1-9-2015

The Revitalization of the Community-based Management of Acute Malnutrition Program in Haiti

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THE REVITALIZATION OF THE COMMUNITY-BASED MANAGEMENT OF ACUTE MALNUTRITION PROGRAM IN HAITI

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Georgia State University

A Capstone Submitted to the Graduate Faculty

of Georgia State University in Partial Fulfillment of the

Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA

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Executive summary

Severe acute malnutrition (SAM) threatens the lives of millions of children globally. In developing countries, 15% of the population is undernourished; and half of the mortality for children younger than 5 years old is associated to undernutrition (UNICEF, 2008), the most vulnerable population to malnutrition. Overall, Haiti reports 19.2% of children are undernourished, 11.4% are underweight, and 10.3% are wasted (Lutter et al., 2011; DHS, 2005, CWW-proposal, 2007). The treatment for the management of SAM has evolved over the decades (Lancet, 2006). The Community Management of Acute Malnutrition (CMAM) is an evidence-based intervention with proven effectiveness for treating children with SAM (Collins, 2007). The CMAM intervention reduces infant mortality related to SAM (Lancet, 2006, Collins, 2007; WHO, 2001; UNICEF, 2009).

The CMAM intervention was validated in 2007 through the United Nations agencies for the management of SAM. Nevertheless, it has had limited reach and poor public health impact in some of the developing countries (e.g.; Haiti) where it was implemented. Concern Worldwide is a non-profit humanitarian organization, which pioneered in the creation of the CMAM intervention. Concern introduced the CMAM interventions in Haiti in October 2007 as a pilot program. The program was implemented in close to 20 health institutions in the metropolitan Port-au-Prince. As is the case with any other public health program, there were many challenges to the CMAM intervention implementation in Haiti. Concern's CMAM intervention was not sustainable after it retracted the technical support in 2012 (UNICEF-Haiti country report, 2014).

The purpose of this paper is to first review the Concern Worldwide CMAM program implementation in five communes of Port-au-Prince. Then, a suggested plan is outlined for the revitalization of the intervention's activities and long-term sustainability once revitalized.

By
JOHANNE DESORMEAUX

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(Under the direction of Dr. Jenelle Shanley Chatham)

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- Maternal mortality
- The Revitalization of the Community Management of Acute Malnutrition Program in Haiti

Acknowledgements

It seemed as if life intended to teach me something, “just Breath”. I am thankful to my immediate support system my amazing family, my friends and J.V, that never let me quit. My gratitude also goes out to the Georgia State University faculty, staff and the Fulbright program; I was able to graduate and obtain my Masters’ degree.

Special recognitions are due to Doctors Chatham and Rothenberg who went above and beyond the call of duty to insure my success. I am grateful for their support.

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Executive summary

Severe acute malnutrition (SAM) threatens the lives of millions of children globally. In developing countries, 15% of the population is undernourished; and half of the mortality for children younger than 5 years old is associated to undernutrition (UNICEF, 2008), the most vulnerable population to malnutrition. If not treated, malnutrition produces life-long physical and cognitive developmental problems (Grantham-McGregor, 1995). Overall, Haiti reports 19.2% of children are undernourished, 11.4% are underweight, and 10.3% are wasted (Lutter et al., 2011; DHS, 2005, CWW-proposal, 2007). The treatment for the management of SAM has evolved over the decades (Lancet, 2006). The Community Management of Acute Malnutrition (CMAM) is an evidence-based intervention with proven effectiveness for treating children with SAM (Collins, 2007). The CMAM intervention reduces infant mortality related to SAM (Lancet, 2006, Collins, 2007; WHO, 2001; UNICEF, 2009).

The CMAM intervention was validated in 2007 through the United Nations agencies for the management of SAM. Nevertheless, it has had limited reach and poor public health impact in some of the developing countries (e.g.; Haiti) where it was implemented. Concern Worldwide is a non-profit humanitarian organization, which pioneered in the creation of the CMAM intervention. Concern introduced the CMAM interventions in Haiti in October 2007 as a pilot program. The program was implemented in close to 20 health institutions in the metropolitan Port-au-Prince. As is the case with any other public health program, there were many challenges to the CMAM intervention implementation in Haiti. Concern's CMAM intervention was not sustainable after it retracted the technical support in 2012 (UNICEF-Haiti country report, 2014).

How the implementation process is conducted is a key factor in the intervention's success

and sustainability over time. Numerous resources (e.g., funds, medical supplies and trainings) were invested in CMAM's success. However, Concern failed to provide the organization capacity building for the maintenance of the CMAM activities. Additional, no resources were made available to practitioners once Concern left. The communication channels had all been severed. Patient screening, referral and follow-up were not achievable under those conditions.

The revitalization of the CMAM program in local health institutions in Haiti requires a rigorous utilization of a sustainability framework adapted to the Haitian setting for lasting public health outcomes. The sustainability plan in Haiti is linked to internal and external factors, some being intrinsic to the organization and others are external factors that determine the intervention's viability. These factors include strong policies, funding, country program ownership, and internal technical support.

The purpose of this paper is to first review the Concern Worldwide CMAM program implementation in five communes of Port-au-Prince. Then, a suggested plan is outlined for the revitalization of the intervention's activities and long-term sustainability once revitalized.

Chapter 1

Introduction

Malnutrition or undernutrition is the lack of some or all of the nutrition necessary for human health (UNICEF, 2006). Globally, the Food and Agriculture Organization (FAO) reports one in every eight human beings is chronically undernourished (FAO, 2012). Nonetheless, those statistics mostly reflect the problem of undernutrition in developing countries. World hunger studies report 15% of the population in developing countries as undernourished, and children are the most vulnerable to malnutrition (Cafiero and Pietro, 2011). The 2015 Millennium Development Goal 1(MDG1) is to eradicate extreme poverty and hunger by 2015 (Lutter, Chaparro, & Muñoz, 2011; Bhutta & Salam, 2012). Many efforts were made from 1990 to 2005 towards the attainment of the 2015 MDG1 in the Latin America and the Caribbean. As a result, improvements in the management of undernutrition have led to a decrease from 14.6% in the 1990s to 8.3% in 2010-2012 in Latin America and the Caribbean (FAO, 2012). Overall, many developing countries, such as Brazil, Mexico, El Salvador, and Honduras, have seen a decline in the numbers of child undernutrition. For example, the level of stunting in Brazil went from 19.8% to 6.8% from 1990 to 2006 (Demographic Health Survey-Center for Disease Control and prevention, 2005). However, based on a geographic mapping of undernutrition, only 4% of the malnourished children in the world live in the Latin America and the Caribbean (FAO, 2012).

The United Nations Children's Funds (UNICEF) reports 1 out of every 15 children will die before the age of 5 in developing countries, and half of these child deaths are attributed to undernutrition (UNICEF, 2008). Moreover, childhood illnesses such as diarrhea and pneumonia

can potentiate the occurrence of malnutrition by reducing the body's ability to retain nutrients (Pelletier, Frongillo, Schroeder, & Habicht, 1995). Additionally, malnutrition produces life-long physical and cognitive developmental problems. If not caught in time some of its effects, such as lower IQ and low cognitive functions, may be irreversible once a child reaches a certain age (Grantham-McGregor, 1995).

Whenever 10% of children younger than 5 years are moderately malnourished in a country, emergency nutrition interventions are implemented in the affected regions (Antwi, 2011). Nevertheless, not all hospitals in developing countries offer nutritional care, resulting in restricted access to care for patients with Severe Acute Malnutrition (SAM) and a delay of patients' treatment. Malnutrition diminishes the body's ability to fight infections. Therefore, SAM children have an increased risk for cross infections when admitted in pediatric wards alongside other children with infectious diseases (Karaolis et al., 2007). Even so, prolonged hospitalization not only increases the risk for cross infections, it also causes a strain on the families' dynamic. Caregivers are required by the hospitals to accompany their sick child. Therefore, they are not able to work and/or provide attention to other children in the family, and attend to other responsibilities (Collins, 2007; Maman et al., 2012). The consequences of prolonged hospitalization are as strenuous to the healthcare system. Hospitals that offer nutritional care are overcrowded, hospital staff are overworked, and services are of poor quality (WHO, 2001; UNICEF, 2009; Valid , 2009; & Antwi, 2011). Evaluations of hospitals using the WHO (1999) guidelines reported low patient weight gain, low recovery rates, high program default, and finally, a high mortality rate (Bachmann, 2009). Since those reports, there were the production of evidence-based practices like the Community-based Therapeutic Care (CTC) program and the Community Management of Acute Malnutrition (CMAM) program leading to

the revisions of the WHO guidelines (WHO, 2003 & Lancet, 2006).

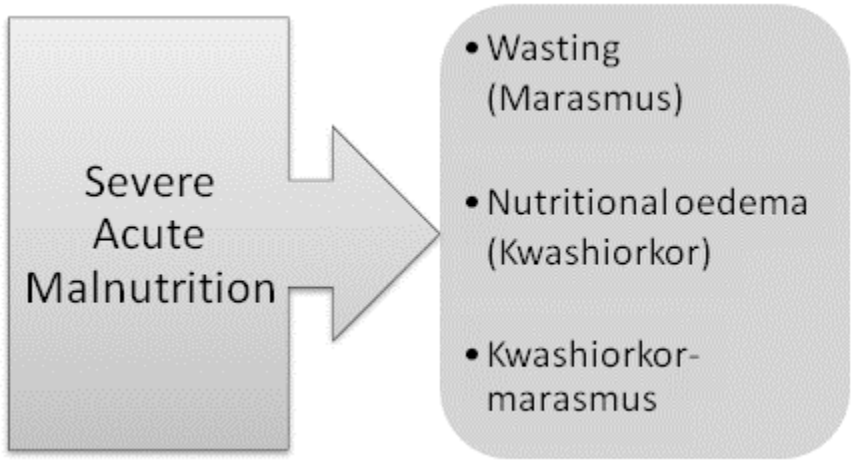
Malnutrition or undernutrition is typically assessed by analyzing children's age, weight, and height plotted on growth charts with normative comparisons. The anthropometric measurements determine the type of malnutrition (i.e., underweight, stunting or wasting) through the WHO growth indicators (see figure 1). These health indicators also specify the severity of the malnutrition (De Onis, Frongillo and Blossner, 2000). "Low weight-for-age" indicates *underweight*, suggesting that the child does not weigh enough compared to same-aged peers. This form of malnutrition is improved with nutritional counseling and monitoring of the child's weight gain process. "Low height-for-age" indicates *stunting*, suggesting the child has not achieved comparative height with peers. Stunting is the result of chronic undernutrition, which overtime slows or alters the growth process. Chronic undernutrition is the result of poor maternal nutrition, poor infant feeding practices and recurrent disease episodes. Stunting is corrected through supplementary feeding programs targeting the entire family. Finally, "low weight-for-height" measures *acute malnutrition*, it is the most dangerous form of undernutrition. Acute malnutrition is classified into three forms (see figure 1-1): wasting also named Marasmus, is a severely emaciated individual with loss of fat and muscle. The second form is the nutritional edema or Kwashiorkor. It is characterized with bilateral swelling that starts at the feet. The last form of acute malnutrition is a mixture of both wasting and nutritional edema Kwashiorkor-Marasmus (WHO, 1999). Children with acute malnutrition have an increased risk of mortality and should be treated with specialized care (WHO, 2006).

Figure 1: Undernutrition

	Acute malnutrition	Stunting	Underweight
Indicators	Low *weight for height* mid-upper arm circumference (MUAC) or low weight-for-height (WFH, wasting) Or Presence of bilateral pitting oedema	Low *height for age*	Low *weight for age* combining wasting and stunting

Source: WHO growth indicators, 2003.

Figure 1-1: Classification of acute malnutrition



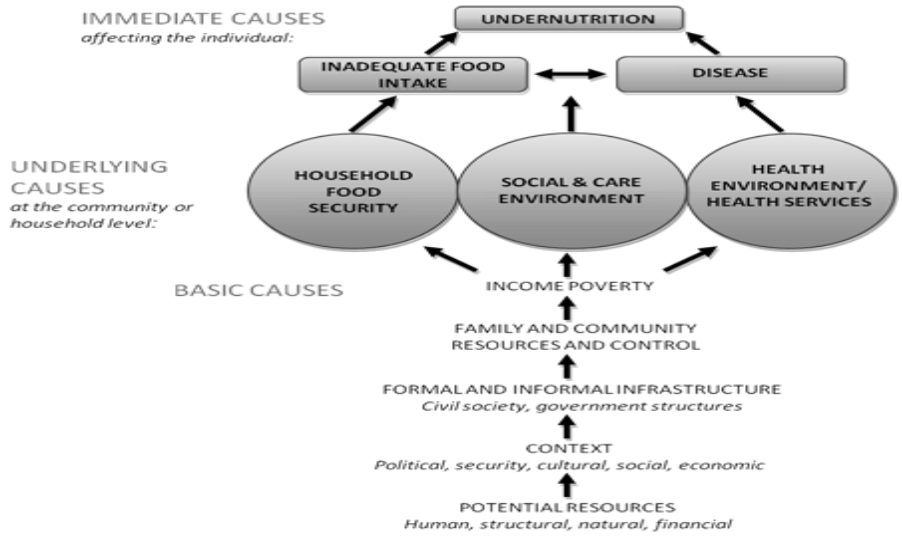
Source: WHO, 2006.

Malnutrition conceptual framework

Malnutrition is a multifactorial problem with highly inter-correlated solutions (see figure 2). The World Health Organization (WHO) and the United Nations Children's Funds (UNICEF) joint committee reflected on the management and preventive avenues of undernutrition. The joint committee elaborated the Malnutrition Conceptual Framework, which explains the causal

mechanism linked to undernutrition and states the recommended focus for interventions (UNICEF, 1990). The conceptual framework details the numerous pathways leading to malnutrition. Malnutrition is embedded in the socio-cultural, economical, and political environment surrounding the affected populations. When not addressed, these elements result in child undernutrition and ultimately increase infant mortality. Moreover, malnutrition objectifies the burden of intergenerational poverty. It is a reflection of poor maternal and child health (MCH), and nutrition which are associated to unsanitary living conditions, poor education and low buying power (Garza & de Onis, 2004; Lutter, Chaparro, & Muñoz, 2011). The United Nations Children's Funds stated "the causes of malnutrition are classified as immediate, underlying, and basic, whereby factors at one level influence other levels" (pg.6, UNICEF, 1998). The proper application of the framework allows effective action planning for the improvement of nutritional health at national and local level. It can also be used as an assessment tool during crisis and provide appropriate actions (UNICEF, 1998).

Fig 2: Malnutrition Conceptual Framework



Source: UNICEF (1998). The State of the World's Children, 1998.

Country profile of Haiti

The Republic of Haiti is a Caribbean country located in the Western hemisphere. An area of 10,714 square miles occupied with over 10 million inhabitants (Institue Haitian de Statistique et d'Informatique (translate to English National census bureau), 2014). The Haitian population is predominantly female with more than half of the population is under 21 years (EMMUS-V, 2012). Haitians live with less than two dollar per day, making them unable to provide for their basic needs (World Bank, 2014). The population has limited access to resources and quality healthcare services. The Human Development Index (HDI), as defined by the United Nations Development Program (UNDP), is a measure of the average accomplishment in key aspects of human development (Ray, 2014; "Human Development Index (HDI)," n.d.). In 2012, Haiti ranked 161 out of 187 countries. With an HDI of 0.456, Haiti falls lowest on three measures of the human poverty (UNDP, 2013 & World Bank, 2014). Compared to other developing nations (e.g.; the Dominican Republic, Mexico and other Caribbean countries), Haiti has the lowest numbers for life expectancy at birth, literacy, and gross net income per capita (UNDP-HDR report, 2010). The United Nations Population Funds (UNPF, 2012) reported the life expectancy in Haiti to be 63 years. Healthcare in Haiti even though free, for children younger than 5 years, is of limited coverage and there are recurring costs for care and shortage of medical supplies. Analysis on the health system workforce reports 5.9 physician and 6.5 nurses for 10,000 inhabitants, providing only 60% of the health coverage for the entire country ("Ministère de la Santé Publique et de la Population," n.d.).

Maternal and child health are significant challenges to the Haitian health care system. Even though, 96% of mothers reported breastfeeding, infant and child feeding are also major public health concerns. Early initiation of breastfeeding was reported by 44.3% of women, but

only 24% breastfed exclusively up to 6 months. Low birth rate is reported in 23% of live births (EMMUS-IV (DHS), 2007). Exclusive breastfeeding and optimal complementary feeding during infancy are not standard practices in Haiti. Infant mortality rates in Haiti were around 57 deaths per 1000 live birth, and mortality rate of children under 5 years old is 86 per 1000 births (EMMUS-IV Haiti, 2007; UNICEF, 2008). The maternal mortality rate is the highest in the west hemisphere at 603[479-789] per 100,000 live births (EMMUS-IV, 2007). Haiti shows some of the highest number for nutritional deficiencies in Latin America and the Caribbean. Undernutrition is less than 9% in the Latin America and the Caribbean, except for Guatemala (18%) and Haiti 19.2%. Wasting is low in most of the countries in the Latin Americas and the Caribbean, but Haiti reported 10.3% in 2005. Finally, 22% of children less than 5 years are classified as underweight in Haiti (DHS, 2007; CWW-proposal, 2007; WHO, 2008; Lutter et al., 2011). These numbers confirm the inherent precariousness of the Haitian health care system.

Intervention Area: the City of Port-au-Prince

Port-au-Prince is the capital and the largest city in Haiti. Located in the Gulf of La Gonave, the city measures 15 square miles (see figure 3). It is densely populated with over 3 million inhabitants (Haiti National census bureau, 2014). It is the center of economical, political and intellectual life in Haiti. Unemployment is extremely high 40.6% in 2010 after the earthquake, compared to 11.24% in 2007 (Trading economics, 2014). There is a constant migration of rural dwellers to the capital. These immigrants constitute a burden to the Haitian capital. They live in overcrowded urban slum cities all around Port-au-Prince. These slums are the harbors for the most vulnerable and poorest of the Haitian society. Inhabitants of the slums live in unstructured dwellings and have no access to electricity, running clean water, or proper sanitation.

Since the 1980s, Haiti has suffered worsening poverty, socio-political unrest, and economic instability. For example, in 1991 and 2004 democratically elected president Jean-Bertrand Aristide suffered 2 coup d'état. Ever since, Haiti is under military assistance from the United Nations Stabilization Mission (Pierre-Louis, 2011). The Haitian currency which was of equal value to the US dollar back in the 1970s and early 80s has been greatly depreciated (1US dollar = 9 Haitian dollars) (Banque de la Republique d'Haiti, 2014). Nevertheless, the government is striving to rebuild the country with the vision of a better tomorrow for the Haitian children ("Ministère de la Santé Publique et de la Population," n.d.).

Figure 3: The city of Port-au-Prince

Source : http://johnrougeux.com/category/travel

Overview of Project

For the past thirty years, Haiti has been unable to maintain lasting governance. Continuous political instabilities, recurrent natural disasters (e.g., hurricanes and earthquake), and man-made disasters (e.g., aggressive deforestation and Cholera outbreaks) have caused Haiti to become dependent of the international aid (Carpio, 2010). Concern Worldwide and other non-governmental international agencies joined efforts to combat the malnutrition epidemic in Haiti. Concern Worldwide is a non-governmental, international, humanitarian organization whose mission is to reduce the suffering from extreme poverty (Concern Ireland & Worldwide). Valid International is a humanitarian agency specializing in the implementation of evidence-based practices in the field of nutrition (Valid, 2008). They both pioneered interventions for the management of severe acute malnutrition, in response to the famines in Africa in 2000 (Valid, 2008). Other organizations that provide support for breakthrough nutrition programs, Food and Nutrition Technical Assistance (FANTA), is a United States Agency for International Development (USAID) funded project that provides technical support to non-governmental organization (NGO) national and governmental institutions for nutrition and food security interventions development, implementation, monitoring, and evaluation (FHI, 2014).

The Demographic Health Survey (2006) reported a rise in malnutrition cases in Haiti. From 2000 to 2005 the national prevalence for severe acute malnutrition rose from 0.6% to 2.2% (DHS-Haiti, 2005). Evidence-based researchers from expert organizations such as Valid International, Concern Worldwide and FANTA have shown the efficacy and effectiveness of the community management of severe acute malnutrition (CMAM) methodology, and the health impact for the prevention of death from acute malnutrition (Lancet, 2006).

In 2008, Concern Worldwide-Haiti implemented a nutritional program to manage malnutrition in the urban city of Port-au-Prince in 3 communes, targeting children younger than 5 years (CWW- Strategic Plan, 2006). Gradual increase in food prices worldwide resulted in a global crisis in 2007-2008. The world prices for rice, wheat, and maize increased by 102%, 115%, and 204% respectively, according to the UN Food and Agriculture Organization (FAO, 2011). By April 2008, the rise in food prices in Haiti ranged from 50 to 100%. The population reacted with violent demonstrations, which concluded with the dismissal of Haiti's Prime Minister (CNN/World, 2008; "2007-2008 Food Crisis," n.d.). The Commission Nationale sur la Securite Alimentaire (CNSA; translates as the National food security commission) reported 1.9 million Haitians at risk of food insecurity in 2008. People had less money to dedicate to essential food items resulting in a decrease in the quality and quantity of foods.

The Community Management of Acute Malnutrition (CMAM) intervention was designed to support vulnerable families during the food crisis of 2008 in Port-au-Prince. Rapid snapshot assessment provided an estimation of the population's nutritional status and the impact of the food crisis. The nutrition assessment reported an increase of malnutrition in children younger than 5 years, and on the seriousness of the nutritional health in Haiti (ACF, MSPP & UNICEF, 2009). In response to the Haitian malnutrition crisis, Concern established the CMAM intervention. The CMAM intervention focused on quality and appropriate care for the management of children with severe acute malnutrition (CWW-CMAM proposal, 2008).

Purpose of Paper

The CMAM implementation was based on the assumption that once Concern Worldwide-Haiti stepped down after providing five years of technical support, the local institutions would be

able to maintain the quality services for children suffering of severe acute malnutrition. The initial program planning and implementation suggested an integrative method with the capacity building of national and non-governmental institutions for the management of malnutrition. Nevertheless, this was not the case; in most institutions the CMAM was a parallel program.

The current project provides a review of Concern Worldwide Nutrition program, CMAM, to assess the strength and challenges to the implementation process and the sustainability of a community-based project in urban Port-au-Prince. This paper will conclude with recommendations for the revitalization and sustainability of follow-up nutrition programs, and the lessons learned can be applied to future public health interventions in Haiti.

Chapter 2

Intervention implementation literature review

Background

Severe acute malnutrition threatens the lives of approximately one million children yearly around the world (WFP & UNICEF, 2008). The effectiveness of treatment of severe acute malnutrition has been proven through health interventions during emergency settings and routine development programs. These statements were proven in countries such as Ethiopia, Malawi and, Bangladesh (Collins et al., 2006; Ashworth, 2006; Valid, 2008). On the other hand, the duplication of these nutrition interventions faced multiple obstacles in countries like Haiti, with similar health concerns (UNICEF, 2008; Bachmann, 2009). Nutrition science faces the same challenges with implementation of evidence-based programs as other public health plans (Garrett, 2008; Pallas et al., 2013; Hulcombe, Sturgess, Souvlis, & Fitzgerald, 2014). During the implementation of the integrated management of childhood illness, providers were reluctant to the new sick child screening practices. There was minimal buy-in and the program soon faded out after its execution (Mushi et al., 2011).

Proven effectiveness aside, nutritional rehabilitation programs are complex interventions that take months to produce the desired outcomes. Thus, nutrition interventionists struggle with the policy makers' and program funders' partake into the nutrition intervention program development (Bachmann, 2009). There is high a risk of program default and fatalities, if the

interventions are not delivered adequately (Collins, 2007; Garret, 2008; Bhutta & Salam, 2012). Evidence-based practices that derived from the trials gained momentum from public health innovations in the early 1990s. Concern Worldwide is one of the leading organizations that contributed to the already mentioned practices for the validation of nutrition interventions in the world and developing countries (Collins, 2007; Valid International, 2008).

There is a growing gap between science and real world implementation. The focus of many implementation research studies and public health initiatives is to bridge this gap (Tabak, Khoong, Chambers, & Brownson, 2012). Researchers have excelled in efficacy trials, which provided the evidence-based knowledge for public health problems. However, translation of these principles into real world applications is problematic. Only small portion of the research trials are successfully translated into public health interventions (Fixsen et al., 2005; Flay et al., 2005; Damschroder et al., 2009). Implementation is the integration of a program/practice into an organization or community. The quality of the implementation process influences the intervention's outcomes. The process of incorporating a program into a community, organization or even a country is the main challenge in implementation science (Fixsen et al., 2005; Flay et al., 2005).

The implementation process is more than just providing the intervention's guidelines and provider trainings. Program implementation and the transfer of knowledge is a continuous process, which needs to be refined throughout the program's development (Blasé & Fixsen, 2003; Fixsen et al., 2005). Given the complexity of evidence-based intervention programs, implementation is a lengthy process, which requires intervention based and implementation based activities in order to have lasting effects. The implementation based activities are the resources given to provider agencies for the delivery of services. The intervention based

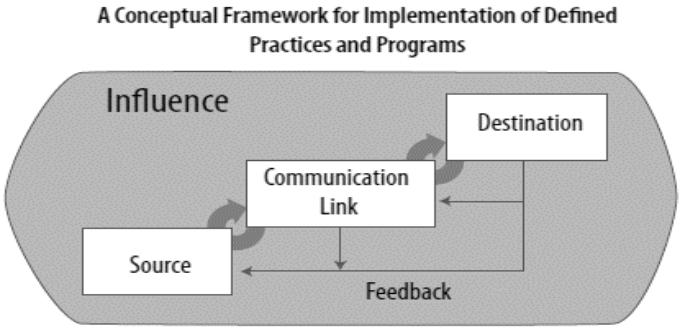
activities are the program's impact on beneficiaries. These two sets of activities will be complementary for the intervention's success.

The premise of this literature review is to detail the transforming research process into real world applications. As the developers of the CMAM, Concern faced the mission of installing CMAM in urban Port-au-prince (CWW-Goldman proposal, 2007). This implementation faced several challenges. Nutrition science is a novel field not readily connected to other successful fields of study, which possess the knowledge and tools to successful intervention implementation and maintenance (Garrett, 2008; Gillespie, Haddad, Mannar, Menon, & Nisbett, 2013). Before discussing these challenges, a contextual framework of implementation is discussed.

Implementation Components

Public health program implementation is a complex process. Identifying key players is the initial steps in the implementation process. Fixsen et al.'s monograph (2005) put forward the Implementation Framework which details the elements in a successful implementation process (see figure 4). The Implementation Framework details the elements that will influence a successful program implementation, such as the source, the destination, purveyors' support and the feedback (Fixsen et al., 2005). These elements are intrinsically inter-correlated components of the implementation process.

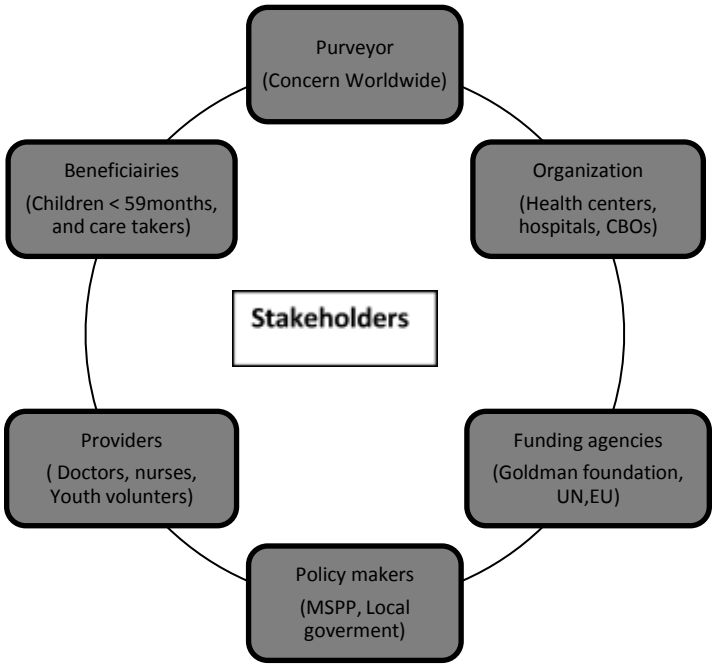
Figure 4: Implementation Framework



Source: Fisxen et al., 2005

The evidence-based practice is the source for the program implementation. Once the intervention is selected, it is matched to the appropriate destination which is the provider agencies, organizations or community, with the capacities to carry out the intervention activities. For this process to succeed, the creation of a planning-group is recommended (see figure 5). The planning-group is composed of program stakeholders (e.g. providers, funders, community-based organizations, consumers). Other element in the implementation framework is the communication link. It consists of the program purveyors, which are most knowledgeable of the intervention practices. Purveyors possess the experiences required for intervention implementation with fidelity, that the way it was intended. The purveyors provide technical support to promote the success of the intervention and the quality of the implementation. Finally, through the feedback loop, a continuous flow of information is shared between the agencies, practitioners and the purveyors.

Figure 5: Planning group for CMAM implementation



Implementation process

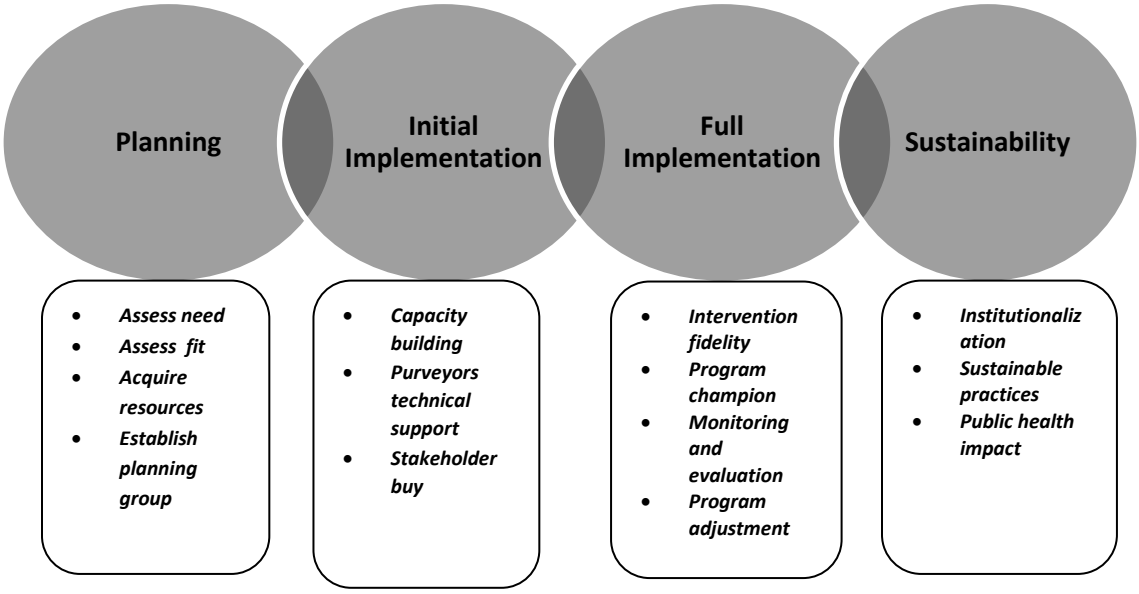
Program implementation is defined as a set of activities design to put into practice an evidence-based intervention (Fixsen et al., 2005; Flay et al., 2005). A well planned implementation is fundamental to successful program outcomes and long-term sustainability. Eventually, the implementation's results should reflect the outcomes of the efficacy trials (Lee et al., 2008). Testing the intervention in a small scale pilot can favor program maintenance, so that stakeholders get the visible results of the intervention's effects (LaPelle, Zapka, & Ockene, 2006). A successful implementation requires methodical planning and preparation even before the program begins. Knowing what works and how to make it work is the first step (Wandersman et al., 2008; Fixsen et al., 2005).The program purveyors monitor the interaction between the contexts of the intervention, (e.g., nutrition interventions post-earthquake), and the mechanisms that will enable favorable outcomes. These factors need to be addressed before the implementation process begins (Duralk & Dupre 2008).

Before the intervention activities initial start-up, implementing agencies have to development a localized knowledge of the intervention's specific destination (e.g., health center or community). The understanding of the contextual environment of the intervention enables adjustments to the implementation process to become compatible with the mandate of the adopting organizations/community. Even so, the intervention has to be in accordance with the organization's mission; it should not require much modification to the organization's structure. The continuous sharing of information among program stakeholders, (e.g. providers agencies and consumers), will facilitate the intervention's implementation with fidelity (Lhussier, Bangash, Dykes, Zaman, & Lowe, 2012).

Stages of implementation

Knowing what works and how to make it work is the first step to public health program lasting impact (Wandersman et al., 2008; Fixsen et al., 2005). Intervention implementation follows a series of correlated stages. It is not simply the process of handing over an intervention manual and hope the program will produce successful results (Fixsen et al., 2005; Damschroder et al., 2009; Colquhoun et al., 2014). There are a variety of implementation frameworks in the literature (Fixsen et al., 2005; Durlak & DuPre, 2008; Schell et al., 2013; Frieden, 2014), most progress through similar stages. For this project, four main stages to intervention implementation are discussed (see figure 6): planning, initial implementation, full implementation and sustainability (Fixsen et al., 2005).

Figure 6: Stages of implementation



The initiation of implementation process starts with a meticulous *planning stage* before the intervention begins. The planning stage lays the foundation, when synchronizing the community's needs and the organizations' capabilities, to carry out the intervention activities. A needs assessment tabulates the data for the program rationale, and the results feed into the program's implementation planning process. The acknowledgement of a problem will permit the development of community awareness, in order to provide a probable intervention implementation plan to address the identified problems. A planning-group involving the program stakeholders set goals and objectives for the program implementation plan. These individuals provide feedback throughout the planning stage process and implementation stages (Fixsen et al., 2005; Flaspohler, Duffy, Wandersman, Stillman, & Maras, 2008; Coreil, 2010).

The planning group during the initial stages of implementation is composed of the local health institutions which will house the intervention; the providers (e.g. trained nurses, physicians and community volunteers) that puts the innovation into practice; the purveyors; the

program funders; and policy makers that provide the political support and advocate for the program maintenance based on its gain for the communities. As an example, during the elaboration of proposal for Concern's 2008 interventions in Haiti, the list of activities of the planning group consisted of nutritional surveys, discussion with the ministry of health, international agencies and community members. They provided the information for intervention implementation for the affected population (Concern-CMAM proposal, 2008).

The second stage in intervention implementation is the *initial implementation*. During this start-up process, the focus is on the stakeholders' (community members, consumers, practitioners, purveyors and policy makers) buy-in. Stakeholder involvement is different for each member. Providers are trained on the intervention activities. The purveyors provide technical support to ensure the delivery of services is in such a way the program is intended to be delivered. During the initial implementation stage, the purveyors' assistance to the implementing organizations determines intervention's outcomes. Their knowledge and expertise with intervention's practices, allows problem resolution when they come-up during the implementation program process.

The third step is *full implementation*. In this stage, the intervention is fully operationalized, that is, all trained providers are receiving the needed technical assistance and coaching, services are readily available to consumers, and the program is reflective of how the purveyor implements. Moreover, stakeholders and those involved in the implementation (managers, administrators) are bought-in, and are supporting the implementation. The result from program's outcomes should be visible at this point, and have favored community's acceptance of the intervention (Oosthuizen & Louw, 2013). At this juncture, the skills, knowledge, and motivation required by the practitioners, organizations or communities are operationalized as

standard practices and reflect the evidence-bases innovation. Implementation fidelity is the focus during the full implementation, making sure that the intervention activities are delivered the way they were designed (Lee et al., 2008; Fixsen et al., 2005; Mowbray et al., 2003)

The final stage of implementation is *sustainability*. This stage focuses on the maintenance of implementation activities in a changing environment. Sustainability is the end result of the entire implementation process. Through the acquired knowledge and skill, program stakeholders become less dependent on the external technical assistance and resources. They are able to replicate the evidence-based practices with fidelity. The combination of actions throughout the implementation process is so programs are sustained over time.

Factors that impact program implementation success

Public health program implementation focuses on the effectiveness of the chosen intervention. Transforming research into real life practice is challenging since the stringent methods of the research setting are not applicable in the real world. Frieden (2014), Garrett (2008), Shel et al. (2013) and Whelan et al. (2014) have all referenced to core elements for public health program sustainability. There are numerous elements that promote initial uptake and sustainment of an intervention. These include secure funding, good partnership and communication among stakeholders, and finally policymakers' support. Handler and colleagues (2001) and Hawe and colleagues (1997) suggested adequate staff training and institutional capacity building as necessary constructs for program goal achievements. A Sustainability Framework can provide a systematic process to promote program planning towards sustainable health outcomes. The Sustainability Framework combines the internal factors (e.g.; staff competence, supervisory skills) and the external factors (e.g., political commitment, funding and

health impact). The internal factors focus on the providers' capacity to maintain intervention activities; whereas external factors are common to any program implementation to achieve sustainability.

Sustainability

Organizations need to obtain a certain level of maturity with the intervention before one can infer that the activities are sustainable. There are varying viewpoints regarding a true definition for intervention sustainability. Sustainability is seen as the continuum of the intervention or its effects after the suspension of purveyor support (Whelan et al., 2014). It has also been defined as the development of organizational capacity, and the settlement of contextual factors, which allows program maintenance over time (Pluye, Potvin, & Denis, 2004; LaPelle, Zapka, & Ockene, 2006; & Pammolli, Riccaboni, & Magazzini, 2012). Viable interventions result from the supportive processes surrounding the implementation. Actions, like the creation of partnership between stakeholders are favorable to lasting program impact. Even so, secured resources and good community engagement also contribute to the intervention implementation sustainability (Lhussier et al., & Card et al., 2012)

As noted earlier, the long-term effect of an intervention is reliant on the level of planning and allocation of resources during the implementation process (Fixsen et al., 2005; Schell et al., 2013). Funding for public health interventions are often allocated for specific periods of time and sometimes for specific activities. Different funding agencies target activities of interest in the intervention but not the program as a whole. The lack of long-term planning is associated with program failure. Therefore, in order for a program to become sustainable over time, there needs to be long-term planning for funds even after initial funds are no longer available (Whelan et

al.'s 2014). To ensure program sustainability, during the implementation process the four stages should conclude into sustainable skills, sustainable practices, and sustainable outcomes. This includes practitioners being able to train new staff during turnover periods and ensure delivery of the intervention with fidelity throughout the implementation (Gatchell, Forsythe, & Thomas, 2006; Scheirer & Dearing, 2011).

Literature on program sustainability revealed the limited lasting effect of public health program outcomes. Reason like the lack of resources (e.g., qualified staff, secure funding) are some of the cited factors that hinder program sustainability. As mentioned, there are internal and external factors within the organization's contextual environment that are challenges to sustainability that leads to implementation failure. The practical skills acquired through the intervention implementation can improve overall staff satisfaction of their work and the quality of services. Innovative methods for treatment or practical tools for program monitoring can foster implementation durability (Frieden, 2014; McGimsey, Greene, & Lutzker, 1995). The practitioners' capacity building and experiences with the intervention can serve as arguments to program maintenance. They can become program champions and also provide the rationale to decision and policy makers on the relevance of the program in their communities (Rowe, de Savigny, Lanata, & Victora, 2005).

Program ownership

Sustainability is a complex process which requires a multifaceted approach (Fixsen et al., 2005). In resource-poor settings, like Haiti, country program ownership is the recommended method for program implementation to strengthen program sustainability. By taking on program ownership, the local governmental agency agrees to become the lead for the intervention

activities (e.g., supervisions, monitoring and evaluation) (Goldberg & Bryant, 2012). Therefore, whenever the purveyor agencies withdrawal their technical support, there are no breaches in services with fidelity. The institutions will have already internalized the new practices as routine activities. Country ownership is achieved through a strategically planned country-level capacity building. Institution staff may receive specialized trainings, or new equipments are donated as part of this sustainability process.

Some organizations have expertise in the process of in country program ownership. Organization such as Valid International and FANTA are institutions which specialize in providing country-level and organizational-level expertise and guidance for program design and management (Valid, 2008; FHI, 2014). Ensuring in-country capacity building promotes the strengthening of country's internal capacities to maintain the program overtime (Frieden, 2014; Schell et al., 2013), that is, local staff is able to successfully manage local programs, making it less dependent on external assistance. Country ownership involves reinforcement of the technical knowledge on the innovative practices, the adaptation of the intervention to the country's realities, the enhancement of program quality and finally maintainable program activities (Scheider & Dearing, 2011; Whelan et al., 2014). Through regular monitoring and evaluation from the local government there can be less external input (The Paris Declaration on Effective Aid, 2005). These strategies allow inclusive program planning, communication and partnership development among partners and donors.

Another term used to define program sustainability is institutionalization, which is the process during which an institution will integrate the intervention activities as its own (Scheirer & Dearing, 2011). Nevertheless, in order for this process to take place, the organization needs to acquire the managerial skills and capacities for program maintenance. Organizational capacity-

building creates leadership. The acquisition of new knowledge augments practitioners' self-confidence in their ability to lead and manage the programs. The program purveyors can provide technical support, if needed, so that providers can develop the required self-efficacy to tackle the intervention's activities successfully. The creation of networks with skilled practitioners is also recommended, particularly the program champions who already have the skills and the experience of effective implementation process with favorable outcomes that can be shared within the network of practitioners as a transfer of knowledge.

In resources-poor countries, the implementation process can be hindered by the program implementers themselves. Purveyor organizations have to be knowledgeable of the evidence-based practices in order to provide adequate support to other institutions. Nevertheless, challenges with program implementation can also be inherent to the implementing organizations, which may lack the managerial capacities to execute the intervention with fidelity. Fixsen, Blasé, Naoom and Wallace, Oosthuizen and Louw (2009) (2013), all mention the importance of program purveyors. Their role is to provide the expert support to the implementing organization. Purveyor organizations are meant to strengthen the weakness of the implementing entities. Their realm of action extends beyond the simple task of training program staff. Kopf and Thayer (2001) argued that purveyors need to be knowledgeable about the evidence-based practice being implemented, and be flexible in the way they respond to the specific needs of each health institution or service providers group. Hence, using purveyors' support can improve the delivery services for adequate program impact.

Funding

Overall, funding has been blamed for the closure of 40% of new public health programs

soon after the first year of implementation (Savaya, Spiro, & Elran-Barak, 2008). Recently, funding agencies require that organization show proof of their financial stability before they can be approved for additional funds (Pluye, Potvin, & Denis, 2004; Mancini & Marek, 2004). Resource-poor countries are commonly dependant on external funds to run program activities. When funds cannot be secure the program cannot be sustained over time. As seen in some settings, practitioners and community members have refused to endorse a program because of the uncertainty of resources beyond the funded period ("Aid Effectiveness 2011 | OECD READ edition," n.d.). Despite having secured funding some organizations have inherent management problems that lead to the misuse of allocated funds. The implementation's success can be delayed by the lack of the leadership and ethics. These obstacles for program sustainability can be addressed with purveyor technical expertise. Resulting into a better management of resources for the delivery services and lasting program impact (Kopf and Thayer 2001).

In closing, the implementation process involves a chain of fundamental activities that contribute to successful program outcomes and long-term sustainability. One needs to recognize the contextual characteristic of the intervention's implementation. The program developer should utilize the communication channels to optimize the transfer of the intervention's activities to the implementing agency with fidelity. In addition to the previous, organizations should also encourage sustainable capacities for the implementation of the evidence-based interventions.

Chapter 3

Description of the CMAM intervention, core component, and guidelines

CMAM- Program description

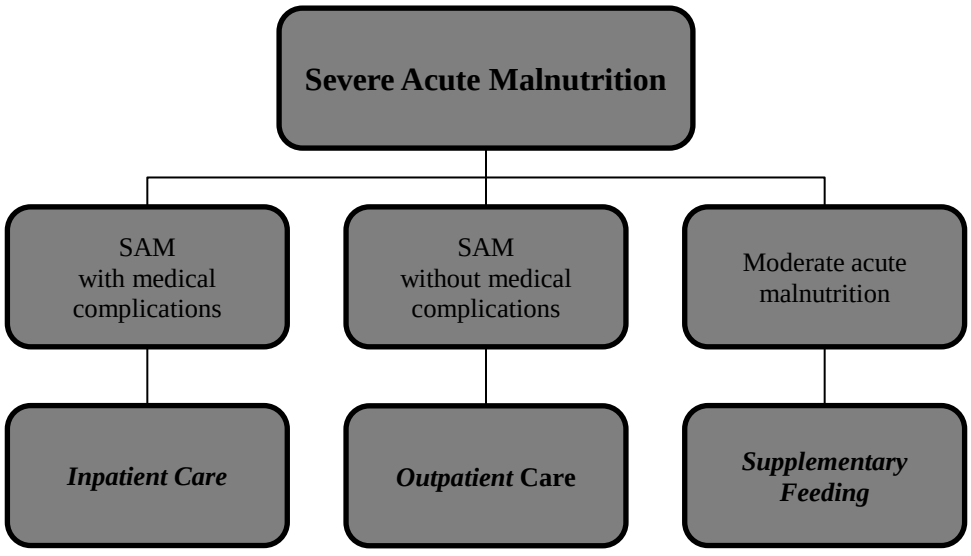
The CMAM is an evidence-based practice founded on community participation for the identification and treatment of children with severe acute malnutrition (SAM) before they become seriously ill (Collins et al., 2006; Ashworth, 2006). The CMAM program is grounded on many years of research from the leading organizations in nutritional care (Brewster, 2011). Not all hospitals offer nutritional care. As a result, there is restricted access for patient with SAM and a delay in patients' treatment initiation. Piloted nutrition interventions from organizations such as Valid International and Concern Worldwide provided the evidence for the efficacy and effectiveness of Community-based Therapeutic Care (CTC).

The CTC provides maximum coverage and access for the management of SAM through decentralized outpatient centers instead of the usual centrally located inpatient facilities (Collins, 2004; Valid 2006). Valid (2006) created a field manual based on the practices of community-based care for the management of acute malnutrition. The evidence-based from the CTC and the proven successful outcomes validated the endorsement of the CMAM by the United Nations (UN) agencies, like UNICEF, WFP and WHO (Karaolis et al., 2007; WHO & UNICEF Joint statement, 2009). In the progression, the CMAM program replaced the CTC with a more complete package of service.

Three particular innovations in nutrition research helped facilitate the development, dissemination and implementation of the CMAM intervention. First in the late 1990s, Nutriset

France, an agency specialized in the production of therapeutic foods, introduces the Ready-to-Use Therapeutic Foods (RUTF). RUTF are an energy and nutrition dense peanut paste designed for the treatment of severe acute malnutrition (Shewade et al., 2013; Schoonees, Lombard, Musekiwa, Nel, & Volmink, 2013). The second change, in 2006, WHO revised the classification of acute malnutrition (see Figure 7). The new classification recommends that severely malnourished children with medical complications or lack of appetite be referred to inpatient facilities for intensive treatment. Severely malnourished children with an appetite and no medical complications are treated as outpatient in the home using RUTF and routine medical care (Ashworth, 2006). The third innovation was the World Health Organization's decision to use the mid-upper arm circumference (MUAC) as an independent criterion for the diagnosis of SAM (in addition to the weight/height ratio). The MUAC measures the muscle mass of the upper arm; it is an effective predictor of risk of death in children aged 6 to 59 months and a feasible screening tool at the community level (WHO & UNICEF Joint statement, 2009; Rasmussen et al., 2012).

Figure 7: New classification of malnutrition



Source: WHO, 2003

The CMAM program was originally designed and implemented in 2000 in response to emergency situations in Africa. The first CMAM pilot materialized during the 2000 Ethiopia famine; it was also tested in Malawi in 2002 ("Cost-effectiveness of community-based and inpatient therapeutic feeding programs to treat severe acute malnutrition in Ethiopia," 2012). The government in Ethiopia refused patients access to the medical facilities, and emergency healthcare workers were unable to provide care for the malnourished population. For that reason, an alternative method of treatment was developed, CMAM, to replace the traditional methods of hospital based rehabilitation for severely malnourished children (Lancet, 2006; "Cost effectiveness of community-based and inpatient therapeutic feeding programs to treat severe acute malnutrition in Ethiopia," 2012). Consequently, based on the positive public health outcomes and success of the CMAM model, in 2007, the UN labeled the community management of acute malnutrition as an international best practice for the management of severe malnutrition (WHO-UNICEF joint statement, 2007). Since then, CMAM practices are increasingly applied, not only in emergency nutrition setting but also for long-term development program with several Ministries of Health around the world (Ashworth et al., 2004, Karaolis et al., 2007).

Components of the CMAM program

A child's nutritional status is assessed using child growth indicators (WHO & UNICEF, 2009). Worsening factors such as risk of food insecurity and the widespread development of infectious diseases are also justifications for CMAM interventions (Collins et al., 2006; Chaiken, Deconinck, & Degefie, 2006). The focus of the CMAM intervention is for the management of various types of acute malnutrition (wasting, nutritional edema, and the Kwashiorkor-Marasmus). In order to reverse the body's wasting process, the WHO guidelines recommend that

all children diagnosed as severely malnourished be admitted to a nutrition program until recovery (WHO, 1999). The guidelines instruct on the different steps in the treatment process and the recovery goals for the SAM children (Collins, 2007; Valid, 2009; Lenters, Wazny, Webb, Tahmeed Ahmed, & Zulfiqar A. Bhutta, 2013).

CMAM is founded on four core components (See Figure 8): 1) community mobilization and outreach, 2) outpatient care for SAM children with an appetite and no medical complications, 3) inpatient/hospital care for SAM children with no appetite and medical complications, and 4) a supplementary feeding program for the management of moderately malnourished children and the prevention services (Collins, 2007). The preventive services are health promotion activities (e.g., health education sessions) offered to all families and current program beneficiaries in the communities. During the CMAM implementation process, all components are addressed to ensure effective harmonization from one step to the next.

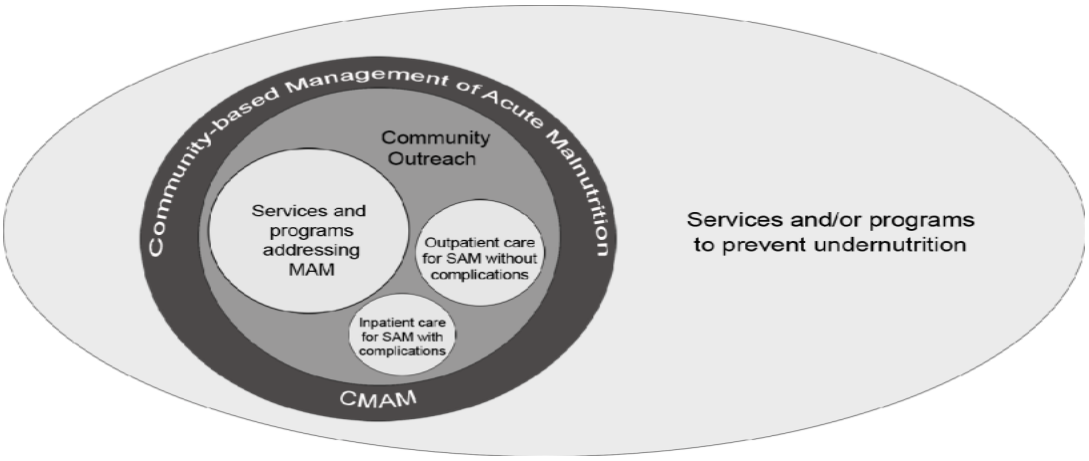
1) Community mobilization and outreach: Community participation and engagement is crucial for the widespread acceptance and coverage of the CMAM program. The creation of community networks is required for the mobilization activities. The community outreach activities are used for the screening and referral of children to the appropriate healthcare services.

2) Inpatient/hospital services are provided for SAM children with no appetite and medical complications. Complications include bilateral edema, Kwashiorkor-Marasmus, lower respiratory tract infection, high fever, severe dehydration, severe anemia, etc (Lancet, 2006). Children with medical complications should be transferred to the nearest in-patient facility. In-patient facilities provide around the clock nutritional care with the RUTF based on WHO guidelines and the medical treatment for the body's recovery.

3) Outpatient care for SAM children with an appetite. The out-patient services are targeted for severely malnourished children without medical complications. Outpatient services consist of a medical consultation which will also include assessment of the severity of malnutrition. The caretakers are provided with a weekly supply of RUTF until the next consult, medications, and health and nutrition education counseling.

4) The supplementary feeding program is for the management of moderately malnourished children. It consists of the distribution of fortified foods and de-worming medication for children that are screened as moderately malnourished. The supplementary feeding programs were not offered in most of the local health centers supported by Concern.

Figure 8: CMAM core component



Source: *Community-Based Therapeutic Care: A Field Manual*. (Valid International, 2006) & WHO, WFP, UN/SCN and UNICEF 2007 joint statement on community-based management of severe malnutrition

CMAM training

The CMAM program includes an instructional manual with specific guidelines for the community management of severe acute malnutrition. Following the result of the evidence-based

trials on the effectiveness of the CMAM, revised WHO guidelines for the management of malnutrition replaced the 1999 training guidelines (WHO, 2003).The CMAM training manual includes learning objectives and practical skill development. After a CMAM training participants should know the various forms of undernutrition and be able to use the screening tools for the identification of SAM in children 0-5 years. Also, providers should be able to properly utilize the RUTF and establish a treatment plan for patient recovery. The breakdown of training participants is in relations to which part of the CMAM intervention they are involved. The complexity and specificity of some of the CMAM material is not suited for non-skilled providers. For the initial CMAM training from 2007 and beyond in Haiti, trainers use the WHO guidelines adapted to the Haitian settings.

By 2010, the “Protocole National pour la Prise en Charge de la Malnutrition Aigue," Haiti’s nutrition guidelines were in place, recommending a five day training for the CMAM interventions. Participants were grouped according to their credentials and their contribution to patient care. Community health workers and volunteers taking part in the community outreach activities for the CMAM intervention, have a concise curriculum focusing on the delivery of health education messages during community visits and nutritional screening using the MUAC. Hence, their training is only three days. In Haiti, the MOH staff was trained separately in the initial set up of the CMAM because of their leading role in the program monitoring (MSPP, 2010).

At least two trainers conduct the training for groups of 15 to 20 participants. Trainers were physician with known expertise in the CMAM practices (e.g. nutritional screening and pediatric intensive care). For the community mobilization component, a nurse with training on community health programs was the lead trainer. The CMAM trainings are interactive to build

upon the participants' knowledge and experiences. Participants referenced to their own experiences as providers or community leaders in order to solidify the new knowledge and share their experiences with other participants (Valid, 2006; MSPP, 2010). The CMAM training modules utilizes a variety of teaching techniques: question and answer sessions, written exercises, practical exercises such as anthropometric measurements with mannequins, role-plays, and case studies review (Ashton et al., 2003; Valid, 2006 & Collins, 2007). The specific training objectives are that participants have the knowledge and skills for the management malnutrition and its complications, participants are able to detail the steps in the treatment process, and finally understand how to use the reporting tools.

Chapter 4

CMAM Implementation in Haiti

Concern's nutrition project was implemented in multiple public health institutions in Port-au-Prince. From 2007 to 2012, Concern provided technical support to 5 major hospitals and 12 community health centers. The CMAM program planning, implementation and maintenance targeted stakeholder involvement and partnership building between the community-based organizations, health institutions, funding agencies, and the MSPP in Port-au-Prince. Through intervention based activities, Concern raised community awareness of the danger of SAM and the urgency for the affected families to seek treatment. The CMAM implementation was a laborious process that was able to refine itself with the years of implementation until the 2010 earthquake disrupted the intervention activities. The emergency situation post-earthquake modified the implementation strategies for the CMAM intervention. The program reported impressive public health impacts. Nevertheless, the intervention was not sustainable after Concern's technical support was discontinued in 2012 (MSPP, 2014).

Organization background

Concern's work in Haiti began in 1994, in response to hurricane Gordon. By 1996, Concern's activities spread to the island of La Gonave, providing assistance to the most vulnerable and impoverished communities. In 2005, Concern launched the Child Survival Program (CSP), a five year project funded by the United States Agency for International Development (USAID), in the urban Port-au-Prince slums. The project's main goal was to reduce maternal and child mortality rate through the improvement of health care services at the

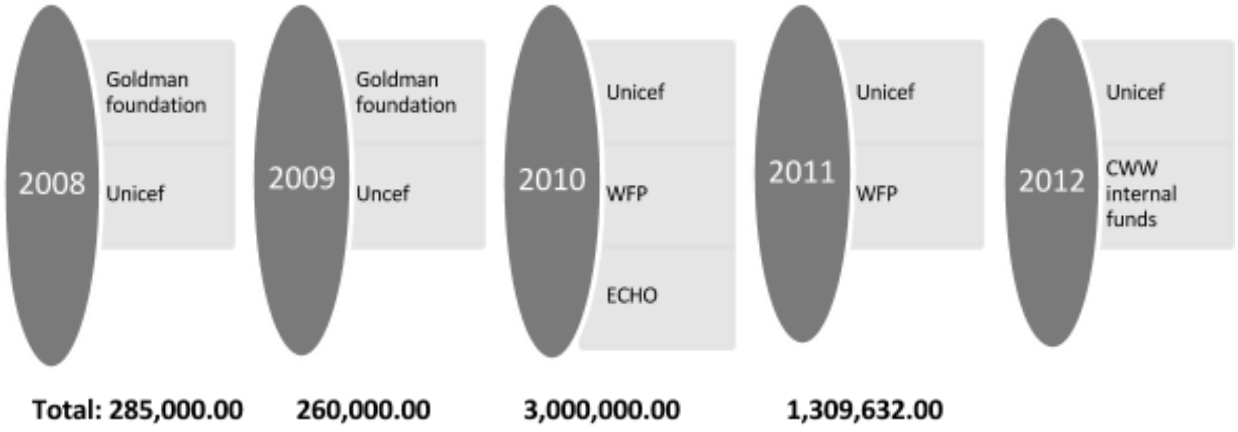
local health centers. The CSP interventions targeted immunization, diarrhea control, nutrition (e.g. breastfeeding and micronutrients), Pneumonia control, Malaria control, maternal and newborn care, and STIs/HIV/AIDS (CWW-CSP proposal, 2005). Concern's involvement in nutrition interventions in Haiti began officially as a pilot at the end of 2007.

The CMAM project started in late 2007 in Haiti, initially as a small sub-component of the larger CSP project. The subsequent year of 2008 was a time of instability--political uprisings, economic uncertainty and various natural and man-made disasters impinged on the development of an already fragile Haiti. As predicted by the National Food Security Commission (CNSA), a food crisis hit the most impoverished of the population in 2008 (CNSA, 2009; Concern proposal, 2008; & WFP, 2012). In response to this humanitarian crisis, Concern's decision makers opted for a broader involvement in health care; nutritional surveillance and care programs were added to the organizations activities in Haiti (CWW proposal, 2008).

One of the challenges to program implementation is the source of funding. The CMAM pilot in 2007 was funded with Concern's internal resources and UNCEF provided additional resources like the RUTF and medical supplies. Concern's request for funding resulted in a US $150,000 grant awarded to Concern-Haiti from the Goldman foundation for the launch of the initial CMAM interventions in urban Port-au-Prince, for a nine months period. Concern-Haiti was later able to secure funding for 2009 through the same funder; mostly covering the technical costs (e.g., trainings, duplication of CMAM manuscript). Overall, Concern received US $236,000 for the implementation and maintenance of the CMAM activities from the Goldman foundation for January 2008 until 2009. For those same years, Concern also requested and obtained US $250,000 from UNICEF, which covered 25% of the total project cost. Other sources of funding included the European Union (EU), European Commission's Humanitarian Aid

Office (ECHO) and Concern's internal funds (CWW, 2010) see table 1.

Table 1: External funding sources



The CMAM program's main objective was to reduce mortality and morbidity linked to severe malnutrition in children less than 59 months. Other objectives were:

- Rigorously document the CMAM implementation through the existing health system in urban Port-au-Prince.
- Inform the Ministry of health on the feasibility, practicality, and outcomes of incorporating the CMAM into the existing care package
- Build and strengthen the Ministry of health functions in the CMAM integration, as well as providing technical support to other nutrition partners.

Planning Phase of CMAM Implementation

The CMAM implementation strategy targeted community engagement and stakeholder buy-in for maximum coverage and program maintenance. The CMAM intervention

implementation in Port-au-Prince required an extensive exploration phase and laborious planning process because of its novelty. Concern needed to identify communities and organization able to accommodate the intervention activities. Stakeholders' buy-in was the primary focus of the planning stage, along with assessing the institutional and country's readiness to incorporate the CMAM intervention into existing services. During the exploration phase of the planning process, the CMAM nutrition advisor convened meetings with the Ministère de la Santé Publique et de la Population (MSPP)'s nutrition department to introduce the CMAM intervention as a possibility to address the challenges of the management of malnutrition in Haiti. Those meetings provided a platform to discuss the feasibility of the pilot intervention in Port-au-Prince under the lead of the MSPP.

Most of the 2007 activities were dedicated to optimizing the implementation process prior to initial implementation. Concern's program staff conducted site visits to identify and select the communities and health institutions where the program would be implemented (CWW, proposal, 2007). Each stakeholder (MSPP, UNICEF, Community volunteer, and program staff) played a specific role in the CMAM implementation. Concern obtained program validation from the MSPP which allowed access to the communities and national health institutions. The partnerships created with the UNICEF facilitated the delivery of resources (funds, RUTF) for CMAM activities. Consequently, medical supplies and most importantly the therapeutic foods needed for case management were donated by the UNICEF. In addition to the resources, the planning stage detailed the activities and resources towards the CMAM program full implementation. By the beginning of 2008, stakeholders were engaged in the decision making process for the CMAM activities. Concern, used evidence-based practices from nutrition experts around the world to develop Haiti's strategy for the management of severe acute malnutrition.

The Initial CMAM implementation in Haiti

A community outreach strategy was established with key program stakeholders in the selected communities from Concern's intervention areas. Throughout 2007, the mapping of the existing community networks was performed to identify the key players in the community and their roles for a successful implementation process. Concern raised community awareness and provided training on acute malnutrition, through meetings with community leaders (e.g., mothers clubs, youth volunteer groups, traditional healers). At the institutional level, Concern targeted practitioners' buy-in with evidence-based data and through introductory CMAM training. There was an initial training done through Valid International, CMAM pioneers, targeting all key decision makers (e.g. MSPP, NGOs, and UN agencies).

Before setting up CMAM activities in the individual health centers, Concern conducted the specific training for each health center staff. Concern provided purveyor support through regular site visit once a week for the outpatient programs and two to three times a week for the inpatient site. During the visits, the providers received additional on the spot refresher trainings on the CMAM components (CWW-country report, 2008). By the end of the pilot intervention, in 2008, Concern had implemented the CMAM and was supporting 4 health centers with outpatient care of SAM and one major hospital that provided inpatient care for SAM children with medical complications.

While UNICEF, MSPP, Concern and other NGOs were involved in the initial planning process, the formation of this planning group provided a means for open dialogue throughout the implementation process. Through the existing networks in the slums the CMAM program was able to establish the community outreach activities and created a partnership with the

community-based organizations (CBO) for the referral of SAM to the outpatient centers.

The CMAM operationalization in Port-au-Prince

By the end of 2008, the CMAM project had been implemented in all of Concern areas of focus for the pilot (see Table 2) and was expanding to other institutions that were suggested by the MSPP or had requested the CMAM services. Concern's strategy for the CMAM implementation focused on community involvement to increase the program's acceptance and dissemination efforts. Through a network of 243 youth volunteers, 12 community-based organizations and 14 community health workers, Concern's program staff was able to educate the public and raise awareness of the burden of malnutrition. At the institutional level, the CMAM program was implemented as an adjunct to the routine activities at the health centers. This methodology was applied to prevent the CMAM intervention's activities to be viewed as a parallel program or added workload. By 2009, the second year of the CMAM's implementation, Concern had provided capacity building to numerous institutional staff. Concern had sustained ten outpatient therapeutic center and one inpatient stabilization center in the State University Hospital.

Table 2: List of CMAM pilot sites

Name	**Services**
SNELAK health centre	Outpatient
Charity sister	Outpatient
Food for the Poor health center	Outpatient
Malique health center	Outpatient
Hospital Universite d'Etat d'Haiti	Inpatient

Source: CWW final report, 2008.

Challenges to CMAM's Implementation

The CMAM project's main focus was mostly on capacity building of local health institution and MSPP, and building a strong network of providers able to adequately manage SAM children. Nevertheless, during the first few years of the CMAM implementation Concern's purveyors support faced many challenges for the integration of the CMAM activities (CWW-Annual report, 2008). During supervision visits it was noticeable that the CMAM activities were not a routine. Concern's program staff would remind the institutional nurse of the general screening of children that entered the clinic regardless if undernutrition was apparent or not. Additionally, at the community level program users, voiced displeasure with the quality of services and even the wait time. Contrary to the planning and initial implementation, the CMAM intervention was a parallel program. Providers would finish all other activities before they attend to the SAM beneficiaries (Valid, 2008).

Post-earthquake emergency interventions

In January 2010, an earthquake destroyed Port-au-Prince and the surrounding towns, and villages. Haiti's earthquake was reported as one of the deadliest natural disasters in modern history (Ivers & Walton, 2012). The earthquake shattered an already weak Haitian economy and also disturbed the education and the health care systems. In response to the 2010 earthquake, there was an unprecedented outpouring of international assistance to the Haitian population. A variety of relief missions came to Haiti's rescue: Medical teams, military, search and rescue missions, and emergency relief agencies. Haiti's cataclysmic earthquake dramatically impacted the health care system with the destruction of numerous health centers and hospitals (CDC, 2010). The national health system was unable to serve a population struck by a major disaster.

International medical relief missions were deployed to care for Haitian needs. Non-governmental organizations such as Doctors without Borders, Medishare, Partners in Health, accompanied the Haitian medical staff for case management (Pierre-Louis, 2011).

Concern's original nutrition program, which began as a pilot in 2007, and the subsequent emergency interventions involved different implementation strategies. As a result of the earthquake, changes were made to the CMAM implementation processes. The modifications to the CMAM intervention in response to the 2010 earthquake hampered Concern's ability to replicate the CMAM practices to other local health institutions. Just like other organizations, Concern's on-going agenda with the CSP and the CMAM program were halted (CWW-situation report, 2010). The lack of sanitation, scarce water supply, little food and access to health care were lingering public health concerns in the quake's aftermath. The worsening conditions gave rise to the deterioration of the health conditions of young children, since their basic needs were not being met (Sigman & Luchette, 2012; CWW-urgence proposal, 2010). In response to this crisis Concern headquarters decided to shift to emergency nutrition interventions in Haiti.

Subsequently, the program design, during the emergency intervention, was intended for a broader range of activities with maximal impact on MCH. The rapid assessments of the internally displaced populations revealed a dissonance of the infant feeding practices and increasing prevalence of untreated childhood illnesses associated to the unsanitary surroundings (CWW-ECHO urgence, 2010). During the planning stage of the emergency response programs the Haitian MSPP with the support of the US's Center for Disease Control and Prevention (CDC) set-up a disease surveillance system (CDC, 2010). Moreover, the on-the-ground organizations, for this instance Concern, provided the results of their ongoing needs assessments.

As often is the case in acute emergency situations, the most vulnerable members of the affected population, children younger than 5 years, reported rapid decrease in their nutritional outcomes. The survey questions targeted nutritional indices in Concern's areas of Haitian desert and the camps cities. The assessment additionally targeted MCH focusing on young infant and child feeding practices and their health needs (CWW-UNICEF & ECHO-urgence, 2010). As noted, child malnutrition was already prevalent in Haiti prior to the 2010 earthquake (DHS, 2005; CWW project report, 2008). The dreadful conditions post-earthquake led to a further and rapid decline of the Haitian population's nutritional condition around the earthquake's epicenter. The results from the assessments prompted Concern to urgently re-establish the CMAM/nutritional care intervention in the functioning health centers of the metropolitan area and the newly instigated camp cities. The emergency nutrition intervention total program cost was over US $2.5 million, funded through UNICEF and other donors like ECHO, EU and CWW internal funds (CWW Situational report, 2010).

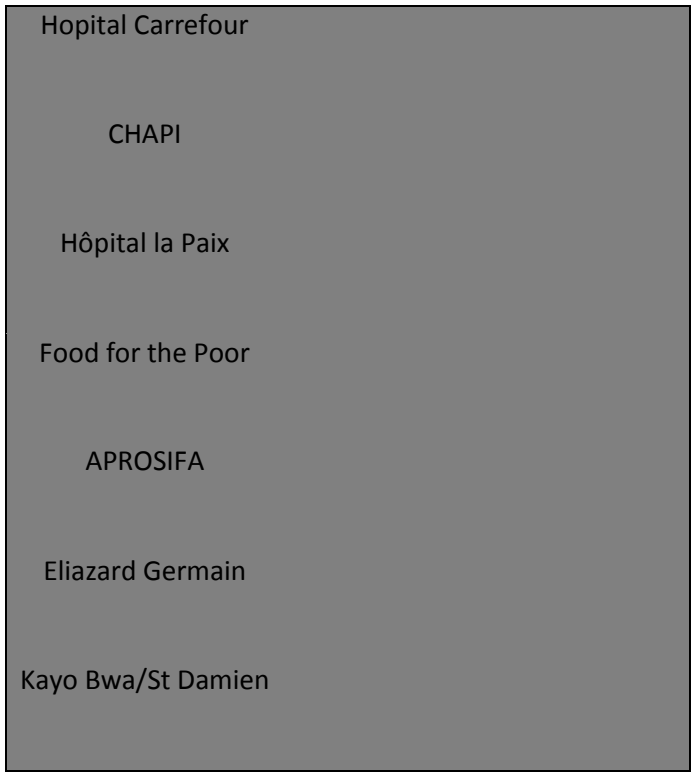
Concern's 16 years of experience with the local Haitian culture/environment was an excellent asset in the aftermath of the quake. In addition, it provided the organization the needed credibility for emergency program design, development and implementation. Given the deleterious conditions in Port-au-Prince, Concern's technical expertise was also a major resource to the Haitian health-care system and provided the necessary technical support to the MSPP to assist the affected communities (CWW Situational report, 2010). Governmental and non-government agencies also needed to modify their initial program planning and implementation strategies in accordance to the emergency settings (Pierre-Louis, 2011).

Consequently, by January 2010 Concern re-established nutritional care in five health centers and had successfully identified other health organizations willing to make nutritional care

part of their care package. Concern's implementation activities were fast tracked. By the end of May 2010, the initially CMAM program had expanded to 5 inpatient centers within the pediatric department of various hospitals, over 15 outpatient centers, and 10 mother-child counseling units (see table 3). Psychosocial support was added to the nutritional care package to assist the program beneficiaries throughout the internally displace camp sites in Port-au-Prince. Contrary to the initial implementation, which took close to a year for the initial implementation, in less than six months the emergency nutrition programs were fully operationalized. Nevertheless, the intervention activities were not integrated. Concern's staff substituted the local provider for the delivery of service in some of the local health institutions. The community mobilization component was reinforced with the coming of 2 new community mobilization officers that poses a good knowledge of the urban slums (CWW-UNICEF proposal, 2010).

Table 3: List of post-earthquake institutions

CMAM service institutions	
Outpatient centers	**Inpatient hospitals**
CSSMII	Hospital St Damien
Armée du Salut	Hospital de Diquini
St Camille	Hopital La paix
Hands of Love	Hopital Eliazar germain
Croix des Missions	Hopital Universite d'Etat d'Haiti



Source: CWW program report, 2012

The target population for the emergency nutrition program averaged 100,000 children less than 5 years. The increase of families at-risk of food insecurity, the challenges of living in the displaced camps, and the weakened health system contributed to this patient surplus in the aftermath of the January 2010 earthquake. The nutrition program went from a concise intervention to an extensive Health/Nutrition program with over 250 employees and a budget of over US $2 million (compared to the 2008 CMAM program funded with Concern's internal funds and the single program contributor, UNICEF). Stakeholder's engagement shifted during Concern's emergency nutrition intervention, program funder showed lots of interest (UNICEF, EU); there increase communication with the MSPP. However, other contributors like providers, CBO and the consumers were not consulted for the implementation process. The emergency nutrition programs' main objective was the same as the original CMAM intervention. The

objective was to reduce mortality and morbidity linked to acute malnutrition in children younger than 59 months. Some of the specific objectives were:

- Promote and encourage good infant feeding practices for children less than one year in seven of the IDP camps in Port-au-Prince.
- Increase access for treatment of severe malnutrition in children less than 59 months. The use of the appropriate nutrition guidelines in seven health centers and one Stabilization center in Port-au-Prince.
- Provide psychosocial support to caregivers in the targeted groups.

The program objectives for the emergency CMAM intervention were in accordance with modifications, to respond the program beneficiaries' needs in the aftermath of the 2010 earthquake. The intervention's main objective was the same as the initial intervention in 2007; to reduce infant mortality in children younger than 5 years, linked to acute malnutrition (CWW proposal, 2010). Nevertheless, there was no mention of the rigorous documentation of the intervention's implementation process. The institutional capacity building was more in the form of trainings that concluded with the initiation of the CMAM activities with the following days. Finally, there was documentation of the program outcomes during the cluster meeting but no sharing of experiences with the MSPP or other NGOs.

The expansions of the nutrition program were in response to the post-earthquake environment. Concern's response focused on 1) providing nutritional assistance in the camps, and 2) malnutrition case management in the existing health structures that were still functional and that families were accustomed to using for healthcare services. The challenges to the CMAM program were associated to the modification in the sphere of influence. The chaotic post-earthquake situation impacted the CMAM implementation component and framework. The

source was still the CMAM intervention but with added intervention activities. Camp sites and new health institutions were added as new destinations for the CMAM intervention. The feedback, which is the exchange of communication among stakeholders, improved. In part because of the creation of the nutrition cluster, they met weekly. The Haitian government was able to build strong partnerships with program funders and NGOs to coordinate effective implementation of nutrition programs. Nonetheless, providers and program consumer were less involved in the implementation based activities and program monitoring and evaluation.

The standardized tool (Nutrition guideline) for the management of acute malnutrition was a requirement during the emergency response. The revised national nutrition protocol based on the evidence-based data from the CMAM was made available on May 2010. This protocol was the set guidelines for anyone involved in nutrition interventions in Haiti and was a standard training manual for Concern and any other organization involved in nutrition programs from that point forward.

The emergency-response nutrition program was an amalgamation of various short-term interventions. For instance, a one month intervention, from February to March, was set in place for the management of moderate malnutrition (WFP, 2010). Nevertheless, Concern's implementation process targeted sustainability since the partnership was made with structurally viable health institutions. Only institutions with the capacity to endorse the CMAM activities were selected during the emergency phase implementation. Additionally, the influx of resources favored stakeholders' compliance instead of buy-in. For example, consumers' engagement was incentivized through clothes, food and other form of donations. Some health institutions agree to the CMAM intervention only if Concern would provide the staff for the required activities. This time around the program implementation focus shifted towards the outcomes impacts. For

instance, funders (e.g., UNCEF) requested accountability for the rendered technical support. In conclusion, similar to the pre-earthquake interventions, the emergency-response nutrition program was implemented in the local institutions. But this time, Concern recruited nurses and practitioners designated for nutrition service delivery, in order to achieve the intended program outcomes and fulfill the targeted objectives stated in the program proposal for justification of funds.

The CMAM Program Outcome

Improving the population's health is the objective of public health interventions. Even so, many public health interventions have failed to have lasting health impacts. This problem is no different in the specialized field of nutrition. Concern and other public health agencies have agreed to the effectiveness of the CMAM intervention for the management of children with severe acute malnutrition (WHO & UNICEF, 2009; Valid, 2008). Even though, Concern has been recognized as a pioneer organization in the implementation of the evidence-based CMAM intervention, making it work in different environments is the challenge of this public health program (Gatchell, Forsythe, & Thomas, 2006; Hulcombe, Sturgess, Souvlis, & Fitzgerald, 2014). An evaluation Concern's implementation of the CMAM intervention in Port-au-Prince showed the obstacles or failures in the implementation process.

The foundations for the CMAM intervention implementation happened within the first year, from June 2007 to August 2008. The CMAM program beneficiaries averaged 30,000 children less 5 years in 3 communes (CWW-proposal, 2007). Program activities focused on the creation of community networks that created a sphere of influence for CMAM activities (e.g. community mobilization for mass screening and patient referral). The CMAM intervention based

activities was through stakeholders engagement; Concern was able to raise community awareness and get community-based organization buy-in into the community outreach component for the screening of SAM children. The policy makers' involvement into the CMAM implementation process favored providers' adherence to the CMAM guidelines for the delivery of inpatient and outpatient services (CWW-proposal, 2007).

Evaluation of Concern's first year of the CMAM pilot reported low program usage, poor quality of the delivered services and challenging implementation process. However, the CMAM intervention was well accepted within the local communities (Valid, 2008; CWW-Handover report 2008). Concern was well respected nationally for its effort towards an implementation of the CMAM practices with fidelity. A good interaction was created with the MSPP, which played a coordinating role in the program planning. In 2008, those program activities concluded with the opening of 4 functioning outpatient centers and one inpatient care facility. There were 408 program admissions, capacity building of 75 health providers, who were trained on the inpatient and outpatient care for SAM; 249 youth volunteers and 47 community-based organizations trained on the community outreach component of the CMAM intervention (Valid, 2008; CWW-country report, 2008). Concern exceeded most of its objectives for that year.

The subsequent year, Concern continued its technical support to service providers. The program focus was to implement the CMAM intervention the way it was intended. In 2009, the program counted approximately 472 admissions, with 10 functioning outpatient centers. Concern trained 24 additional providers and conducted refresher training. It succeeded in fulfilling the objective to provide technical support to other local NGO (Medecin du Monde Suisse). Over 200 community volunteers had received training on the outreach activities (CWW-annual report, 2009). Concern's CMAM intervention received much interest and support from stakeholders

both at community and at national level that favored potential program sustainability.

The Sphere criteria, the international performance indicators for nutrition intervention targeting SAM in children 6–59 month, were used to assess the CMAM performance in the local health institutions (O'Donnell, Bacos, & Bennish, 2002; The Sphere Project, 2004). Concern's CMAM intervention struggled to reach the program performance indicators throughout its years of implementation. The improvement of these indicators (see table 3) was a testimonial of the intervention implementation progress. With the post-earthquake implementation the health institutions were able to surpass the Sphere standards as a direct outcome of the increase in program resources towards each of the CMAM components.

Table 4: Performance indicators

CMAM Performance indicators						
	Standard	**2008**	**2009**	**2010**	**2011**	**2012**
Discharge healed	**> 75%**	62%	70%	79%	81%	85%
Death	**< 10%**	3%	2.5%	2%	4%	2%
Withdrawals	**<15 %**	35%	28.2%	22%	12.1%	9%
Weight gain	**5gr/kg/day**		5.6gr	6.1gr	6.5gr	6gr
Number of admission		326	472	2707	3003	1072
Number of OTP		4	10	12	12	12
Number of SC		1	1	4	5	5

Source: Concern Worldwide Nutrition database

As a start-up staff of Concern's nutrition programs in Haiti, I gave an input from my direct involvement throughout the implementation process. Other analysis and review of project documents (proposals, midterm and final program reports, evaluations), funders' report

(UNICEF, MSPP) and in country assessment of the nutrition situation helped conclude on the CMAM intervention's impact. One could also argue that it was not successful since it could not be sustained once Concern's support stopped. Program sustainability was the not the main target during the CMAM implementation (CWW-proposal, 2007-2008). It was to document the applicability of the CMAM practices in Haiti. Concern documented the challenges and limitations of the CMAM intervention in Haiti in order to adjust the implementation process. Undeniably, there were considerable improvements to the delivery of care for SAM children during Concern's involvement. The development of the national guidelines in 2010 cemented the application of the CMAM practices for the management of SAM.

Each component of the CMAM intervention grew and became more elaborated through Concern's technical support. There were faults within the CMAM implementation process. The planning stage was dedicated to stakeholder buy-in, needs assessment and program fit. Concern created the community network to which it provided the purveyor support for the outreach activities. Same actions for the inpatient and outpatient health institutions, nonetheless, Concern did not dedicate enough time and effort toward the achievement of a strong partnership among the different interventionist of the CMAM intervention. The health institutions had no means for patient follow-up after discharge, nor did the community-based organizations continue with the mobilization activities for SAM screening. Hence, once Concern retracted its support the CMAM could not maintain the intervention activities such as patient referral and community outreach activities. Therefore, local health institutions were not capable of complete service delivery nor was the referral process from the community or outpatient health institutions sustained (CWW-proposal, 2007).

Concern was able to secure resources for the implementation strategies. Even so, funds

had been requested based on the results of the needs assessment which details the local health institutions requirements for the CMAM implementation. Yet, no funds were directly provided to those institutions for managerial planning to sustain the CMAM activities. Other misconception of the CMAM implementation, during the program process the provider training was thought out as organizational capacity building. After over five years of technical support and expenditure of funds, time and equipment, the health institutions lack the self-efficacy to maintain the skills and practices of the CMAM intervention (CWW-proposal, 2012). A revitalization plan for the CMAM intervention in Port-au-Prince will need to fill those gaps in the implementation process.

Flaws of the CMAM Implementation

Each component of the CMAM intervention grew and became more elaborated through Concern's technical support in the implementing health institutions. Nonetheless, there were visible flaws in the CMAM implementation process. The planning stage was dedicated to stakeholder buy-in, needs assessment and program fit. Concern created a community network to which it provided the purveyor support for the CMAM outreach activities. The same proceedings happened for the inpatient and outpatient health institutions. During the CMAM implementation Concern did not dedicate enough time or effort for the achievement of a coalition between stakeholders like the community-based organizations, the health institutions and MSPP which was believed to take the lead for the monitoring of the CMAM intervention. As a result the patient referral process was dismembered. For instance, health institutions had not means for patient follow-up after discharge, nor did the CBOs continue with the mobilization activities for SAM screening. The local health institutions were not capable of complete service delivery nor was the referral process from the community or outpatient health institutions sustained (CWW-proposal, 2007). The implementation process could not reach past the full implementation stage.

Concern was able to secure resources for the implementation strategies. Even so, funds had been requested based on the results of the needs assessment which detailed the health institutions requirements for the CMAM implementation. Yet, no funds were directly provided to those institutions for strategic managerial planning to sustain the CMAM activities once Concern retracted its support. Funding could never be secured for long period, Therefore, each year there was a pending fear that the program will not be continued due to lack of resources.

Other misconception of the CMAM implementation, during the program process the providers' training was thought out as equivalent to the organizational capacity building. The guidelines and program resources could not account for program development. After over five years of technical support and expenditures (e.g., funds, time and equipment), the implementing institutions lack the self-efficacy to maintain the skills and practices of the CMAM intervention (CWW-proposal, 2012). Providers and community workers were trained on the CMAM practices, yet no program champion emerged to advocate for the continuation of intervention. A revitalization plan for the CMAM intervention in Port-au-Prince will need to fill those gaps in the implementation process.

In addition to the cited flaws high staff turnover was a major challenge during Concern's implementation of the CMAM intervention in Haiti. Six different expatriate nutrition advisors gave courses during the five years of the CMAM implementation in Haiti, each with different managerial techniques. These changes affected the consistency of the nutrition interventions. Consequently, the program objectives did not remain stable throughout the course of the intervention. These variances were noticeable when reviewing the program reports. For example, the program performance indicators which evaluated the strength of the intervention activities also illustrate the lack of program fidelity during the CMAM intervention first years.

Concern's started involvement in the nutrition intervention intensified during the food crisis in 2008 and later in 2010 with the earthquake. Concern continued its support to the local health institutions to prepare the transition to program ownership but failed to fully build the organization skills (e.g., program monitoring, staff training) necessary for the maintenance of the CMAM activities. Even so, the CMAM revitalization strategy is detailed in the next chapter.

Chapter 5

Revitalization of the CMAM program in Haiti

International NGOs and national organization sponsoring nutrition interventions responded to the populations at risk of food insecurity prior to 2010 earthquake and intensified their involvement after the catastrophe (Pierre-Louis, 2011). These interventions have produced noticeable progress in material and child health. Review of the Millennium Development Goals (MDG) shows that Haiti is on track to reaching its nutrition goals (Lutter et al., 2011; "Ministère de la Santé Publique et de la Population," n.d.). Moreover, the most recent national nutrition survey (2012) showed great improvements in the nutrition prevalence in Haiti (MSPP, UNICEF & WFP, 2012). Even with those improvements, there is still the need for public health interventions targeting the different forms of undernutrition in Haiti. Therefore, a CMAM intervention with lasting public health impacts and that can be maintained over time is the answer for the management of children still suffering from SAM in Haiti.

Sustainability in the context of the CMAM intervention in Port-au-Prince is the continuation of the nutrition intervention activities after the end of the external support from NGOs. As mentioned, the CMAM was not maintained in any of the health institutions supported by Concern in Port-au-Prince. Nonetheless, the CMAM results sparked the stakeholders' interest on nutrition program that provide quality and adequate care for the management of severe acute malnutrition (CWW-final report, 2012; CWW-proposal, 2013). In order to revitalize the CMAM intervention, the implementation activities needs to be revisited and be strategized to fit the contextual environment of each individual implementing entities (e.g., health centers, pediatric

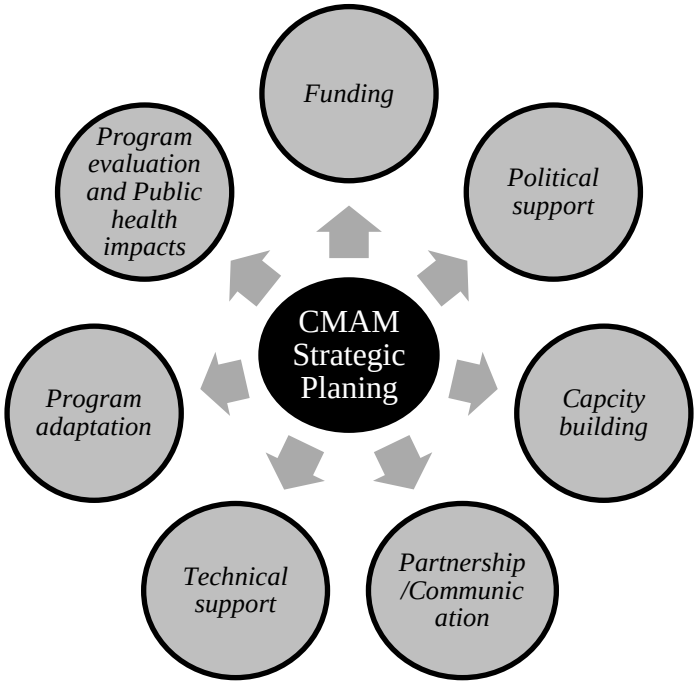
hospitals and local communities). The objectives of the revitalize nutrition intervention, for sustainable program activities, are:

- Reduce infant mortality in children younger than 5 years
- Prevention and management of acute malnutrition with adequate inpatient and outpatient services
- Strengthen partnership amongst program stakeholders
- Promote the capacity building of national human resources

Sustainability Framework

The CMAM revitalization plan will encompass the internal factors (e.g., capacity building) and external factors (e.g., policies) associated with the program implementation. This revitalization process is to ensure the continuum of the CMAM activities (e.g., community mobilization, inpatient, and outpatient services) in a majority if not all the health institutions and communities where the CMAM had been implemented. Using the existing network of stakeholders, one can assess and correct the flaws in the implementation process of the original CMAM program as a means to reopen and perpetuate the CMAM in urban Port-au-Prince. Various authors, working with public health program, referenced to certain factors that need to be in place in order to facilitate program maintenance over time (Rowe et al., 2005; Schell et al., 2013; Whelan et al., 2014). There are a series of prerequisites factors that are inherent for a program to be maintained: funding, political support, capacity building/country ownership, communication, technical support, program adaptation, and effective program monitoring and evaluation and public health impact (see figure 9).

Figure 9: Sustainability Framework



Source: Adapted from The Program Sustainability Framework. Washington University, 2013.

The CMAM revitalization strategic planning

It will be necessary to revisit and adjust the CMAM intervention implementation process in the local communities, in order to revitalize the intervention's activities in Port-au-Prince. Social marketing strategies through health promotion initiatives will reintroduce the CMAM to communities, and remind stakeholders of the CMAM intervention's proven benefits for SAM children. Conversely, new goals for sustainable capacities and sustainable outcomes should be added to the CMAM program planning. The sustainability strategy should be incorporated concomitantly into the implementation based activities early on and not as a final step of the process. Nonetheless, the revitalization of the CMAM intervention in Haiti does not require going back to the all of the steps in the implementation process. Rather an assessment and adjustment of the program implementation activities during the initial and full implementation

stage. For instance, the CMAM revitalization will utilize the existing resources (e.g., trained providers) to regenerate the intervention and support the sustainability strategy.

The specific activities in program planning have to be geared towards the achievement of program maintenance. The program goals and objectives have to encourage sustainable skills and practices, as well as sustainable program impacts. For instance, program stakeholders, in this case the Haitian MOH, have to set-up health policies that will mandate the care for SAM children in all health institutions in the national territory. The making of the CMAM intervention or its national counterpart (Protocole National de Prise en Charge de la Malnutrition) a national best practice for the management of SAM, will fortify the preservation of the program's resources. Even so, the CMAM intervention activities can be coupled with other health interventions (e.g., interventions targeting the integrated management of childhood illness) that will support the effects of the CMAM intervention over time. For instance, CMAM activities can be combined with the integrate management of childhood illness program. The integrated management of childhood illness is a public health program for children under five years focusing on the child health as a whole (WHO, 1995). The program seeks to reduce infant mortality by tackling common childhood illness, promote growth and development by improving providers' skills for case management, improve community health practices and strengthen the local health system ("Ministère de la Santé Publique et de la Population," n.d.,2014; WHO, 2014).

With the existing similarity between the interventions' practices, the combination of the CMAM intervention activities with those of the integrate management of childhood illness will provide a more complete service package to program consumers. Nutritional screening using *weight-per-height* can help classify the types of undernutrition during child's visit; as a result

malnourished children can either be referred for care or nutritional counseling. Through this approach, providers will be inclined to engage in the CMAM intervention because of its designation as a national strategy. Actions such as the inclusion of nutritional screening practices and treatment guidelines for SAM into the integrated management of childhood illness program will facilitate lasting public health outcomes.

In the longer term, the teachings of the CMAM intervention practices should be incorporated into the school of medicines, school of nursing and hospital residencies' curriculum. Internships at learning sites provide a hands-on learning experience and the rapid transfer of skills. The development of a pool of health practitioners already knowledgeable of the CMAM practices upon entering the profession, will favor the sustainably of the intervention activities. This course of action has the potential to generate an ongoing demand through the health providers' request for the nutritional care package in all their local health institutions. Moreover, the health programs would be less affected by staff turnover since practitioners are readily available. As a result, the program can avoid disruption in service delivery during the transition periods.

Once the CMAM intervention has been revitalized, again the challenge is to sustain the intervention's activities. The Program Sustainability Framework suggests the areas of focus for the maintenance of public health interventions. Hence, the strategic planning early on in the implementation process will provide the elements for the maintenance of the program outcomes. We will detail the individual elements of the Sustainability Framework that can produce the maintenance of the CMAM once revitalized.

Funding stability

Over the course of Concern's five years of the CMAM intervention support in the 5

communes in Port-au-Prince, millions of dollars were invested and secured for the CMAM intervention activities. An avenue for the maintenance of the CMAM practice is to have stable funding sources. The national nutrition guideline (2010) is the platform for the nutrition intervention's revitalization in Haiti. The MSPP have to reinforce the mandate that national and international agencies providing nutritional assistance in Haiti reference the national guidelines. The Haitian government should engage in the mobilization of resources through advocacy with the international funders. As was the case during Concern's intervention, the United Nations agencies (e.g., UNCEF and WFP), which already combat undernutrition worldwide, can be a stable source of funding for the maintenance of the nutrition strategy in Haiti. Moreover, the Ministry of health can utilize the existing on-the- ground NGOs' resources to increase program coverage and patient access to nutritional care in Haiti. In doing so, the expenses for the management of malnutrition can be diluted to several funders, donors, and finally the MSPP allocated budget to the nutrition programs. Funding is something that will likely be an ongoing focus of the implementation. With established program ownership (discussed later), this would be one factor of continued consideration by this organization.

Political support

Haiti is a country of socio-economical-cultural instabilities. Health policies, in Haiti, are very much influenced by the political agendas of its government. Interest in the CMAM intervention started to shift in 2011 with the Politique National de Santé (translated in English National Health Strategies) sketched by the new government. With these changes the CMAM intervention got incorporated into a massive social campaign and the curative component of the intervention got dissolved. Nevertheless, there is still a significant percentage of undernutrition in Haiti's population of children less than 5 years. Therefore, there is the need for sustainable

public health nutrition intervention for the treatment of SAM.

Prevention of undernutrition should be the first policy priority; however treatment is needed because of the high mortality risk from SAM. Even though the national policies did not encourage the CMAM curative activities, other social programs targeting child protection grew considerably. Even so, advocacy program focusing on children rights should also address a child right to adequate nutrition. This avenue can be utilized to mandate social policies that promote secured nutrition for all children. Currently, the national government provides free schooling education for all children. One could use this opportunity to also advocate for the provision of a hot meal for schooled children. The government through the collaborative efforts from the MSPP and the Ministry of Education could reinforce all the schools' health clinical to be able to identify early signs of child undernutrition. School nurses should also be provided with the list of the surrounding health centers for the referral and the management of children which show sign of acute malnutrition. Finally, free treatment for malnourished children must be ensured.

Organizational capacity building and Country ownership

Socio-political instability over the years resulted in the international agencies' transit of resources through NGOs. Nonetheless, these international donors and NGOs have failed to produce public health interventions with lasting benefits for the communities. The proposed solution to this unbearable waste of funds, with minimal impact on the population's wellbeing, is the development of in-country/organizational capacity building. This process is crucial for program maintenance after the Concern's support is retracted. In-country/organizational capacity building encompasses various phases which are needed in program sustainability. The development of capacity building can be divided in two separate arms. Organizational capacity

building is the managerial capacity for the development of the nutrition program. At the provider level, the national nutrition strategy should recommend the attainment of the practical skills for the management of SAM children. Moreover, the organizational staff should be responsible for the program's monitoring and evaluation in order to adjust and improve the delivery of services over time as needed.

An additional element to program maintenance is the country's ownership of health interventions. Country ownership favors long term strategic planning for sustainable public health programs. The Ministry of health has to regulate the delivery of services to structure the health system. Providers' involvement and adherence to the CMAM is encouraged, since the management of acute malnutrition has become a national strategy that can be maintained through the MSPP. The country ownership is attained through the development of national competencies. The opportunities to integrate national/governmental staff with CMAM training will maximize the development of country ownership. The MSPP should be empowered and given the lead of the implementation strategies. The CMAM activities should become part of MSPP and health care providers' roles and responsibilities.

Communication

The Sharing of information and experiences from the implementing entity with the program experts is fundamental for continuous good learning practices. Technical/coordination meetings should be put in place at various levels. The national nutrition strategy should encourage the dissemination of the national guidelines to inform program stakeholders of the advantages of the CMAM practices. Making the CMAM a national strategy will increase coverage and access for nutritional care. Through nutrition surveillance and health education

campaigns, the local communities are made aware of the problem of malnutrition and the risk of mortality for the children less than 5 years. Communication will encourage behavior changes. Patients should be motivated to look for health care services, generating social pressure on policy makers for the availability of care for SAM children. Creating a demand of services is another process to increasing program maintenance.

Communication amongst stakeholders is also needed. The complexity of the CMAM intervention requires the inter-correlation of each of the program's component for a complete service package for SAM children and their families. As introduced during the earthquake, an initially monthly than trimestrial nutrition cluster meeting under the lead of the MSPP can facilitate a communication channel for organizations conducting CMAM intervention in Haiti. Therefore, a continuous feedback process can be generated from one another for better case management.

Technical support and partnership

The management of malnutrition in Haiti is a multi-sectorial problem which requires contributions from the all the health agencies, as well as the synergy of intervention activities for a greater coverage. An estimated 10,000 NGOs are present in Haiti (Pierre-Louis, 2011). A public-private partnership is needed to increase the sustainability of nutrition interventions in Haiti. Through good communication, organizational capacity building and funding, the MSPP can foster a coalition between the private and public sectors to increase health coverage and access of care. The technical support can be provided through purveyor agencies such as Valid International and FANTA that possess the expertise for country level nutrition program development. National staff are to be trained on the specificities of the intervention in order to be able sustain afterwards when there is no more support. Moreover, national nutrition focal points

can be strategically trained as the national purveyors for the nutrition program.

Program sustainability is also reliant on the creation of partnership and communication. Organizations have to engage in the sharing of the program challenges in order to secure technical support from purveyor agencies. The continuum of interaction may predict the development of program champions that will advocate for equate program implementation. The existing partnership amongst organization can also facilitate the capacity building of health providers through the sharing of experience on quality nutrition services.

Program adaptation

The CMAM intervention applied to the Haitian context is too complex with too many contributors. The institutional capacity assessment and program fit will determine the CMAM maintenance overtime. Another strategy to revitalize the CMAM intervention in Haiti would be to segment the program into smaller scale activities. Contextually the CMAM intervention with its four components is too complex to be integrated and managed by a single health institution. It may prove more sustainable if the different components of the CMAM interventions are disentangled, and afterward target specific organizations to implement the components. An assessment of the health institutions' capacity is warranted to establish which components of the CMAM program goals is achievable.

For example, in 2011-2012 this health care institution, Nos Petits Frères et Soeurs, handled both the outpatient and inpatient care, and supported the community outreach activities. Institutions like these require minimal support to until it reach a certain level of program maturity and can later become program champions. Hence, concomitantly with the implementing organization purveyor agencies will identify which activities can be carried out adequately based

on the organization's strength. As a result, the CMAM components broken down into smaller scale activities are to be adapted to the Haitian socio-cultural environment to be sustained. In order to compensate for high staff turnover the health institutions have to establish a capacity development strategy. For instance, request staff training from a more skillful program partner. Finally, program sustainability is the ability to adapt to the ongoing changes in the interventions' sphere of influence. Some of the elements referenced in the Sustainability framework are also to be adapted to Haiti's contextual environment.

Program evaluation and Public health impacts

Program evaluation is a substantial aspect of program implementation and sustainability. Hence, it is recommended for the maintenance of the revitalize CMAM intervention in Haiti, for the health organization (e.g., inpatient and outpatient health centers) to undertake at least two program process evaluations, one mid-year and a final assessment of the program's outcomes. Also a program Strengths, Weakness, Opportunities, Threats (SWOT) analysis should be conducted, consumer surveys on service delivery, and providers' self-assessment surveys. These elements will help in structuring the program's strategies for sustainable capacitates and sustainable outcomes.

As with the initial CMAM implementation back in 2007, the revitalization of the program is also going to be somewhat of a lengthy process with many challenges. It is important that the stakeholders work against the inherent challenges of the healthcare system in Haiti, in order to create a viable implementation that addresses the sustainability framework, we can hope for the needs of children suffering from SAM.

Conclusion

A well-nourished population has less than 1% of children experiencing acute malnutrition (WFP, 2012). As of 2012 in Haïti, 4% of children suffer from acute malnutrition (Ministère de la Santé Publique et de la Population, n.d., 2014). Haiti's vulnerable populations are the ones most affected during crisis situation, due to their lack of knowledge on how to mitigate their risks. Taking into account the importance of a well nourish population, the revitalization of the CMAM intervention propose a national strategy with a comprehensive and integrative methods for the implementation and maintenance of the program outcomes. The goal of this project was to analyze the key contributors to the sustainability strategies for the nutrition program in Haiti. Nonetheless, there are prerequisites to nutrition program survival, such as the availability and quality of resources including skilled staff, financial stability, and organizational structure for the sustainability of the public health program activities.

Appendix A:

Acronyms

CBO	Community-based organization
CDC	Center for Disease Control and prevention
CMAM	Community management of acute malnutrition
CSP	Child survival program
CTC	Community-based therapeutic care
CNSA	National food security commission
CWW	Concern Worldwide
DHS	Demographic health survey
ECHO	European Commission's Humanitarian Aid Office
EMMUS	Demographic health survey
EU	European Union
FANTA	Food Nutrition technical Assistance
FAO	Food and Agriculture Organization
HDI	Human Development Index
IHSI	National center for health statistics
IMCI	integrated management of childhood illness
MDG	Millennium Development Goal
MCH	Maternal and child health
MOH	Ministry of health
MSPP	Ministère de la Santé Publique et de la Population
MUAC	Mid-upper arm circumference
NGO	Nongovernmental organization
RUTF	Ready to use therapeutic food

SAM	Severe acute malnutrition
SWOT	Strengths, Weakness, Opportunities, Threats
UN	United Nations
UNICEF	United Nations Children Funds
USAID	United States Aid for International Development
WFP	World Food Program
WHO	World Health Organization

Appendix B:

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