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Summary Report

Hedwig Deconinck, Paluku Bahwere,
Serigne Mbaye Diene, Diane de Bernardo,
Pierre Adou

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This report is made possible by the generous support of the American people through the support of the Office of Health, Infectious Diseases, and Nutrition, Bureau for Global Health, United States Agency for International Development (USAID), under terms of Cooperative Agreement No. AID-OAA-A-11-00014, through the FANTA-2 Bridge, managed by FHI 360.

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Published October 2011

Recommended Citation

Deconinck, Hedwig; Bahwere, Paluku; Diene, Serigne Mbaye; de Bernardo, Diane; Adou, Pierre. 2011. *Review of Community-Based Management of Acute Malnutrition Implementation in West Africa: Summary Report*. Washington, DC: FHI 360/FANTA-2 Bridge.

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Acronyms

ACSI	Accelerated Child Survival Initiative
CBO	community-based organization
CHW	community health worker
CMAM	Community-Based Management of Acute Malnutrition
COGES	Comité de gestion (Health Management Committee)
CPS/MS	Cellule de Planification et de Statistique du Ministère de la Santé
DCHA/OFDA	USAID Bureau for Democracy, Conflict, and Humanitarian Assistance, Office of U.S. Foreign Disaster Assistance
DN	Directorate or Division of Nutrition
DNSI/MEIC	Direction Nationale de la Statistique et de l'Informatique du Ministère de l'Économie, de l'Industrie et du Commerce
ENA	Essential Nutrition Actions
FANTA-2	Food and Nutrition Technical Assistance II Project
GAM	global acute malnutrition
GMP	growth monitoring and promotion
HIV	human immunodeficiency virus
IMCI	Integrated Management of Childhood Illness
INS	Institut National de Statistiques
IP	implementing partner
IYCF	infant and young child feeding
km	kilometer(s)
M-MAM	management of moderate acute malnutrition
M-SAM	management of severe acute malnutrition
M&R	monitoring and reporting
MAM	moderate acute malnutrition
MDG	Millennium Development Goal
MICS	multiple indicator cluster survey
MOH	Ministry of Health
MUAC	mid-upper arm circumference
NGO	nongovernmental organization
NHIS	national health information system
QI	quality improvement
REACH	Renewed Efforts against Child Hunger
RUTF	ready-to-use therapeutic food
SAM	severe acute malnutrition
SBCC	social and behavior change communication
SMART	Standardized Monitoring and Assessment of Relief and Transition
SQUEAC	semi-quantitative evaluation of access and coverage
SUN	Scale Up Nutrition
U.N.	United Nations
UNSCN	United Nations Standing Committee on Nutrition
USAID	United States Agency for International Development
VCT	voluntary counseling and testing
WARP	West African Regional Program
WFP	World Food Programme
WHO	World Health Organization

Executive Summary

This report summarizes the findings of reviews of Community-Based Management of Acute Malnutrition (CMAM) in four West African countries (Burkina Faso, Mali, Mauritania, and Niger) that were conducted between October 2009 and October 2010. The goal of the review is to examine CMAM implementation practices and make recommendations to continue supporting CMAM integration, scale-up, and quality improvement (QI). Much progress in the integration and scale-up of CMAM has been achieved thanks to increased support from governments, United Nations (U.N.) agencies, implementing partners (IPs), and donors. The importance of CMAM in preventing death during and after the recent food security and nutrition crises was recognized, but quality concerns limited the overall impact of CMAM on childhood mortality and reduced its contribution toward the achievement of the Millennium Development Goal (MDG) objectives.

This report discusses the key determinants to achieving maximum impact of CMAM integration, scale-up, and QI, which are grouped in five domains: the enabling environment for CMAM, competencies for CMAM, access to CMAM services, access to CMAM supplies, and quality of CMAM. For each key determinant, optimal practices, a summary of findings, constraints, and practical recommendations for the Ministry of Health (MOH); U.N. agencies; academic, research, and training institutions; nongovernmental organizations (NGOs); and donors are provided.

MAIN FINDINGS

The main findings are summarized below.

- The Enabling Environment for CMAM
 - Governments recognize the impact of nutrition on development, and hence are in favor of scaling up nutrition. Consequently, major steps to improve the political and policy environment for nutrition in general, and CMAM specifically, have been taken.
 - High-level bodies have been created or are being created, ensuring national political leadership in nutrition. Multisectoral coordination and links between the different bodies and entities to promote a comprehensive approach to address recurrent food security and nutrition crises have been discussed but have not been well established.
 - The MOH/Directorate or Division of Nutrition (DN) increasingly plays a lead role in coordination and technical expertise for CMAM, but its capacity still needs to be strengthened at the national, subnational, and district levels.
 - The coordination and technical leadership role of the MOH is supported by UNICEF and IPs; the MOH receives intermittent support from imported international expertise or temporarily available experts or individuals and has not institutionalized learning and capacity strengthening. This stopgap approach does not promote a long-term, sustainable, and comprehensive strengthening of national expertise and learning.
 - Recurrent food crises have promoted integration and scale-up of CMAM, despite having limited advocacy systems in place for CMAM.

- Competencies for CMAM
 - The in-service cascaded training strategy for CMAM that was initially established is still being used as a method of strengthening competencies, but is not part of a comprehensive and sustainable capacity strengthening strategy.
 - No standardized and adapted training materials are used.
 - The training strategy is effective in quickly reaching out to a large base of health care providers who are then tasked with implementing CMAM.
 - Concrete steps to integrate CMAM into the pre-service training have started.
 - Learning sites are not yet intentionally established. However, a few sites have started playing the role of learning site and a few sites could be promoted to playing that role.
 - While some excellent and promising practices are being implemented or tested, there is still only limited documentation, information sharing and use of lessons learned from these

opportunities, despite the often-expressed need and eagerness for learning and accessing information.

- Access to CMAM Services
 - With integration and scale-up of CMAM that had gradually started in 2005, a very good geographical coverage has been reached for the management of severe acute malnutrition (SAM), except in remote areas or places with mobile populations.
 - The management of moderate acute malnutrition (MAM) is spotty and not integrated as a routine health service, but is well supported by the World Food Programme (WFP) and IPs in areas with food insecurity.
 - Community outreach remains weak and is largely conducted by IPs with expertise in nutrition, as part of their development programs.
 - The shortage of qualified and trained staff and the financial constraints faced by the governments to hire health personnel undermine the progress that has been made in the integration, scale-up, and QI of CMAM.
 - The informal health system plays an important role in the care of acute malnutrition, but is largely ignored.
- Access to CMAM Supplies
 - A national supply system for CMAM is not in place, but strengthened support is provided by UNICEF, WFP, and IPs to limit supply outages.
 - Innovative supply management support systems are being piloted and could provide some promising lessons on how to strengthen the supply system.
- Quality of CMAM
 - Besides the national guidelines, there are few standardized tools and job aids available to health managers, trainers, and health care providers.
 - There are concerns about the accuracy of the monitoring and reporting (M&R) system and application of the M&R system has not been harmonized. But discussions for improvement have started.
 - Within the context of an integrated CMAM, maintaining the quality of services is a continuous challenge and the need for QI approaches has been expressed.

CONSTRAINTS

Constraints are summarized below.

- The Enabling Environment for CMAM
 - There is limited national policy support and guidance for CMAM and integrating and linking with multisectoral coordination initiatives.
 - There is a limited advocacy capacity and no comprehensive advocacy plan for sustaining national and international commitment and funding.
 - There is limited institutionalized capacity at the national and subnational levels to ensure management and technical leadership.
 - There is limited effective coordination and technical leadership among government, humanitarian, and development organizations, and academic and training institutions.
- Competencies for CMAM
 - There is no comprehensive and sustainable strategy for the overall strengthening of capacities for CMAM.
 - Academic institutions are peripherally involved in in-service capacity strengthening, and there is insufficient training in management of acute malnutrition in pre-service training.
 - There is limited national expertise to strengthen and adapt protocols and develop comprehensive standardized training methods and tools adapted to the national context.

- Access to CMAM Services
 - There are persistent geographical, financial, and socio-cultural barriers to accessing CMAM.
 - There is limited investment in the community outreach component of CMAM.
 - There is a shortage of qualified health workers in the national health system.
- Access to CMAM Supplies
 - The MOH has limited responsibility for the CMAM supply system.
- Quality of CMAM
 - There is limited emphasis on improving the quality of community outreach, outpatient care for SAM, inpatient care for SAM with medical complications, management of MAM (M-MAM), and management of services.
 - Although the routine surveillance system is effective in reporting caseloads, it is significantly less so in demonstrating CMAM performance and in using the findings to improve the implementation strategy.

RECOMMENDATIONS

Recommendations are summarized below.

- The Enabling Environment for CMAM
 - Initiatives to endorse and promulgate policy documents that are favorable to the integration, scale-up, and QI of CMAM should be encouraged.
 - Similarly, coordination and technical leadership in CMAM at the national, subnational, and district levels should be supported.
 - Efforts to raise the profile of nutrition within the MOH should continue all the way down to the lowest level.
 - Nutrition services should be incorporated into the appropriate divisions/departments of the MOH at all levels.
 - An advocacy system for nutrition, including CMAM, should be supported.
- Competencies for CMAM
 - Support for a comprehensive strategy for developing technical capacities and expertise should be encouraged and should include integrating CMAM in pre-service training, improving in-service training and continuous mentoring, establishing learning sites with quality care that become national centers of advanced learning, and encouraging national and facilitating international learning visits.
 - Documentation and information sharing systems should be set up and should be accessible to all.
 - Involvement and/or links with national and international experts and discussion forums should be encouraged.
- Access to CMAM Services
 - To further improve access to CMAM services, expansion of inpatient care and further decentralization of outpatient care should be encouraged.
 - Links between the network of community outreach workers and the health system should be strengthened, and synergetic collaborations between the formal and the informal health systems should be established.
- Access to CMAM Supplies
 - The CMAM supply systems should be strengthened and should reach the lowest levels of the health system involved in CMAM.
 - Innovative and sustainable systems should be explored to prevent supply stocks from running out.

- Quality of CMAM
 - QI of CMAM should be a key priority. A continuous QI approach should be adapted and/or developed and field tested.
 - National guidelines should be updated and reflect most recent evidence and promising practices.
 - Training materials, job aids, and M&R tools should be adapted and/or developed, and access to global CMAM tools should be facilitated.
 - Routine M&R systems should be standardized and simple so that accurate and precise information is made available and should be compatible with global M&R systems so that comparison between countries remains viable.
 - CMAM performance should feed into nutrition surveillance and national health information system (NHIS).

Specific recommendations for donors, U.N. agencies, and IPs are summarized below.

- Emergency donors and IPs should view CMAM as a disaster risk reduction activity in countries that have endemic crisis levels of acute malnutrition or that are prone to recurrent shocks.
- Emergency and development donors and IPs should therefore strengthen durable capacities by supporting the integration, scale-up, and QI of CMAM services within governmental structures and national institutions and into the national health system.
- In-country technical expertise should be strengthened in a sustainable way.

Introduction

The United States Agency for International Development (USAID), Bureau for Democracy, Conflict, and Humanitarian Assistance Office of U.S. Foreign Disaster Assistance (DCHA/OFDA) has been supporting the management of acute malnutrition through the West African Regional Program (WARP) in the Sahel since 2005. DCHA/OFDA requested assistance from the Food and Nutrition Technical Assistance II Project (FANTA-2) to review the state of Community-Based Management of Acute Malnutrition (CMAM) in four West African countries (Burkina Faso, Mali, Mauritania, and Niger) to help identify DCHA/OFDA program priorities, including those where DCHA/OFDA investments should be directed to support CMAM. The goal was to review CMAM program implementation, including institutionalization and promising practices, and its integration into national health systems to provide DCHA/OFDA with a status report for each country; highlight lessons learned; and make recommendations on challenges, promising practices, gaps, and priority areas for DCHA/OFDA support. In Niger, the review also assessed the government's and partners' responses to the 2010 food crisis. The review was intended to provide DCHA/OFDA with information for its program planning processes and potentially as an advocacy tool to guide other donors in planning CMAM support in the region. It is the authors' hope that findings from the review will benefit communities, program managers, and governmental and nongovernmental organizations (NGOs) involved in community-based nutrition interventions in the Sahel region. This report synthesizes the main findings from the four countries.

BACKGROUND

Situation of Acute Malnutrition

The Sahel is one of the poorest regions of the world. In the past decade, the region has faced repeated natural disasters, including droughts, locust outbreaks, and floods. Consequently, most countries of the Sahel, including Burkina Faso, Mali, Mauritania, and Niger, have a history of both endemic hunger characterized by seasonal fluctuations and repeated acute food crises. The prevalence rates of global acute malnutrition (GAM) in children have remained at critical levels (defined by the WHO as 15 percent of the population) for at least a decade, and have increased above the critical level during the hunger seasons and food crises. Because of the high prevalence of GAM, sub-optimal infant and young child feeding (IYCF) practices, high morbidity coupled with poor access to essential health services and safe drinking water, and rapid population growth, the absolute number of children suffering from acute malnutrition has increased over the last 10 years, affecting mainly children aged 6 months to 2 years. Both children living in rural areas and those living in urban areas are affected, and high rates are found even in some areas classified as less food insecure. In 2010, it was estimated that 1.5 million children under 5 years of age suffered from acute malnutrition. In that same year, UNICEF estimated that 859,000 children under the age of 5 in Burkina Faso, Mali, Niger, Northern Nigeria, and Chad needed urgent life-saving treatment for severe acute malnutrition (SAM).¹ In the Sahel, where one in five children dies before the age of 5, acute malnutrition is the direct or indirect cause of more than 50 percent of child deaths (~225,000 child deaths out of the total 449,000 annual child deaths).²

This situation applies in all four of the countries in this review. Although the prevalence of SAM is alarming in each, the actual GAM rates vary from one country to another. The latest national GAM rates at the time of the review are 23.0 percent for Burkina Faso,³ 13.0 percent for Mali,⁴ 11.9 percent for Mauritania,⁵ and 16.7 percent for Niger.⁶

¹ UNICEF. 2010. Child Malnutrition in the Sahel Region.

² UNICEF. 2006. Consolidated Appeal Process.

³ UNICEF Multiple indicator cluster survey (MICS). 2007. http://www.unicef.org/statistics/index_countrystats.html.

⁴ Cellule de Planification et de Statistique du Ministère de la Santé (CPS/MS), Direction Nationale de la Statistique et de l'Informatique du Ministère de l'Économie, de l'Industrie et du Commerce (DNSI/MEIC), and Macro International Inc. 2007. Enquête Démographique et de Santé du Mali 2006.

⁵ UNICEF MICS. 2007. http://www.childinfo.org/mics3_surveys.html.

⁶ Institute National de Statistiques (INS), Niger. 2010. Rapport de l'enquête nutrition et survie des enfants de 6 à 59 mois, mai-juin 2010.

History of the Management of Acute Malnutrition in the Region

In most of the countries visited for the review, the management of acute malnutrition was not standardized until recently. In all four countries, the first standardized national guidelines for inpatient care were developed in the early 2000s. Understandably, these guidelines covered only inpatient care for treatment of SAM until full recovery based on 1999 World Health Organization (WHO) recommendations. The CMAM approach, adopted by WHO, UNICEF, the World Food Programme (WFP), and the United Nations Standing Committee on Nutrition (UNSCN) in November 2005, was included in a revised version of the guidelines developed by these countries in late 2006. In 2010, the CMAM approach was still relatively new, and the countries were at different levels of integrating and scaling up CMAM, ranging from limited to advanced.

OBJECTIVE OF THE REVIEW

The objective of the review was to:

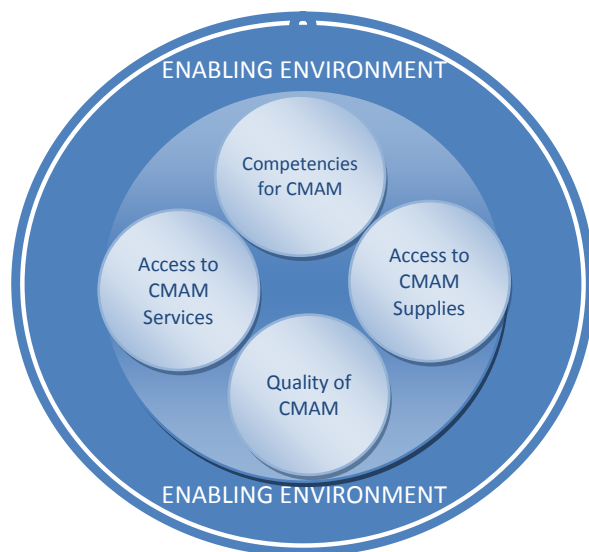
- Examine the overall status of CMAM implementation in Burkina Faso, Mali, Mauritania, and Niger, and to provide a status report of CMAM efforts in each country.
- Examine the performance and effectiveness of CMAM programs. If there are insufficient data, develop recommendations for strengthening monitoring and reporting (M&R) systems.
- Analyze the relevance of DCHA/OFDA-funded activities and the extent to which these activities are helping to support viable national health systems.
- Identify challenges, opportunities, gaps, promising practices, and lessons learned in CMAM implementation in each country.
- Make recommendations to DCHA/OFDA on how to address challenges, pursue opportunities, fill identified gaps, and identify promising practices that should be incorporated into other programs, and build on lessons learned in the region and globally.

METHOD

The review consisted of country visits and document reviews. The country visits offered the opportunity for field visits with direct observation of CMAM services; semi-structured interviews with key informants at the national, regional, district, and community levels; and discussions with health managers and health care providers, community-based volunteers, community leaders, beneficiaries, and non-beneficiaries. The review team met with representatives of all relevant stakeholders, including national governments, United Nations (U.N.) agencies, NGOs, and community-based organizations (CBOs). The document reviews consisted of examination of existing nutrition policy and strategy papers, national protocols, evaluation reports, program reports, and available performance information.

Document review and field visit inquiries focused on key elements of the CMAM framework, developed by FANTA (FANTA-2's predecessor program) during a 2007 three-country review of CMAM integration. The CMAM framework groups elements that are critical to successful CMAM integration, scale-up, and quality improvement (QI) into five domains: the enabling environment for CMAM, competencies for CMAM, access to CMAM services, access to CMAM supplies, and quality of CMAM (Figure 1).

Figure 1. Domains of CMAM Integration



This report discusses the key determinants to achieving maximum impact of CMAM integration, scale-up, and QI. For each key determinant, optimal practices, a summary of findings, constraints, and practical recommendations for the Ministry of Health (MOH); U.N. agencies; academic, research, and training institutions; NGOs; and donors are provided.

Instead of analyzing the relevance of only DCHA/OFDA-funded activities for CMAM and the extent to which these activities are helping support viable national health systems, the scope of the reviews was broadened and analyzes overall support for CMAM.

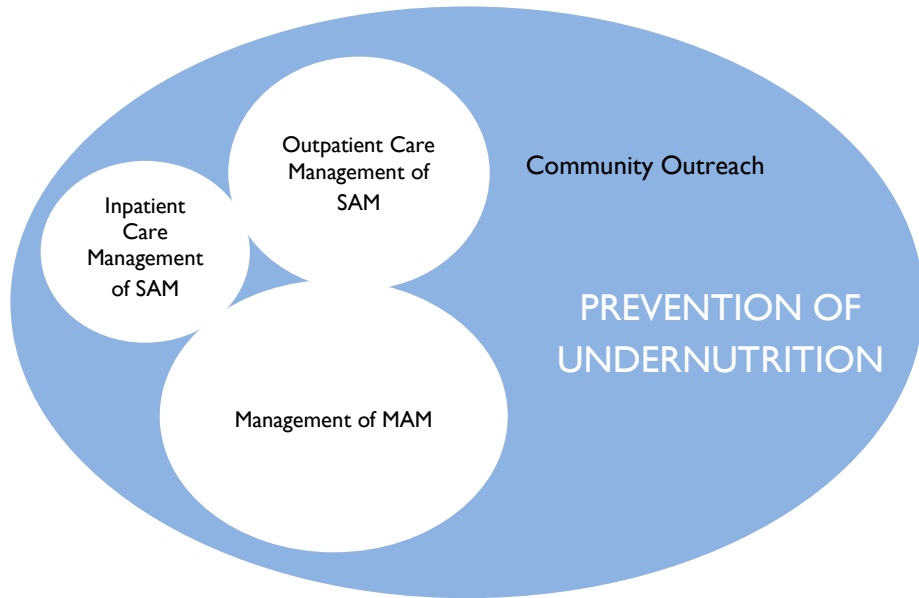
The FANTA-2 team that conducted the review included Hedwig Deconinck, Senior CMAM and Emergency Nutrition Advisor; Paluku Bahwere, CMAM and HIV and Nutrition Advisor; Serigne Mbaye Diene, Senior HIV and Nutrition Advisor; Diane De Bernardo, CMAM and Emergency Nutrition Specialist; and Pierre Adou, HIV and Nutrition Advisor.

DESCRIPTION OF CMAM

CMAM is a comprehensive approach for the management of acute malnutrition that includes the management of severe acute malnutrition (M-SAM) in outpatient care (for children 6–59 months with SAM without medical complications); M-SAM in inpatient care (for children 6–59 months with SAM and medical complications and children under 6 months of age with acute malnutrition⁷); the management of moderate acute malnutrition (M-MAM) (for children 6–59 months with moderate acute malnutrition [MAM]); and community outreach for community involvement, early detection and referral of cases for treatment, and follow-up of problem cases. The different components are presented in Figure 2.

⁷ Diagnostic criteria of wasting in infants under 6 months are under discussion. Current classification of acute malnutrition in infants under 6 months and admission criteria for inpatient care are based on the presence of bilateral pitting edema and/or signs of visible wasting. See: Kerac, Marco et al. 2011. "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." *BMJ*. Available at <http://www.adc.bmj.com/content/early/2011/02/01/adc.2010.191882.full>.

Figure 2. Components of CMAM Presented in the Overall Context of Nutrition



Review Summary of CMAM in Four West African Countries

THE ENABLING ENVIRONMENT FOR CMAM

Government and Ministry of Health Leadership

- **Optimal Practices**
 - Governments and the relevant ministries, particularly the MOH, show commitment and are actively involved in activities related to the prevention and management of acute malnutrition and are integrating CMAM into policy making and strategic planning; setting standards; and allocating human and financial resources to promote CMAM integration, scale-up, and QI, and to link nutrition, including CMAM, with multisectoral nutrition and food security initiatives.
- **Synthesis of Findings**
 - Stakeholders recognize the negative impact of nutrition on the progress of development, and nutrition has been prioritized in the government developmental agendas. High-level bodies have been created or will be created to ensure national political leadership in nutrition. Nevertheless, there is significantly less emphasis on the management of acute malnutrition than there is on addressing food security. There are no well-established linkages with multisectoral nutrition and food security initiatives, except where there is the Renewed Efforts against Child Hunger (REACH) initiative. There are no national plans for significantly increasing the human and financial resources for the management of acute malnutrition using the national budget or the common donor's basket. There have been several initiatives to endorse and promulgate policy documents that were favorable for the scale-up of CMAM, but they have not yet been successfully implemented. Efforts to raise the profile of nutrition within the MOH had limited impact as the profile of nutrition at the peripheral level of the health system remains low.
- **Constraints**
 - The high-level commitment has not yet translated into concrete action plans for integration, scale-up, and QI of CMAM.
- **Recommendations**
 - Preventive nutrition interventions should be central to government nutrition plans, but children with MAM and SAM who failed to benefit from these preventive interventions should also receive sufficient attention. The Directorates and/or Divisions of Nutrition (DN) and their national and international partners should be encouraged and supported to use all means and forums to advocate for more attention to the management of acute malnutrition by governments and high-level, specialized bodies. Updating the national nutrition profiles and increasing the involvement of the relevant governance bodies will assist with changing opinions on nutrition and recognizing the importance of CMAM.

Ministry of Health Coordination

- Optimal Practices
 - For the MOH to play a coordination role in CMAM integration, scale-up, and QI, nutrition coordination systems and CMAM technical task forces or working groups are established at the national and sub-national levels, with established terms of reference, including reporting lines, membership criteria, meeting schedules, and reporting and documentation requirements. The coordination system embraces coordination activities in development and emergency settings and includes relevant partners. Meetings are coordinated and chaired by MOH representatives. If needed, the MOH capacity for coordination is strengthened.
- Synthesis of Findings
 - During the emergency response of the past 5 years, a coordination mechanism for managing important funds and nutrition response activities involving many partners was needed quickly and was put into place. During this 5-year period, important steps were taken to reinforce coordination mechanisms and strengthen the role of the MOH.
 - The Nutrition Cluster, when it exists, takes on a major role in coordinating emergency nutrition interventions, but has not yet involved development nutrition partners.
 - A network of MOH nutrition focal points is set up at the different levels and strengthens the coordination of CMAM activities within the health system, across sectors, and with IPs. Despite the many multisectoral and sectoral coordination systems that were created, and various initiatives that were initiated, the nutrition coordination systems at national, subnational, and district levels are not well linked with food security systems, and strategies and activities are often organized in parallel and are not always compatible with one another. The success of the nutrition coordination mechanism depends on the individual doing the coordination rather than the mechanism being institutionalized. In Mauritania, the REACH initiative is in the process of establishing an overarching coordination framework for partners across sectors that is being replicated at the subnational level and that seemed very promising.
- Constraints
 - The coordination mechanisms are very results oriented and focus on saving lives and livelihoods. They focus less on creating a sustainable coordination structure and viable coordination process at the different levels. UNICEF has taken the lead role for coordinating nutrition interventions at the national levels, and partially at the subnational levels, and fills the role of nutrition cluster lead agency. UNICEF has invited the MOH to participate, but the difference in capacities (resources) means that MOH/DN personnel often remain bystanders.
- Recommendations
 - A simple review of the coordination systems at national, subnational, and district levels could highlight weaknesses and opportunities and inform stakeholders how to strengthen the coordination mechanism within the MOH and how linkages with preventive nutrition and food security programs across sectors should be strengthened. Roles and responsibilities, and collaboration tools and systems, should be defined, ensuring representation across sectors and from relevant partners. The coordination mechanism should cover both development and emergency response activities, to avoid duplication. Meetings should be coordinated and chaired by MOH representatives, and MOH capacity should be strengthened where appropriate (e.g., improved communication system, UNICEF support and mentoring, as in the example of co-coordination in Niger in the cluster approach).

Integration into Policy and Strategic Plans

- Optimal Practices
 - Prevention and management of acute malnutrition is listed among the countries' priorities, and relevant multisectoral bodies have included it in their policy and strategic plans. For the

MOH, CMAM is included in the national health and nutrition policies, and the integration, scale-up, and QI of CMAM is part of the strategic plans, annual action plans, and budgets. The CMAM integration and scale-up strategy and capacity strengthening strategy is in line with the overall nutrition strategy and the epidemiological profile of the countries. Policies and strategic plans cover all components of CMAM, and the linkages between components are addressed, regardless the responsible body.

- Synthesis of Findings
 - Nutrition is a priority for the MOHs who are in the process of integrating the prevention and management of acute malnutrition into their national health and nutrition policies and strategic plans. Governments recognize the management of acute malnutrition as a key intervention to accelerate progress toward achieving the Millennium Development Goals (MDGs). However, the national guidelines for the management of acute malnutrition are still the only document to comprehensively introduce CMAM and address policy-related issues.
 - The integration of M-SAM into the basic package of health services is promoted and is the main avenue through which CMAM integration into policy documents is taking form, but it does not always cover all components of CMAM.
 - M-MAM is usually separated from M-SAM, since the former has been implemented in food-insecure areas and the latter in areas with high SAM prevalence rates. At the implementation level, the MOH often has had limited involvement in M-MAM. Hence, SAM and MAM services do not always have established links and are not implemented in the same area, unless the same body is implementing or supporting both. In Mauritania, the MOH does not have the mandate for M-MAM, and this creates strategic planning problems at the national level (although less so at the subnational and district levels because partners are more closely linked by a coordination system that is in the process of being improved through REACH).
 - The community outreach component is not usually part of a strategy, but rather relies on implementing partner (IP) involvement. The oversight of community outreach for CMAM at the national, Subnational, And district levels has not come about despite the long history of involving community health workers (CHWs) in health outreach services, such as growth monitoring, health and nutrition education, and vaccination activities.
- Constraints
 - Community outreach for CMAM is weak and relies on IPs rather than exploring opportunities through existing health extension initiatives.
 - Defining and structuring the role of CHWs, community-based volunteers, and/or other community extension workers and the role of the Comité de gestion (COGES) (Health Management Committee) has been neglected, which constrains community mobilization for early presentation and increased CMAM coverage.
- Recommendations
 - The MOH, with technical support from community health extension experts, should develop a strategy and implement a plan for strengthening CMAM community outreach activities, building on and strengthening existing community structures and initiatives.
 - An evidence-based, cost-effective approach for M-MAM should be explored and adapted to the country-context and aligned with the prevention of acute malnutrition and M-SAM approaches.
 - Next, the MOH, with technical support, should strengthen the M-MAM component by developing a strategy and guidelines and by linking M-MAM with prevention and M-SAM, especially in countries prone to recurrent food insecurity and shocks. The role of community outreach workers for CMAM (CHWs, community-based volunteers, and/or other community extension workers) and the role of the COGES should be defined and structured. This will improve the likelihood of getting the community involved in early presentation and will increase CMAM coverage.

MOH Technical Leadership and Technical Support Mechanisms

- Optimal Practices
 - The MOH/DN has the capacity to develop and update national strategies, plans, standards, and tools for CMAM; strengthen capacities for the management and implementation of CMAM; support continuous QI approaches; promote information sharing and documentation; engage in providing operational evidence; and lead technical discussion and decision making. An MOH technical support mechanism (unit or team) functions as an operational technical support service that promotes the integration, scale-up, and QI of CMAM at the national, subnational, and district levels, and institutionalizes country-specific learning.
- Synthesis of Findings
 - There is no specific CMAM technical support mechanism or sustainable long-term strategy for capacity strengthening in place. A hasty training process, based on a cascaded training method, without standardized training materials or job aids is the most common approach. The pool of master trainers and supervisors includes MOH/DN personnel, clinicians with teaching experience, and subnational and district health officers and nutrition focal points.
 - Supervisors provide formative supervision and are involved in problem solving that is often beyond their skill set; hence, the overall impact of the supervision is limited.
 - The nutrition focal points are not always dedicated to nutrition activities full time and nutrition is not always their main assignment, which hampers their involvement and learning.
 - U.N. agencies and NGO IPs complement MOH technical capacity by having technical experts on their teams and working in collaboration with the MOH at national, subnational, and/or district levels in their impact area.
- Constraints
 - The main constraint is the lack of human and financial resources to create a base of expertise on CMAM at the national level at the critical moments of CMAM integration and scale-up. In the absence of a continuous mechanism for providing countries with technical expertise, the national pool of experts (trainers and supervisors) does not have a technical framework or structure to fall back on and therefore does not always get the chance to strengthen or consolidate their knowledge base as needed, which in turn restricts the MOH's ability to strengthen institutional capacity in a sustainable way. Most often, short-term and ad hoc expertise from U.N. agencies and IPs comes and goes, and the transfer of knowledge remains limited or confined within the U.N. agency or IP in its impact area and is often lost with staff turnover.
- Recommendations
 - For country-specific institutional learning of a new approach to take place and become sustainable, an initial period of capacity strengthening should happen through development of a capacity strengthening strategy and establishment of a capacity strengthening mechanism. The creation of a CMAM technical support mechanism at the DN to provide that support is advisable. The initial periods of integrating and scaling up a new health approach are critical moments for establishing standards of care on which capacity strengthening strategies are built; the integration and scale-up of these approaches require significant investment in human and financial resources.
 - Technical and financial support should create full-time positions at the national level to participate in the CMAM technical support mechanism, and at the subnational and district levels to support nutrition. The CMAM support mechanism could be temporary, supported by a highly qualified expert if necessary.
 - Technical support to CMAM should be balanced and comprehensive, providing support to all components equally, as one weak component will hamper the quality and effectiveness of the other components.

Advocacy for CMAM

- Optimal Practices
 - There are established systems with tools and sufficient resources for effective advocacy for CMAM.
- Synthesis of findings
 - The 2005 West Africa food crisis pushed Sahelian governments, the donor community, and IPs to recognize that the prevention and management of acute malnutrition is a priority. The crisis served as an opportunity to successfully advocate for increased support to national nutrition services in general. This translated into a significant increase in resources for CMAM implementation, and most nutrition partners, i.e., UNICEF, WFP, and health and nutrition IPs, included CMAM in their work plans for subsequent years.
 - With the exception of Burkina Faso, the MOH/DN, which is responsible for the coordination, integration, scale-up, and QI of CMAM has not been strengthened and is still lacking resources.
 - The UNICEF/MOH-facilitated courses on M-SAM and the subsequent orientation and cascaded trainings have been successful advocating tools for CMAM. Key policy makers, health managers, and health care providers have been oriented or trained and enabled to provide the care. The effectiveness of CMAM has subsequently turned health care providers, beneficiaries, and community leaders into strong CMAM advocates.
- Constraints
 - The absence of a formalized advocacy system for CMAM endangers the sustainability of funding for CMAM (also see below under “Sustainability of Funding”). CMAM is currently funded with emergency response funds and most of these programs are funded for only a very short period of time.
 - As a result of weak advocacy, health and nutrition IPs supporting long-term nutrition development programs have not been attracted to or encouraged to be involved in CMAM.
- Recommendations
 - The MOH, with technical support of an advocacy expert, should develop a formal advocacy system and plans with the aim of raising awareness for CMAM support.
 - Advocacy efforts should target high-level government officials, donors, and IPs.
 - Advocacy systems should include the production and dissemination of position papers, the organization of advocacy events, the updating of country nutrition profiles, and the allocation of resources for advocacy.
 - Lessons learned from the REACH approach that was being piloted in Mauritania could inform and strengthen the advocacy strategy.

National Guidelines

- Optimal Practices
 - National guidelines for CMAM have been developed and include an M&R system. There are also job aids specific to the different levels of use (i.e., management, inpatient care for SAM, outpatient care for SAM, M-MAM, and community outreach).
 - National guidelines are updated at certain intervals to reflect the latest evidence and promising practices. These guidelines set national standards that are adhered to by the MOH, U.N. agencies, and IPs. Exceptions are made for ethics committee-approved and MOH-informed scientific and operational research, pilot studies, and learning sites for new approaches that are being studied and field tested before promotion for strategy change, guidelines change, implementation, and/or nationwide scale-up.
 - Based on recent evidence, intermediate changes to some aspects of the guidelines are approved by MOH and made available to implementers. These changes, e.g., fast-tracking effective strategies based on this recent evidence or improving quality and effectiveness of a

- nutrition response to an emergency, could be considered before a guidelines review process is re-opened.
- National guidelines serve as an important technical tool to set standards and promote adherence to standards.
 - **Synthesis of Findings**
 - During an initial training, international experts shared a guidelines template that was adopted as the first or interim national guidelines for CMAM without adapting it to the country context or to country-specific systems and promising practices. These guidelines were later revised and improved, but they retained some errors and weaknesses, e.g., an overemphasis on inpatient care, too little emphasis on community outreach, and limited or no M&R.
 - Only a few job aids have been made available, and they are not always standardized and not always appropriate for use at the different levels of the health system.
 - The MOH/DN and partners recognized the technical weaknesses and a review process has started and/or is being planned for.
 - The guidelines are usually the sole reference document for the management, implementation, and training of health managers and health care providers on CMAM.
 - The dissemination of national guidelines, and subsequent participatory revision processes, coupled with the training of core trainers, have boosted the capacity of the MOHs and enabled them to strengthen capacities of trainers, health managers, and health care providers in planning, standardized implementation, and supervision. The review process has been implemented through an established network of national and subnational trainers and nutrition and health managers from the MOHs and IPs.
 - **Constraints**
 - The MOHs are lacking human and financial resources and are not able to fully lead and coordinate reviews of the guidelines. When the first national guidelines were developed, there was limited national expertise on CMAM. Consequently, various (national and international) experts, who have different opinions about the best approaches to use and different levels of expertise, were involved in the development and subsequent reviews. This sometimes hampers the review process and limits the quality of the review output.
 - The absence of a technical expertise mechanism in-country has reduced the ability of the MOH to comprehensively address the technical aspects of the program.
 - **Recommendations**
 - The MOH, with technical support from and in collaboration with a technical working group or task force, should lead the national guidelines revision process, with suggested changes based on thorough knowledge of the evidence base, a review of the performance of national services, and a review of lessons learned inside and outside the country. The revised version of the national guidelines with proposed changes should be presented and discussed in a national forum involving international experts and should include experience and information sharing; endorsing, amending, or rejecting the suggested changes; disseminating the new version of the guidelines; and advocating for including community screening for acute malnutrition as part of child survival and other community-based health and nutrition interventions.

National Data Repository

- **Optimal Practices**
 - A national CMAM data repository is essential to understand and follow trends of incidence and prevalence of acute malnutrition, monitor the quality of care, understand the burden on the health system, prioritize geographical areas, manage and plan for resources, and strengthen capacity. CMAM information assists in advocacy and in the planning and managing of resources for CMAM capacity strengthening.

- Synthesis of Findings
 - The M&R system for M-SAM usually feeds into a national data repository for SAM that is managed by UNICEF. The authors could not determine whether the data repository includes MAM or whether a body other than UNICEF/MOH is managing a similar data repository for M-MAM. While the burden of the M&R system is carried by the health managers and health care providers at the different levels of the health system, most commonly the information is channeled through a parallel system to be integrated into the UNICEF-managed database. Aggregated summary information is analyzed and released at intervals, but does not necessarily reach the managers at the subnational and district levels or the implementers in the health facilities, and does not systematically include performance indicator results or any analysis.
- Constraints
 - While there is a national data repository, the MOH has no direct access to it. Therefore, use of the information is restricted and not available at the lower echelon, depriving stakeholders of any opportunity to provide feedback and to use the information to improve their programs.
- Recommendations
 - The MOH, with technical support from an M&R and database expert, should manage and maintain the data repository at the national and subnational levels. This repository should receive accurate and precise information from a robust but simplified and therefore sustainable M&R system. The national and subnational MOHs should have direct access to accurate information for planning, managing, and advocating for CMAM and should be able to share the data with their partners and stakeholders.

Motivation and Accountability for Health Care Providers

- Optimal Practices
 - Roles and responsibilities for CMAM are included in the health manager's and health care provider's job descriptions, and supervision and job appraisal systems take these into account. This contributes to the staff's motivation and accountability.
- Synthesis of Findings
 - CMAM activities are already considered to be part of the basic health services package, though job descriptions of health managers and health care providers do not reflect that.
 - Roles and responsibilities of the different health actors and specific activities at each level of care, including the community, are described in the national guidelines.
 - Supervision of CMAM is not integrated into the supervision of other health activities, with the exception of a few districts. Thus, there is no system to hold health managers and health care providers accountable for the management of SAM. In these circumstances, accountability varies according to individual motivation.
 - Lack of motivators for health managers and health care providers is a well-recognized problem affecting national health systems. With donors pushing for rapid impact (humanitarian intervention projects generally have a 6–12 month time frame), the IPs circumvent the lack of motivators of the health system and top up the salaries of health care providers and/or provide incentives to CHWs. Some health care providers highlighted that job satisfaction comes with positive treatment outcomes, access to training that expands their knowledge base and builds self-confidence, and increased support from supervisors. If these key elements are present, they are or would be more motivating and enhance their accountability more than direct incentives do. These elements can be ensured only if they are institutionally recognized, thus part of the job description, and if they are included in annual work plans with a budget allocation.

- Constraints
 - Generally, there is no formal national functional appraisal system with defined job descriptions for health managers and health care providers. This is a barrier to improving the quality of health care services, including CMAM. Salary top-off and in-kind incentives provided by IPs are measures that can be temporarily effective but are not sustainable for national health systems, and staff expectations may damage working conditions in the long term.
- Recommendations
 - The MOH should explore and introduce a performance-based motivation system that does not immediately rely on additional funding.
 - The MOH should consider developing or updating job descriptions, with defined roles and responsibilities for CMAM, and establish a job appraisal system that would contribute to a person's motivation and accountability.

Sustainability of Funding

- Optimal Practices
 - The involvement of long-term development partners in CMAM funding and the inclusion of CMAM activities in the national budget are the most sustainable mechanisms for funding CMAM.
- Synthesis of Findings
 - Consistent with the growing prioritization of nutrition, direct allocations of the national budget to address acute malnutrition have increased. However, they are still too small to meet the need and primarily cover health care providers' salaries. Thanks to the strong donor interest in supporting emergency nutrition interventions in the region, a significant amount of resources are allocated for CMAM. Hence, CMAM is largely funded with emergency response funds, which results in programs with short funding lives, some with multiple short-term cost extensions, and others with interruption and renewal by other new short-term funding. This unpredictable funding means that U.N. agencies and IPs have to dedicate an inordinate amount of time and resources to fundraising efforts, dealing with funding restrictions, trying to maintain staff, and renewing proposals, instead on focusing on essential work.
 - Health and nutrition IPs and donors supporting long-term development programs are not yet involved in CMAM.
 - Health managers and health care providers welcomed the health care fee exemption for children under 5 and pregnant and lactating mothers, but they also believe that the health care system could collapse in the absence of adequate financial compensation of health facilities for the rendered services. In the meantime, emergency-funded IPs offer temporary and unsustainable measures to cover the gap.
- Constraints
 - The contribution of the national public sector budget to the management of acute malnutrition and other nutrition activities remains very small, and there are no strategic plans on how the budget could be increased to progressively absorb any costs currently paid by humanitarian donors. Moreover, the progressive changes of the cost-recovery system and the exemption for children under 5 and pregnant and lactating women affect income generation at the health facility level.
- Recommendations
 - The involvement of long-term development partners in CMAM funding and the inclusion of CMAM activities in the national budget should be encouraged and advocacy efforts should target these aims. The transition from emergency to development funding sources should be coordinated. The MOH, with technical and financial support from partners and donors, should

identify and establish a sustainable funding mechanism to compensate for the loss of income resulting from the provision of free care to children under 5 and pregnant and lactating women.

Free Treatment for Children under 5

- Optimal Practices
 - Most children under 5 with MAM or SAM are from deprived households. A policy for free health care services for children under 5, including those with SAM, is in place, the national health system is adhering to it, and the government is fulfilling its responsibility and compensating health facilities (i.e., health care providers) for the loss of income.
- Synthesis of Findings
 - National health systems have a user-fee system under a decentralized community-based model (Bamako Initiative) in place. Exemptions for user fees for children under 5 and pregnant and lactating mothers have recently been introduced by governments and are based on a nationally organized reimbursement system for provided care. Most funding agencies and health care providers are in favor of abolishing user fees for children under 5 and pregnant and lactating women. New policies and guidelines have started to reflect the free-services policy. For example, national guidelines for CMAM follow this policy and mandate free treatment for children under 5 with SAM.
 - The costs of nutrition supplies and its transportation are always met by external funding sources. UNICEF, WHO, WFP, and some NGOs make therapeutic (therapeutic milks, ready-to-use therapeutic food [RUTF]) and supplementary foods (ready-to-use supplementary food, and fortified-blended food), supplies, and drugs for systematic treatment available for free to national health systems.
 - Some IPs under their emergency support strategy in their impact area put in place an exemption for CMAM that includes subsidizing health facilities' functionality, paying drug bills, donating required supplies, and/or partially or entirely covering the cost of the treatment.
 - Important delays in reimbursement are common (some health facilities have not received reimbursement as much as 2 years after submitting a request), which renders the system useless and de-motivates health care providers.
- Constraints
 - As a result of a weak reimbursement system of the cost-recovery approach and frequent major delays in reimbursement, health facilities are finding it challenging to recover lost income. Moreover, the introduction of CMAM has usually been accompanied by an overall increase in health facility attendance, especially by children under 5, further burdening the cost-recovery system.
- Recommendations
 - While governments progressively move away from the user fees approach, the MOH and funding agencies should consider alternative approaches for compensating for the loss of income at the health facility level to ensure that the free-services policy for children under 5 with SAM or MAM or other common diseases is followed. MOH and IPs should assist health facilities in submitting justifications for cost-recovery in a timely fashion and strengthen the refund process.

COMPETENCIES FOR CMAM

Learning Sites

- Optimal Practices
 - Learning sites that cover all CMAM components are set up during the introduction and integration of CMAM. These sites receive intensive technical support and mentoring, and gradually expand to sites with expertise and quality care. These sites offer learning to visitors, accept interns, and have dedicated mentors appointed. CMAM expertise includes national and global knowledge of evidence-based and best practices, implementation skills and experience, and training and mentoring skills for CMAM.
 - Existing sites with CMAM components with expertise and quality care are also identified, supported, and used as learning sites.
 - Depending on the sustainability of technical and financial support, and by involving academic and training institutions, learning sites grow into centers of advanced learning and provide opportunities for research.
- Synthesis of Findings
 - The MOH's option for a cascaded training method that enhanced rapid scale-up of M-SAM has not resulted in the establishment of formal learning sites. Moreover, the basic training plan does not include the development of sustainable national expertise and no formal strategy for capacity strengthening is planned and budgeted for. Existing opportunities for learning have not yet been explored. Therefore, the MOH relies on U.N. agencies and IPs that continuously import short-term expertise. The need for such learning sites has been recognized and some existing sites that provide quality care have started to function as learning sites. For example, in Burkina Faso there is a district-learning site, in Mali there is a plan to start one formal learning site, and in Niger an existing site offers internships.
- Constraints
 - There are few established learning sites and limited CMAM management and implementation expertise on the national level. This has delayed sustainable learning and quality implementation of CMAM. It also means that technical support for and training on various CMAM aspects depends to a great extent on international experts.
- Recommendations
 - The MOH, with technical support from experts, should identify CMAM sites with good quality care of all or partial components of management and implementation. As part of the plan for strengthening capacities in CMAM, these formal learning sites should become centers of advanced learning that are linked with academic and training institutions where learning visits and internships are offered to institutionalize learning.

In-Service Training

- Optimal Practices
 - The MOH has a core team of expert CMAM trainers and mentors providing in-service training and mentoring.
 - Standardized and well-developed training modules for trainers and trainees are available covering theory and practical training, and are adapted to the different levels of use.
 - Learning sites (centers of advanced learning) for internships with expert mentors are available and used for in-service training.
 - A strategy for in-service capacity strengthening is in place, with links to academic and training institutions.

- Synthesis of Findings
 - M-SAM is introduced at the national level in a 6-day training by a team of international experts, targeting senior clinicians, senior health managers, and academics. The learning objectives of this training cover strengthening knowledge on the patho-physiology of SAM and clinical case management, but cover neither case management skills nor facilitator skills. Furthermore, learning objectives on outpatient care, community outreach, and M&R are limited to a superficial orientation. The same type of training is then repeated by the new trainees, who become trainers passing on the same knowledge in a cascaded training. A similar cascaded training method is in place for refresher trainings.
 - Standardized training materials do not exist with the exception of the national guidelines, a few job aids, and a set of slides that is used in various ways and are not adapted to the trainings of different levels of health professions. The trainings focus on transmitting knowledge without reinforcing skills. And the trainees have not received a facilitator training to become trainers.
 - Despite the disadvantages of these cascaded trainings, in a very short time an impressive number of health managers become trainers, different levels of health care providers receive training, and a good geographical coverage is achieved. The cascaded trainings allow rapid scale-up of CMAM within a short period, but have not guaranteed quality care.
 - While in-service training is planned for, in-service mentoring is neither part of a conceptualized strategy of capacity strengthening nor standardized, but is conceived as supportive supervision. Supervision focuses on reporting and supply management, and seldom covers mentoring on quality care or problem solving. NGOs collaborate with the MOH to provide supervision in their impact areas, and the mentoring aspect depends on the skill set of the supervisors involved. Temporary in-service mentoring has been organized by the Burkina Faso government in a few pilot districts.
 - One NGO in Niger provides internship opportunities in its inpatient care site that functions as a center of excellence.
 - The above initiatives are neither part of a defined plan for training clinical tutors/mentors, nor linked with and/or integrated in academic and training institutions, and therefore are not sustainable.
 - Besides the low-quality training tools and the limited and/or lack of mentoring or supportive supervision, other factors that affected the effectiveness of the training included mixing trainees with different backgrounds, insufficient supervisory visits, insufficient facilitation skills of the trainers, and the tendency of health care providers to consider training mainly as a way of increasing their income.
 - Some academic and teaching institutions suggest providing extracurricular courses taught by skilled trainers for MOH staff; this could be one immediate option to improve the MOH capacity. Although none of the countries has ever used academic and training institutions for in-service training, there is a growing sentiment that this approach could yield significant benefit.
- Constraints
 - A cascaded training uses new trainees to become new trainers and, because this process moves the trainees further and further from the initial training, it tends to dilute the knowledge and skills of the training. No training on training skills or adult education methods is provided, and no standardized training materials are made available. No impact evaluation of the cascaded training is performed, while the system is copied in many countries and tends to become the standard.
 - The almost nonexistent pre-service training in the management of acute malnutrition means that learning relies exclusively on costly in-service training, while the high turnover of health professionals limit the effectiveness of in-service training in this context.
- Recommendations
 - The MOH, with technical support from training experts, should strengthen the skills and capacity of their trainers and make available standardized and well-developed training

- materials covering theory and practice, and adapting these to the different levels of use (see also “Quality of CMAM,” “Standardized Tools” below).
- The MOH should develop a comprehensive strategy of learning that fits into a broader strategy of capacity strengthening, linking to academic and training institutions, and using different opportunities and innovative methods for learning (e.g., workshops; participatory discussion meetings, QI approaches, problem-solving systems, information-sharing systems, performance assessments and feedback, linking with peers, sharing lessons learned). Potential advantages for involving academic and training institutions include increasing training opportunities for new knowledge acquisition, using trainers whose core competency is transferring knowledge and skills, reducing the risk of losing trainers, creating an opportunity to integrate CMAM into pre-service training, linking pre-service and in-service training, and creating opportunities for certified trainings.

Pre-Service Training

- **Optimal Practices**
 - CMAM is included in the pre-service curricula of health professionals and will promote broadening the knowledge base of skilled health managers and health care providers. This will also gradually reduce the need for intensive and costly in-service training.
 - Academic and training institutions have the opportunity to gain expertise and assume the lead role in advanced learning.
- **Synthesis of Findings**
 - Nutrition in general is not well covered in the health professionals’ training curriculum, and coverage of the management of acute malnutrition is practically nonexistent. But the process for integration has started and national technical working groups on curriculum development have been formed. Moreover, some nursing schools and medical schools have identified the need to improve their coverage on nutrition, including acute malnutrition, and have started the improvement process. For example, in Niger, recent nutritionist graduates have completed a 60-hour module on the management of acute malnutrition; in Mali, a 6-hour module has been included in the public health course for fifth-year medical and pharmacy students, including practical training in rural districts; some schools send their students for internships to inpatient care or to districts with outpatient care for CMAM; and one NGO has specific earmarked donor funding to organize a stand-alone training course on inpatient care for 15 newly graduated, unemployed medical doctors, resulting in all 15 being employed immediately after the course.
- **Constraints**
 - The limited involvement of academic and training institutions in the CMAM integration and scale-up process and the low level of expertise that they could therefore develop means that they are not in an optimal position to strengthen their own capacities and take a lead role.
- **Recommendations**
 - Academic and training institutions, in close collaboration with the MOH and with technical support from experts, should be closely involved in all aspects of CMAM integration, scale-up, and QI. A technical working group involving partners should develop training curricula for the different levels of training of health professions and include lessons learned on curriculum development for CMAM from other countries.
 - Pre-service training for CMAM should be linked to learning sites that, in return, with the support of the academic and training institutions, should grow into centers of advanced learning (and centers of excellence), offering learning visits and internships with qualified mentors.
 - Academic and training institutions should be linked to a global and national documentation and information sharing system for CMAM.

Documentation, Information Sharing, and Operational Research

- Optimal Practices
 - Documentation and sharing of evidence, best and promising practices, performance assessments, and lessons learned is promoted among health professionals and is facilitated by a formal documentation and information system. The documentation and information system is not only an inventory or repository but is used for capacity strengthening and decision making.
 - Operational research for country-specific learning is promoted.
- Synthesis of Findings
 - Documentation is agency-specific and remains confined to the respective agency. Even formal systems of information sharing were limited to just a few initiatives, such as REACH, the National Health Information System (NHIS), and UNICEF reporting systems. Some innovative experiences could have been very informative, but were unfortunately poorly documented or not shared. Examples include effectiveness of treatment of children with SAM without routine antibiotics and community health workers conducting triage of children with SAM with complications at the community and health facility level.
 - Sharing of CMAM program documentation, meeting reports and innovative experiences is done on an ad hoc basis and is not formalized and collated in a repository with open access. IPs have a strong interest in CMAM operational research, and some research is ongoing on unresolved questions related to CMAM. Examples include safety of different admission and discharge criteria, effectiveness of alternate formulations of supplementary food, effectiveness of different preventive approaches, and decentralization of CMAM using CHWs for outpatient care. Despite the knowledge that some agencies have done and continue to do great research that has contributed to the global evidence base, national sharing and learning is not formalized to a significant extent. The MOH complained that it was not aware of the research or does not have access and learned about the research only through global forums and publications.
- Constraints
 - Some learning opportunities regarding innovative approaches and constraints are lost because of weak documentation, absence of information sharing, and the reigning culture of confining information within agencies.
- Recommendations
 - The MOH; U.N. agencies; NGOs; and academic, research, and training institutions should contribute to documenting experiences and be actively involved in documentation and information sharing.
 - The MOH with support from a lead agency or technical working group should set up a national interactive documentation and information sharing mechanism and/or forum, tailored to the needs, and link it with global CMAM mechanisms and forums.
 - Operational research should be promoted, always involving national academic and research institutions so that no opportunities for learning are missed.

ACCESS TO CMAM SERVICES

Initial Implementation, Integration, and Scale-Up

- Optimal Practices
 - To facilitate the introduction and integration of CMAM and to prepare for gradual scale-up, learning sites are established in a limited number of sites and include sites with inpatient care and outpatient care management of SAM, management of MAM (M-MAM), and community outreach.

- Learning sites receive technical support from experts and provide quality care and country-specific learning. Health managers and health care providers have the opportunity to consolidate their knowledge and skills at these sites: They implement the protocols, tailor context-specific good practices, learn lessons for strategy change or refinement, and strengthen their expertise. In a next step, health care providers from new implementation sites use the established learning sites for learning visits and internships. Examples of good quality at the start of the integration process offer opportunities for learning and promote confidence in the service.
- Scale-up around learning sites expands gradually at the district and the subnational levels, following a scale-up plan that prioritizes areas according to set criteria (health facilities or districts are prioritized based on, e.g., high SAM caseload, opportunity for QI, and easy access, and good quality care with good learning opportunities).
- Synthesis of Findings
 - Nutrition rehabilitation units with varying objectives, protocols, and quality existed prior to the introduction of CMAM. Few of these units were using the WHO 1999 protocol for inpatient care management of SAM. The gradual introduction of CMAM in the past decade and the national initial training starting in 2005 strengthened the capacity of these units. However, they did not receive additional support to become learning sites with continuous mentoring. Thus, the establishment of learning sites was not included in the strategy of integration and scale-up of CMAM into routine health services. Existing CMAM sites that had started implementing the CMAM approach with NGO support and had accumulated expertise prior to adoption of the CMAM approach by the MOH were not used as learning sites.
 - However, the need for learning sites and for centers of advanced learning is being increasingly recognized. Burkina Faso has started to experiment with a phased scale-up approach in a limited number of districts. Mali is planning to establish five centers of advanced learning, and Niger has started using one NGO-supported site for training.
 - The traditional way IPs support the management of SAM and MAM is through setting up parallel programs and handing over responsibilities with the closing of programs or at the end of an emergency. Many IPs have now evolved to where they provide an integrated approach. Instead of setting up a parallel temporary program for saving lives with rapid impact, they strengthen the technical, financial, and managerial capacities of the existing health system. Humanitarian donors express concern about this process not providing as fast an impact, but the integrated approach has contributed to national capacity strengthening, promoted sustainability, and contributed to disaster risk reduction, as the countries will be better prepared to respond to future crises without delay.
- Constraints
 - Poor quality of implementation at initiation affects the knowledge, skills building, and hence confidence of health managers, health care providers, and communities in CMAM. A weak start of CMAM makes it less acceptable to stakeholders. Hence, CMAM service uptake and use have not had as positive an impact as they could have. It is difficult to overcome this sentiment and requires special effort to show success.
- Recommendations
 - Even as integration of CMAM into routine health services is well in progress, the MOH should identify sites with quality care at strategic locations (i.e., accessible, in the vicinity of an academic or training institution) or with a potential to offer quality care with technical support, and use these as learning sites. The MOH, U.N. agencies, and academic and training institutions should further support these learning sites to achieve and maintain good quality (e.g., good performance, good coverage, and good mentoring and learning opportunities).

Community Outreach

- Optimal Practices
 - Community outreach for community mobilization, early detection, and referral for treatment using a wide network of trained community-based outreach workers (i.e., CHWs, other extension workers, volunteers) is key for CMAM success and is included in the integration, scale-up, and QI strategy. The community outreach strategy is developed based on an assessment, includes identifying barriers to access and service uptake, builds on and further strengthens existing community initiatives, empowers communities, and enables improved coverage.

- Synthesis of Findings
 - National health systems recognize the importance of the outreach component in delivering health interventions that has already been used for child survival health initiatives (e.g., child health weeks, routine immunization and campaigns) for decades. However, no strategy on how to integrate CMAM into the existing health outreach system or strategic plan has been developed. The occasional integration of screening in campaigns results in the identification of many SAM children who are not yet enrolled in treatment and complements other routine screening activities at the health facility and the community at low cost.
 - The strongest community outreach systems have been taken on by nutrition IPs. The systems put in place by nutrition IPs with development experience seem most integrated and sustainable. Unfortunately, there is no documentation on the effectiveness and challenges of these experiences or, if it exists, it is not accessible. Many organizations addressing acute malnutrition struggle to achieve acceptable coverage and to sustain regular, active case-finding.
 - Weak community outreach for CMAM leads to late presentation of cases for treatment, poor treatment outcomes, high defaulting, and low coverage.
 - The role of the CHW in community outreach is not yet well defined and varies from sporadic, ad hoc community mobilization and active community case-finding to passive case-finding at presentation at the health post. Similarly, involvement of health communication and social services at the district level in CMAM, with focal points serving as members of the district health management team, is not yet defined, and the focal points' possible role in community outreach for CMAM is overlooked. .
 - Community outreach for CMAM relies on CHWs or community-based volunteers who have been selected individually by the community or on existing community structures and initiatives, such as women's groups or grandmothers' groups. The possible advantage of using existing structures or initiatives is that it mitigates against the weaknesses of the MOH CHW system.
 - Moreover, the informal health system is largely ignored, despite the recognition that traditional healers are the first-line care deliverers for malnourished children.
 - Experiences with different approaches that may improve the community outreach are ongoing and include:
 1. Using CHWs involved in health extension activities, such as the community-based growth monitoring and promotion and immunization activities.
 2. Creating a separate network of outreach workers for CMAM, with the risk of verticalizing the delivery of the outreach component. Examples include involving community-based groups, such as women's groups, grandmothers' groups, and COGES.
 3. Conducting regular door-to-door screening as a stand-alone activity or during other health campaigns, such as child health weeks and censuses for blanket feeding.
 4. Relying on the lowest level of the health system (the CHW) to conduct outreach activities, including community mobilization, SAM and MAM case-finding, and follow-up of problem cases in the community.

5. Exploring different incentives and motivation strategies for CHWs. Examples include a fixed monthly allowance, a performance-based monetary incentive, community support for the CHW's garden, privileges such as easy access to health care for the CHW and his/her relatives, access to training, and promise of progressing to formal employment for volunteers.
- Constraints
 - The community outreach component of CMAM relies heavily on unpaid outreach workers whose motivation tends to fade over time. IPs commonly respond to this constraint by providing temporary incentives that are not sustainable for the health system to take on.
 - Recommendations
 - The MOH and IPs should document the different community outreach approaches that are used and identify the most promising approach, considering specific contexts of existing community-based initiatives. The MOH, with technical support from experts and in collaboration with IPs, should develop a strategy based on an assessment that includes identifying barriers to access and service uptake, and should put into place a sustainable, affordable, integrated community outreach system for CMAM. The MOH, with technical support from experts, should continuously improve the quality of community outreach.

Management of MAM

- Optimal Practices
 - M-MAM is a component of CMAM and is compatible and formally linked with M-SAM. A child with SAM who improves and discharged is referred to M-MAM for continued support. A child with MAM who deteriorates is referred to M-SAM for treatment.
- Synthesis of Findings
 - While M-SAM is being integrated into routine health services, M-MAM has been implemented both within and outside of the health system, depending on the support received. In the latter case, M-MAM is separate from M-SAM; in the former case, M-MAM and M-SAM are linked when the same body (U.N. agency or NGO) supports both activities. National health systems have by no means sufficient capacity to integrate M-MAM as a routine health service.
 - Most frequently on a global basis and for more than a decade in the region, M-MAM has been implemented as a temporary emergency intervention during periods of food insecurity and/or high GAM prevalence rates. M-MAM is most often prioritized in areas with high food insecurity and M-SAM in areas with high GAM prevalence rates. These areas do not usually overlap, except during periods of increased vulnerability or crises. This often results in delayed expansion of M-MAM in areas with high GAM prevalence rates, unless IP support is available. Moreover, during emergencies and lean periods, blanket supplementary feeding is organized as a preventive population measure for children 6–24 months if resources are available; this tends to replace the need for scale-up of targeted M-MAM.
 - M-MAM receives support from WFP in the high food insecurity zones and/or from UNICEF in the high GAM zones, and is implemented through the MOH, NGOs, and/or CBOs. In Mauritania, a government body other than the MOH is in charge of M-MAM, which increases the need for coordination and could potentially harm policy and decision making, making the gap between M-MAM and M-SAM even wider.
 - Since the transition to the 2006 WHO child growth standards, children previously identified with MAM with the highest risk of death, i.e., the most serious or vulnerable cases of MAM, are now being categorized as SAM and have earlier access to improved treatment. This has justified an emergency response that does not prioritize M-MAM, but rather preventive undernutrition interventions that target children 6–24 months or 6–36 months with blanket feeding to complement M-SAM. The blanket feeding is usually linked with comprehensive health and nutrition interventions (e.g., vitamin A supplementation, deworming, distribution of bednets, intensified immunization, and community screening for active case-finding of acute malnutrition and referral for treatment).

- There are considerable barriers to access to targeted M-MAM, which contributes to the late presentation of the child for treatment, early defaulting, and an increase in the risk of adverse effects (relapse to MAM, deterioration to SAM, or death). Because of lack of awareness and other barriers to access and service uptake (see “Quality of CMAM,” “Coverage and Barriers to Access and Service Uptake” below), communities and caregivers do not perceive MAM as a health risk and often delay presentation.
- **Constraints**
 - Global evidence shows that MAM contributes to a great proportion of deaths associated with acute malnutrition. Thus, in places where the WHO standards have not yet been applied, a significant proportion of children with MAM are expected to die before reaching the level of SAM as a consequence of increased susceptibility to infection and increased risk of death with common infections. In places where the transition to the WHO standards has taken place, and where M-MAM is integrated into the lowest level of the health system, the increased and very high caseload of MAM is a significant burden for a weak health system without the necessary human and financial resources.
- **Recommendations**
 - The MOH, U.N. agencies, academic and research institutions, IPs, and donors should advocate for and/or contribute to strengthening evidence on the effectiveness of case management, mass treatment models, and preventive measures for MAM in lean periods and shocks leading to food insecurity. Systematic reviews and operations research demonstrating the effectiveness of different treatment modalities, various food supplements, and the preventive approach should inform national guidelines and strategies for M-MAM, in line with the national epidemiological profile of acute malnutrition. M-MAM should continue to be a priority until evidence indicates that a preventive population intervention is more cost-effective and safer than a curative approach, in both lean periods and food security shocks.

Management of SAM in Outpatient Care

- **Optimal Practices**
 - Decentralized outpatient care for M-SAM for children 6–59 months without medical complications is provided.
 - Every child in touch with the health system is screened and has access to treatment.
 - M-SAM is integrated into the routine health services (basic package for health services).
 - Children with SAM with medical complications and whose condition is deteriorating are referred to inpatient care and return after stabilization.
 - Children with SAM who deteriorate, do not improve, or are absent or defaulting are followed in the community and/or referred according to an action protocol.
- **Synthesis of Findings**
 - Effective decentralization and scale-up of outpatient care to health centers and, in certain locations, health posts increases access to M-SAM tremendously. Health facilities have been empowered to provide M-SAM: Health care providers are trained, a few basic job aids are in place, and supplies are available. This allowed a country like Niger to admit up to 12,000 new SAM cases per week during the 2010 food crisis. However, M-SAM is not yet formally included in the basic package of health services. Access is still challenging in areas with sparse and mobile populations. Also, the weak community outreach component limits the impact of the decentralized outpatient care because of continued late presentation that leads to a case-fatality rate higher than the 2 percent expected in quality CMAM programs.
 - The limited geographical coverage of health facilities in remote areas promotes a more decentralized CMAM using the lowest level of the health system for outpatient care, i.e., health posts, run by CHWs (or nurses, in the case of Niger). The potential benefits of this approach are to bring services closer to the user and to reduce the opportunity cost of the caregiver, and hence to improve coverage and reduce defaulting. In the decentralization approach, CHWs are used to monitor children with SAM during follow-up visits and refer to

the nurse only those children with a medical complaint. The main advantages of this approach are reduced workloads for nurses and shorter waiting times for caregivers. This approach could also reduce defaulter and mortality rates.

- Constraints
 - A human resources shortage, high turnover, and major areas with sparse and mobile populations are the main constraints for reaching suitable geographical and treatment coverage of outpatient care.
- Recommendations
 - To make outpatient care sustainable, the MOH should formally include M-SAM in the basic package for health services and allocate a budget.
 - The MOH, with technical support from experts, should continuously improve the quality of outpatient care.
 - The MOH, with technical support from experts, should strengthen community outreach and inpatient care to make outpatient care more effective.
 - The MOH, with financial support from donors and partners, should strengthen human resources for health services that are suffering from a manpower shortage.

Management of SAM in Inpatient Care

- Optimal Practices
 - Centralized but accessible inpatient care for M-SAM in children 6–59 months with medical complications and for infants under 6 months with acute malnutrition is provided in health facilities with 24-hour care and with qualified personnel. Children 6–59 months with SAM after stabilization in inpatient care continue treatment in outpatient care.
 - Caregivers of children in inpatient care receive food and have a way to prepare it.
- Synthesis of Findings
 - Integration of M-SAM into inpatient care is scaling up more slowly than into outpatient care as a result of the human, financial, and material resources needed for training, equipping, and supplying inpatient care sites and the limited number of hospitals where inpatient care could be integrated. Consequently, critically ill children are still referred to inpatient care sites located more than 100 km from their villages. This increases the risk of referral refusals by caregivers of children with SAM with medical complications and infants under 6 months who cannot be treated as outpatients. Refusing the referral increases the risk of the child's death. NGOs tried to minimize the refusal rate by offering transportation, feeding the caregivers during the inpatient care, and/or providing a monetary incentive. Relatively low case-fatality rates were reported in inpatient care, which appears to be due to underreporting (e.g., unreported death occurring in first 24 hours or in the emergency ward, death occurring during the referral process).
- Constraints
 - Since inpatient care addresses the needs of those with the highest risk of death, its performance has a great impact on the confidence the community has in CMAM. As a result, quality of care at the inpatient care level affects overall CMAM service uptake and compliance with the treatment.
- Recommendations
 - To make inpatient care sustainable, the MOH should formally include M-SAM in the basic package for health services and allocate a budget.
 - The MOH, with technical support from experts, should continuously improve the quality of inpatient care.
 - The MOH, with technical support from experts, should strengthen community outreach and outpatient care to make inpatient care more effective.

- The MOH should plan for a sustainable system to provide food for caregivers of children with SAM in inpatient care.

Referral between the Different Components of CMAM

- Optimal Practices
 - Referral and counter-referral mechanisms exist between community screening and sites with M-SAM and M-MAM, between outpatient care and inpatient care and vice versa, between outpatient care/inpatient care and treatment services for other medical conditions and vice versa, and between outpatient care and M-MAM. The referral system allows children to receive timely and appropriate care for their health condition, and movement between services is tracked.
- Synthesis of Findings
 - National guidelines provide guidance on how to support the referral mechanisms and how to track referrals. Except in cases where the same NGO is involved in supporting multiple CMAM components, the referral and counter-referral mechanisms are poorly established and their effectiveness is difficult to assess. It is obvious that a high proportion of cases are lost during referral between components. Challenges of the mechanisms include weakness of the existing referral and counter-referral mechanism between the different levels of the health care system, difficulties of caregivers to meet the cost of transportation, lack of a tracking system, and weakness of the community outreach component to follow lost cases in the community.
 - Interestingly, there were some encouraging initiatives that showed how the referral system could improve in a sustainable manner. For example, in some districts in Niger, communities have taken responsibility for the transportation system, provide payment for referral, and monitor referral and counter-referral.
- Constraints
 - In the absence of a robust referral/counter-referral and tracking system, it is difficult to ascertain the outcome of referrals and impossible to confirm whether children who are referred receive the appropriate care. It is assumed that many children are lost during referral between different components.
- Recommendations
 - The MOH, in collaboration with district management teams, partners, and communities, should identify and put into place feasible and sustainable measures for an effective CMAM referral mechanism that is compatible with existing referral systems and further strengthens them. The strengthening of referral mechanisms should be discussed during CMAM training, mentoring, and supervision.

Qualified Health Managers and Health Care Providers

- Optimal Practices
 - Enough qualified managers and health care providers are available.
- Synthesis of Findings
 - A shortage of human resources is a major and critical weakness for CMAM integration, scale-up, and QI. While good progress was made in strengthening the capacity of health managers and health care providers in CMAM, and in appointing nutrition focal points, the severity of the shortage varies considerably from Mauritania (very severe) to Mali and Niger (moderately severe). In some areas, this results in unqualified personnel (without formal professional medical training) taking full responsibility for M-SAM, including for those in inpatient care.

- Mali and Niger have a high rate of unemployment among physicians and nurses. Sufficient graduates are available to fill the national vacant positions, and even to support the needs in neighboring countries. Sadly, because of budgetary restrictions and considerable pressure to minimize their expenses, governments are not in a position to hire new staff.
- In addition to the shortage of health personnel in the national health system, high staff turnover limits the availability of experienced and trained staff. Because CMAM is not yet integrated in pre-service training, new graduates entering the health system are mostly not trained. Moreover, the strategy for in-service training is to target health staff directly involved in CMAM implementation and not the broader base of the health system. This strategy does not take into account the high staff turnover rate, the rotation of personnel within the health facility, and the negative attitude of those who are denied training (mainly because they feel technically insecure). These factors contribute to an increased and continuous need for refresher trainings and mentoring, as M-MAM and M-SAM components are weakly covered or not covered at all in the pre-service training.
- Constraints
 - There is a shortage of qualified and trained staff, and governments face considerable financial constraints when it comes to hiring health personnel. This undermines any progress that has been made in the integration, scale-up, and QI of CMAM.
- Recommendations
 - Governments and donors should join efforts to address the shortage of a qualified health care provider pool in the national health system.
 - The MOH, academic and training institutions, and partners with technical support should support the integration of CMAM into pre-service training, and, in the meantime, maintain and strengthen in-service training to allow access to training to all clinicians involved in pediatric care to prevent disruption of services and dilution of quality resulting from staff rotation and turnover.

Integration into Routine Services

- Optimal Practices
 - CMAM is integrated into the basic package of health services and has a budget allocated covering management and implementation activities. CMAM is not delivered as a project or a vertical program.
- Synthesis of Findings
 - CMAM integration into routine health services remains a work in progress and is not yet formalized in policy or practice. There is a willingness to integrate CMAM, and various management and implementation activities have already been integrated into the national health system, following the examples of other child health and nutrition programs and/or initiatives (e.g., Essential Nutrition Actions, essential family practices, growth monitoring and promotion, child health campaigns). But many health managers and health care providers are still addressing CMAM as a stand-alone vertical program, and consider CMAM implementation only with support from U.N. agencies and IPs.
 - The process of integrating M-MAM has fallen behind, and there is no indication on when and how this would be effectively done.
- Constraints
 - In the absence of formal and effective integration into the national health systems, CMAM remains heavily dependent on external resources.
 - Fading emergency funds and/or international interest in CMAM and/or nutrition could threaten the progress on integration and scale-up of CMAM.

- Recommendations
 - The MOH, partners, and donors should integrate CMAM into the routine health services and allocate a budget and should take advantage of the current, favorable international environment to accelerate the integration and scale-up.

Linkages with the Informal Health System

- Optimal Practices
 - Community outreach for CMAM involves stakeholders in the informal health sector (including, e.g., religious leaders, traditional healers, traditional birth attendants, drug vendors) to raise their awareness of acute malnutrition, to involve them in early detection and referral for treatment of cases, and to improve care-seeking behavior and child care practices of community members in general.
- Synthesis of Findings
 - In general, health care providers are not collaborating with the informal health system. They also tend not to consider or recognize the important role that the informal health system plays in influencing access to CMAM and delaying care, or in inhibiting the use (and continuation) of treatment for SAM. However, all health care providers are well aware that children were often first presented to the traditional healer and that some children had received harmful interventions (e.g., scarification, burns, herbal drinks). All health care providers are aware that many children are presented late for care, have their treatment interrupted, or are refused referral due to the interference of the informal health system. Still, the formal health system avoids interfering with these harmful practices and resents pressure to engage with the informal health system.
- Constraints
 - Malnutrition is not always perceived as a nutrition or health problem. According to tradition, caregivers with a malnourished child first seek care from a traditional healer, who is readily available in the community. Ignoring the involvement in care of these practitioners delays the access to CMAM for many targeted communities.
- Recommendations
 - The MOH and IPs should ensure that the community outreach strategies for CMAM include collaboration with the informal health system, and that this collaboration is covered in training, mentoring, and supervision.
 - The MOH and IPs should make deliberate efforts to sensitize practitioners of the formal and informal health system on the need and advantages of active collaboration for improving CMAM.

Linkages with Preventive Nutrition and Other Community Initiatives and Services

- Optimal Practices
 - Strategies and plans exist to link CMAM with preventive nutrition and other community initiatives and services that strengthen household food security, healthy environments, and livelihoods.
 - Households with children with acute malnutrition are among the most vulnerable households and are linked with initiatives reinforcing prevention of malnutrition.
- Synthesis of Findings
 - Integration of CMAM with preventive nutrition or other community initiatives and services is limited, with the exception of areas where NGOs are involved in these initiatives.
 - The MOH and IPs focused on implementing the core components of CMAM; their involvement in linking with preventive nutrition or in working with other sectors that had ongoing initiatives that contribute to the prevention of malnutrition is limited.

- Constraints
 - Households with children with SAM are not linked to existing community initiatives and services contributing to the prevention of malnutrition, thereby increasing the risk of children relapsing after treatment and/or of other siblings being admitted with acute malnutrition.
- Recommendations
 - The MOH and IPs should have a strategy in place to link CMAM with other community initiatives and services outside of the MOH that contribute to the prevention of malnutrition.
 - Formal multisectoral collaboration at all levels (national, subnational, district, and community) should be established to tackle undernutrition comprehensively.
 - The situation analysis that precedes the community outreach strategy should map the existing relevant initiatives and services and establish links to improve community involvement and explore links and involvements that contribute to the prevention of malnutrition.

ACCESS TO CMAM SUPPLIES

Management of Supplies for CMAM

- Optimal Practices
 - Therapeutic foods, routine drugs, and other essential supplies for CMAM (therapeutic and supplementary foods, routine drugs, and equipment) are included in the national list of essential drugs and medical supplies.
 - A sustainable system to procure, distribute, store, and monitor the use of CMAM supplies is established, and is part of the national essential drugs and medical supply system.
- Synthesis of Findings
 - In Mali, management of CMAM supplies is integrated into the national system. Elsewhere, attempts have been made to integrate CMAM and some interesting lessons have evolved from this effort, but they are not well documented.
 - Access to most of the supplies for CMAM is good at the national level. However, in many occasions, the availability of routine drugs, including antibiotics and antimalarials, is disrupted and the supply of RUTF is cut off at the health facility level.
 - IPs complement each other in managing the international and national procurement of supplies. Hence, it is not uncommon to find IP-supported or other supply systems in parallel with the MOH-run national supply system.
 - Efforts to use, strengthen, and/or modernize the national essential drug and medical supply system have been attempted, but have not yet been successful or sustainable.
 - U.N. agencies and IPs fully or partially fund the CMAM supply system and remain largely responsible for its management up to the district or community level. The availability of emergency funds means that the level of support could remain high, but there is not a good understanding of what would happen next.
 - Despite having a national production unit of RUTF in Niger and small production units of supplementary foods in Mali and Burkina Faso, the supply system depends on international procurement.
 - Two innovative approaches were piloted on a small scale. One used the national essential drug and medical supply system for the distribution of CMAM supplies, and the other used private transporters. It is too early to assess the advantage and sustainability of these approaches; however, they both have great potential if effective.
- Constraints
 - While access to CMAM supplies is relatively good, the supply system is prone to pipeline cuts or deterioration when support from U.N. agencies and NGOs lessens.
 - The weaknesses of the national supply management system pose a challenge for the integration of CMAM.

- Recommendations
 - The MOH, with technical and financial support from donors and partners, should improve and integrate the CMAM supply system into the national health supply system.
 - U.N. agencies with strong experience in supply systems (i.e., UNICEF and WFP) need to be engaged in strengthening national supply systems and transferring their expertise.

QUALITY OF CMAM

Adherence to Standardized Protocols

- Optimal Practices
 - National guidelines exist, are adhered to, and are widely disseminated. Job aids accompany the guidelines, which facilitates adherence to the guidelines and promotes quality care.
 - Subsequent improved versions of the guidelines are accompanied by orientation and refresher training for optimal dissemination and strengthening of knowledge and skills on new practices.
- Synthesis of Findings
 - National guidelines exist and are widely disseminated.
 - Even the slightest shortcoming in the guidelines causes misinterpretation or confusion and hampers standardization of care.
 - The guidelines and copies of some pages or tables are the main job aid. But because different versions of the guidelines are in circulation, different tables and guidance are used.
 - Some good efforts on job aids have been led by experienced IPs, but because these job aids are not always in line with the latest version of the guidelines or not adapted to the level where they are shared, they do not always help standardize the treatment.
 - The level of adherence to the standardized protocols varies from moderate to good, and the main determinants of adherence to the guidelines are the quality of the guidelines and the quality of the training for implementation. Specific examples of elements that interfere with adherence to the guidelines include:
 - Application of the CMAM approach is inconsistent with an overemphasis on inpatient care as the preferred approach, resulting in, e.g., treating children with SAM without complications in inpatient care or day care centers and retaining children with SAM in inpatient care after stabilization.
 - The cascaded training method limits the transfer of knowledge and skills and subsequent supportive supervision/mentoring is insufficient for strengthening problem-solving and treatment skills.
 - IPs apply their own guidelines.
 - Areas that have well-established inpatient care sites (facility-based approach) tend to delay the transition to the comprehensive community-based approach.
 - Variation in the treatment for shock due to dehydration, regardless of the protocol in the national guidelines and echoing the international debate. Variations include fluid administration as described in the WHO 1999 guidelines⁸; more cautious fluid administration, an approach adopted in most of the national guidelines; and more generous fluid administration as described in the guidelines for non-malnourished children.
 - Routine medicines are not always provided as prescribed in the treatment protocol because of drug shortages.
 - Mid-upper arm circumference (MUAC) measurements are not consistently used as independent admission criteria and are still considered by many individuals as a criterion for first-stage community-screening only.

⁸ WHO. 1999. *Management of severe malnutrition: a manual for physicians and other senior health workers*. Geneva.

- Some operational research initiatives suggest it is appropriate to diverge from the guidelines (which is allowable if the MOH is informed and any resulting lessons are shared with all).
- Constraints
 - Incompleteness and inconsistencies in the national guidelines result in lack of adherence to treatment protocols, negatively affect child treatment outcomes, and hinder institutionalized learning and sustainability of care.
- Recommendations
 - The MOH, with technical support from and in collaboration with national partners with real academic and clinical experience, should revise national guidelines and address incompleteness and inconsistencies.
 - Revisions at certain intervals should be planned for and should be accompanied by orientation and refresher training for optimal dissemination and strengthening of knowledge and skills on new practices.

Standardized Tools

- Optimal Practices
 - Standardized tools for design, planning, implementation, QI/supervision, M&R, and training of CMAM exist and are adapted to the national guidelines and the country context as appropriate.
- Synthesis of Findings
 - Tools for design, planning, implementation, QI/supervision, M&R, and training are largely insufficient. They are incomplete, not standardized, not adapted to the level of use, or do not exist.
 - The main job aid and training material is the national guidelines (although not always the latest version). The available job aids are usually very much appreciated and used, but some are too complicated or not adapted to the appropriate level and, as a result, confused staff. Slides from the initial national training focus on clinical aspects only.
 - The slide composition varies from trainer to trainer.
 - There is no guidance on how to develop and/or adapt training materials to different audiences and different levels of responsibility, or on how to organize practical training sessions.
 - Supervision checklists do not exist or are incomplete, are not standardized, and do not promote participatory evaluations and problem solving. Different M&R forms are used, sometimes in the same district, and guidance for completing these forms differs.
- Constraints
 - The tools used to implement CMAM are often incomplete. This negatively affects the quality of care and of the learning process and reduces implementers' confidence and job satisfaction.
- Recommendations
 - The MOH, with technical support from experts, needs to make available standardized tools for design, planning, implementation, QI/supervision, M&R, and training of CMAM. These tools need to reflect the latest version of the national guidelines, be country-specific, be adapted to different levels of use, and be revised when new versions of the guidelines are developed and new learning on promising practices emerges. Existing generic tools for CMAM, e.g., job aids, training materials (including facilitator guide and trainee handouts, covering theory and practice), and data repository, can be easily adapted to the national guidelines and the country context. Some generic tools need no adaptation and are globally available, e.g., costing tool, coverage tool (soon to be ready for dissemination).

Supportive Supervision

- Optimal Practices
 - A cyclical process of measuring a performance gap for CMAM; understanding the causes of the gap; testing, planning, and implementing interventions to close the gap; studying the effects of the interventions; and planning additional corrective actions in response is in place.⁹
- Synthesis of Findings
 - Supervisory systems are in place and are common practice where human and financial resources allowed for these visits. The systems are the old-fashioned supervisory visit of the supervisor with a checklist and pen. However, checklists do not always exist, are incomplete, or are not standardized. The supervisors verify weaknesses, mostly in accessing supplies, and have limited skills in problem solving. Often these visits are initiated by the IP who invites the MOH supervisor to perform joint supervision visits and provide the logistical support. Sometimes IPs have set up parallel supervision systems.
 - The success and/or impact of the supervision visit depend on the individuals involved rather than on the system. The opportunity for mentoring and problem solving is dependent on the expertise of the supervisors, which is limited, and mainly focused on discussing the supply access (as this is indeed always a major problem that needs to be addressed). More comprehensive supervision, including technical support, is provided in NGO-supported health facilities. However, even in some NGO-supported programs, supervisors lack the detailed expertise that could allow them to quickly identify the weaknesses in the implementation of CMAM and address many of the health care provider's questions.
- Constraints
 - The method and quality of the supervision is not allowing for true strengthening of the knowledge base and skills in a situation in which both the pre-service and the in-service training has serious limitations. This situation affects the quality of implementation and prevents achievement of the maximum impact or best results from the resources invested.
- Recommendations
 - The MOH, with technical support from experts, should improve the existing supervisory system (including standardizing the supervision tool adapted to the different levels, assigning supervisors, training supervisors, assigning a budget, and putting a logistics support system in place) that strengthens the knowledge base and improves treatment and problem-solving skills.

Monitoring and Reporting

- Optimal Practices
 - A comprehensive and feasible M&R system for CMAM, including M-MAM, M-SAM, and community outreach is standardized and in place, reveals performance, and informs strategies for implementation and capacity strengthening. The M&R system is compatible with global M&R systems so that comparison between countries remains viable.
 - The current expanded M&R system is maintained until CMAM is a routine health service, has a continuous QI approach in place, is covered in pre-service training, and is sustainably funded, at which point the M&R system can be further simplified.
 - The M&R system informs the national and subnational data repository on CMAM, and feeds into the national nutrition surveillance system and the NHIS.

⁹ Tawfik, Y.; Segall, M.; Necochea, E.; and Jacobs, T. 2010. *Finding Common Ground: Harmonizing the Application of Different Quality Improvement Models in Maternal, Newborn, and Child Health Programs, Technical Report*. USAID Health Acre Improvement Project. Bethesda, MD: University Research Co., LLC. Available at <http://www.hciproject.org/node/2048>.

- Synthesis of Findings
 - The M&R system for M-SAM consists of daily, weekly, and monthly collection of data and the monthly reporting of these data to the health district and subnational and national MOHs.
 - Problems in M&R are common and cover all aspects, e.g., weak precision and accuracy of data, incompleteness of reporting, delays in reporting, unavailability of reporting forms, weak analysis, and limited feedback and utilization of findings. NGO-supported districts have fewer problems, as they provide technical and financial support and strengthened capacities and/or oversight over reporting responsibilities.
 - Because of the importance of the data for planning and management of CMAM, UNICEF is supplementing the national system with a temporary parallel system and/or by directly taking the lead for ensuring the information flow, compilation, and utilization.
 - M&R tools (registration books, treatment cards, road to health cards, supply cards, tally sheets, monthly summary reports, supply use and request forms, referral forms) are not always standardized and adapted to the level of use or understood by the user (health managers, supervisors, and health care providers). Hence, the timely submission, accuracy, and completeness of the information are seriously jeopardized.
 - A considerable workload is associated with the filling in of M&R tools for CMAM that is being executed in parallel and in addition to the regular M&R system of health services at the health facility.
 - Examples of common problems related to the M&R tools for CMAM are:
 - Incomplete and different guidance for completing the tools is received, even within the same districts.
 - A considerable level of effort is required to fill in all the tools.
 - The terminology and definitions of variables are not always well understood, e.g., the difference between incidence and caseload, absentee and defaulter.
 - There is limited or no comprehension of the meaning and use of the information and indicators by users. Indicator formulas and calculations are not part of the monthly reporting form and are also not covered in the national guidelines.
 - No direct or indirect feedback on performance based on the monthly report is provided (i.e., indicators showing and calculated on the monthly reporting form, supervisors providing analysis and explanation of findings).
 - The M&R system for the M-SAM commonly feeds into a national data repository for SAM that is managed by UNICEF.
- Constraints
 - A weak M&R system reduces the capacity of the MOH and IPs to capture information required for planning and for determining and improving performance.
- Recommendations
 - The MOH, with technical support from experts, should develop and put into place a concise standardized M&R system adapted to the different levels that will provide accurate and precise information sustainably. The M&R system should be integrated into the national guidelines and should be covered in training, mentoring, and supervision. A set of sentinel sites or periodic in-depth reviews or periodic data collection in sampled sites could be envisaged to supplement a simplified routine M&R system and provide expanded information on performance.
 - The MOH should manage the M&R system that feeds into the national data repository system for M-MAM and M-SAM, national nutrition surveillance, and the NHIS.
 - The MOH should provide disaggregated analysis and feedback on performance to all levels, and use the results of the M&R system to inform strategies for implementation and capacity strengthening.

Coverage and Barriers to Access and Service Uptake

- Optimal Practices
 - Coverage and barriers to access and service uptake are assessed at certain intervals with a country-adapted and standardized tool that is part of the community outreach system. Outcomes of the assessment are used to inform the implementation and capacity strengthening strategies.
- Synthesis of Findings
 - In many areas where community outreach is limited, efforts to raise awareness among community leaders and members about acute malnutrition and the services that are offered to treat it and about community screening to detect and refer children with acute malnutrition for treatment are weak. As a result, coverage is expected to be low. However, there is no direct measure of coverage of national expertise. Therefore, indirect methods are used to assess treatment coverage. Survey prevalence rates and expected new cases over a specific time period (incidence) are used to estimate expected caseloads, and these rates are compared to reported caseloads for the same time period. Because of the imprecision of the different estimation methods, the results should be interpreted with care. However, the estimates have proven to be a valuable tool for planning supply management.
 - There are two direct methods for assessing precise and accurate coverage rates developed for CMAM by Valid International based on the Centric Systematic Area Sampling and semi-quantitative evaluation of access and coverage (SQUEAC) methods, which have been in use since 2003 and 2007, respectively. Unfortunately, in-country capacity to use these methods has not been developed, and U.N. agencies and IPs applying these assessments have to rely on international expertise. The few U.N. agencies and IPs who have assessed coverage and barriers to access and service uptake found the results very useful for informing program improvement.
 - The methods allow for the prioritization of areas with the lowest coverage and barriers to access and service uptake that need to be addressed. Coverage rates results are usually low, and barriers to access for M-SAM and M-MAM are similar to what is found in most countries, e.g.:
 - Lack of awareness, therefore late or no presentation, and high defaulting
 - Weak or absent active community screening
 - Opportunity cost for caregivers to seek health care
 - Social barriers, usually husband- or grandmother-related
 - Economic barriers during planting, weeding, and harvest seasons
 - Priority use of the traditional healer
 - Existing user-fee system not aware of any newly applied waiver system for children under 5
 - Distrust in the national health service
 - Disappointments at the health facility, e.g., behavioral issues of staff, long waiting lines, drugs and/or food outages, absence of health care provider
 - Need to care for other children at home
- Constraints
 - Because of limited community outreach assessments, barriers to access and service uptake are common but not addressed, resulting in low use of services and late presentation for treatment. The absence of in-country capacity for assessing coverage with direct methods and relying on imprecise indirect methods could provide misleading results.
- Recommendations
 - The MOH, with technical support from experts, should test the feasibility of existing coverage assessment methods adapted to the country context and assess their cost-effectiveness. The MOH, IPs, and academic and training institutions should then strengthen their capacity in the use of the country-specific tool for assessing coverage and barriers to access and service uptake of CMAM, and put into place a dynamic system to adapt strategies according to the findings.

National Nutrition Surveillance Systems and the NHIS

- Optimal Practices
 - A national nutrition surveillance system uses the CMAM M&R system and nutrition surveillance systems to capture trends of incidence (new cases), burden of acute malnutrition (caseload), and performance of CMAM. The incidence trend and burden of acute malnutrition are integrated into the NHIS. Both the national nutrition surveillance system and the NHIS are used for advocacy and planning.

- Synthesis of Findings
 - Different systems for nutrition surveillance and/or food security, vulnerability, and early warning systems are in place, and more comprehensive nutrition surveillance systems are being piloted. The various systems aggregate a wide range of information covering, e.g., food security, livelihoods, health and nutrition, and mortality from routine monitoring systems, assessments, and surveys. The nutrition surveillance system relies heavily on annual or biannual nationwide Standardized Monitoring and Assessment of Relief and Transition (SMART) surveys that assess and monitor malnutrition trends.
 - Some innovative approaches of nutrition surveillance systems are being field tested as pilot programs but are weakly documented or have documentation that is not widely shared, which limits the ability to provide and/or learn lessons. In addition, the triangulation of the nutrition analysis with food security and/or CMAM program performance is not well exploited and limits the understanding of the nutrition situation and the opportunity to inform risk reduction strategies.
 - Depending on the country, the NHIS includes underweight, acute malnutrition incidence, case-fatality, acute malnutrition caseload, maternal anemia caseload, and/or vitamin A supplementation coverage. Mauritania has the most developed NHIS; it is computerized at the district, subnational, and national levels and includes CMAM indicators. The reporting and interpretation of findings is managed by the epidemiology team at all levels, and a national bulletin is produced and disseminated regularly. The Mauritania example shows that, with adequate support and resources, it is possible to greatly improve the health and nutrition surveillance system. Not enough resources are invested in the NHIS elsewhere to comprehensively include nutrition.
 - In general, there is only limited use of the available health and nutrition information for defining country priorities. Weaknesses are recognized and are being addressed. However, they are not translated into action points of a strategic plan with set objectives and timeline, and it is not clear if adequate resources are being sought for doing that.

- Constraints
 - SMART surveys implemented at the subnational level are costly and provide averages at the national and subnational levels. This is useful for painting a broad picture of the nutrition situation and for monitoring trends, but the surveys do not provide the nuances that are necessary either for identifying hotspots of high burden of malnutrition unless they are repeated at smaller scale or for understanding the causes of malnutrition.
 - Weak nutrition surveillance or NHIS reduces the capacity of the MOH and partners to capture information required for advocacy, planning, management, and QI.

- Recommendations
 - The MOH, with technical support from experts, should strengthen the nutrition surveillance system and the NHIS by including accurate information on incidence trends and burden of acute malnutrition that will inform the MOH, IPs, and donors for advocacy, planning, managing, and QI of CMAM.
 - SMART surveys are useful tools in emergencies but should not be the only means for assessing the nutrition situation and monitoring trends.
 - Bulletins should be developed and disseminated at regular intervals triangulating the different information from various sources and should include incidence and caseload trends of acute malnutrition and performance of CMAM.

Evaluation

- Optimal Practices
 - Reviews and evaluations inform the integration, scale-up, and QI strategies and plans, thereby increasing the cost-effectiveness of CMAM. Reviews and evaluations ascertain that the service/program/intervention has achieved the intended objectives and impact.
- Synthesis of Findings
 - CMAM was introduced at scale as an emergency intervention in the West Africa region in 2005, in response to the high food price crises and recurrent high levels of GAM. At the worst points in these crises, governments decided that CMAM should be integrated into the routine health services. However, no baseline and impact evaluation activities were implemented.
 - Reviews and evaluations of CMAM are not common. However, there is a general growing awareness of the importance of and need for reviews and evaluations, including assessment of coverage. UNICEF and certain donors have initiated reviews or evaluations to look at the impact of emergency nutrition interventions and the progress of integration, scale-up, and QI of CMAM and to inform post-emergency strategic planning for CMAM. In 2009, UNICEF commissioned a review of CMAM in 10 West and Central African countries, including the four countries of this review. Some NGOs conducted external evaluations of their programs. Many implementers, especially those operating at the national level, were concerned by the absence of a direct method to estimate the national coverage based on rigorous sampling. Evaluation of impact relied mostly on trends of burden of malnutrition provided by the NHIS and the annual or biannual nationwide SMART surveys.
- Constraints
 - The costs of surveys, reviews, and evaluations are high, and the budgets that donors impose on IPs means that they could not easily engage in these activities.
- Recommendations
 - Program designers and health managers from all backgrounds and donors should ensure that all nutrition initiatives include a rigorous evaluation component and should promote making information available for learning and decision making.
 - SMART surveys are useful but should not be the only means for evaluating impact.

Conclusions

Acute malnutrition is a major public health problem throughout the developing world. Although its contribution to the worldwide burden of child mortality varies by country and is reflected differently in different studies, it is universally recognized that acute malnutrition is one of the five top causes of death of children under 5. It is estimated that more than 19 million children around the world are severely acutely malnourished at any one time.¹⁰ These children have a greater than ninefold increased risk of dying compared to a well-nourished child.¹¹ *The Lancet* Series on Maternal and Child Nutrition and the 2010 multi-stakeholder global 'Scale Up Nutrition' (SUN) effort both emphasize the importance of addressing undernutrition and acute malnutrition in meeting the MDG of reducing child mortality rates (MDG 4). With 4.0 percent of the global death burden in children under 5 attributable to SAM and 14.5 percent attributable to global (moderate and severe) wasting,¹² an effective approach to tackling the problem of child malnutrition, such as CMAM, has been welcomed. Increasing the access to interventions that prevent or treat acute malnutrition will result in a substantial reduction in under-5 mortality. Universal access to these interventions may save the lives of thousands of children every year. In the aftermath of recent food security and nutrition crises in West Africa, much progress in the integration and scale-up of CMAM has been achieved as a result of increased support from governments, U.N. agencies, IPs, and donors, and the recognized importance of CMAM in the prevention of mortality.

The main challenges implementation of CMAM faces include the weakness of national health systems into which CMAM has been integrated, e.g., the shortage of health care providers, the weakness of community outreach, the uncertain and unsustainable supply system, and limited national expertise in CMAM that is not yet institutionalized.

Achievements in Brief:

- **The enabling environment for CMAM.** Since the introduction of CMAM, acute malnutrition has gained in importance at the national and subnational policy and implementation levels. National guidelines have been developed and disseminated widely. Although guidelines are not always adhered to, the level of uptake of essential elements has been positive.
- **Competencies for CMAM.** Despite the limitations in the training approach and quality, the training of many hundreds of health managers and health care providers within a few years has been a very important achievement. Almost all the health facilities visited have at least one health care provider trained on CMAM.
- **Access to CMAM services.** Access to treatment for acute malnutrition, especially for SAM, has gone from nonexistent to almost nationwide coverage. Significant progress in the integration of CMAM into routine health services has been made in all four countries.
- **Access to CMAM supplies.** With support from U.N. agencies and IPs, access to therapeutic foods, supplies, and drugs for the management of acute malnutrition has improved considerably. However, the supply system has not yet been integrated into MOH systems and national budgets have contributed little to the financing of the program.
- **Quality of CMAM.** M&R systems have been identified as weak and a standardized but complicated West Africa regional approach has been proposed. QI has been recognized as a next focus area that needs to be strengthened and plans are being discussed for developing approaches.

¹⁰ *The Lancet* Series on Maternal and Child Undernutrition. 2008. WHO is currently estimating the global number of severely acutely malnourished children and the global number of deaths associated with SAM.

¹¹ *Ibid.* The odds of dying are estimated to be 9.4 times higher in severely wasted children.

¹² *Ibid.* Note: WHO is currently developing estimates of the number of children around the world with SAM and the global number of deaths associated with SAM.

References

CPS/MS, DNSI/MEIC, and Macro International Inc. 2007. Enquête Démographique et de Santé du Mali 2006.

Deconinck, H.; Bahwere, P.; and Adou, P. 2011. *Review of Community-Based Management of Acute Malnutrition Implementation in Niger*. Washington, DC: AED/FANTA-2.
http://www.fantaproject.org/downloads/pdfs/FANTA2_CMAM_Niger_Jan2011.pdf.

Deconinck, H.; Bahwere, P.; and De Bernardo, D. 2010. *Review of Community-Based Management of Acute Malnutrition Implementation in Mali*. Washington, DC: AED/FANTA-2.
http://www.fantaproject.org/downloads/pdfs/FANTA2_Mali_CMAM_Review_Nov2010.pdf.

Deconinck, H.; Bahwere, P.; and Diene, S. 2010. *Review of Community-Based Management of Acute Malnutrition Implementation in Burkina Faso*. Washington, DC: AED/FANTA-2.
http://www.fantaproject.org/downloads/pdfs/FANTA-2_BurkinaFaso_CMAM_Review_Nov2010.pdf.

Deconinck, H.; Bahwere, P.; and Diene, S. 2010. *Review of Community-Based Management of Acute Malnutrition Implementation in Mauritania*. Washington, DC: AED/FANTA-2.
http://www.fantaproject.org/downloads/pdfs/FANTA2_Mauritania_CMAM_Review_Nov2010.pdf.

Deconinck, H.; Swindale, A.; Grant, F.; and Navarro-Colorado, C. 2008. *Review of Community-based Management of Acute Malnutrition (CMAM) in the Post-emergency Context: Synthesis of Lessons on Integration of CMAM into National Health Systems*. Washington, DC: AED/FANTA-2.
http://www.fantaproject.org/downloads/pdfs/CMAM_Synthesis_Apr08_v2.pdf.

INS, Niger. 2010. Rapport de l'enquête nutrition et survie des enfants de 6 à 59 mois, mai-juin 2010.

Kerac, Marko et al. 2011. "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." *BMJ*. <http://www.adc.bmj.com/content/early/2011/02/01/adc.2010.191882.full>.

The Lancet Series on Maternal and Child Undernutrition, 2008.

Tawfik, Y.; Segall, M.; Necochea, E.; and Jacobs, T. 2010. *Finding Common Ground: Harmonizing the Application of Different Quality Improvement Models in Maternal, Newborn, and Child Health Programs, Technical Report*. USAID Health Acre Improvement Project. Bethesda, MD: University Research Co., LLC. <http://www.hciproject.org/node/2048>.

UNICEF. 2006. Consolidated Appeal Process.

UNICEF. 2010. Child Malnutrition in the Sahel Region.

UNICEF MICS. 2007. http://www.unicef.org/statistics/index_countrystats.html and http://www.childinfo.org/mics3_surveys.html.

WHO. 1999. *Management of severe malnutrition: a manual for physicians and other senior health workers*. Geneva.