process for generating financial resources (CSR as an opportunity) and their allocations through diverse business models, process, and mechanisms across the governance tiers.

Capitalizing on the available windows of opportunity through:

- Collective action towards creating uniform policies, protocols, and guidelines, strengthening of existent mechanism or reforms
- Creating a voice through evidence and research (Common tools and approaches) based positioning and advocacy at national, regional and global levels
- Scaling up on Nutrition Movement through strengthened campaigns and relevant approaches
- Building government ownership and accountability for replication and scale.

Working towards defining protocols for convergence across:

- Specific ministries and departments for an integrated action towards redressing the causal factors of nutrition insecurity
- Integration of already existent multi-sector networks and coalitions.

CONCLUSION

Severe acute malnutrition is a medical condition that requires immediate treatment like any other life-threatening condition. However, across India less than 1% of children with SAM receive the treatment that they desperately need to recover. RUTF is a treatment for uncomplicated severe acute malnutrition and not a cure-all for all forms of childhood under nutrition. RUTF is a medicine not a substitute for food and like any other medicine, its distribution and use must be strictly regulated. Also, the treatment and prevention of acute malnutrition must not be viewed as competing priorities but as concerted efforts, much like the treatment of any other illness (malaria, tuberculosis, HIV,) where it is inconceivable to focus only on prevention without treating already affected people and prevent them from dying. CMAM as an approach realises that SAM treatment as for any other disease is not a sustainable solution and must be accompanied by preventive interventions. CMAM has 4 pillars or components and one of the pillars is the community mobilisation which

entails strategy and interventions promoting prevention of under nutrition.

The scale-up of CMAM should, therefore, be in conjunction with (and not replaced) interventions that covers all forms of under nutrition. Prevention of under nutrition in all its forms is best undertaken through well-established multi-sector approach involving food security-expanding access to high quality foods, improved water and sanitation facilities, quality health care, integration of management of childhood illnesses optimal infant and young child feeding practices, addressing care practices and better knowledge of nutrition, health, and hygiene practices in communities which are needed to make a lasting impact, prevent the development of acute malnutrition and reduce the influx/caseload of SAM patients in the first place. Thus the treatment of millions of malnourished children from this life-threatening disease that is severe acute malnutrition is as pressing a need as the prevention of further under nutrition through a holistic and integrated approach.

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