



Linking Nutrition & (integrated) Community Case Management

— A REVIEW OF OPERATIONAL EXPERIENCES —

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ABBREVIATIONS & ACRONYMS

ACF	Action Contre la Faim/Action Against Hunger
A&T	Alive and Thrive
ANC	Antenatal Care
APE	Agente Polivalente Elementar
ASC	Agent de Santé Communautaire
CBD	Community-Based Distributor
CBN	Community-Based Nutrition
CBNP	Community-Based Nutrition Programme
CCM	Community Case Management
CDD	Community Drug Distributor
CHA	Community Health Activist
CHW	Community Health Worker
CMAM	Community-based Management of Acute Malnutrition
CNW	Community Nutrition Worker
CSB	Corn Soy Blend
CTC	Community Therapeutic Centre
DALY	Disability-Adjusted Life Year
DRC	Democratic Republic of the Congo
GAIN	Global Alliance for Improved Nutrition
GAM	Global Acute Malnutrition
HDA	Health Development Army
HEW	Health Extension Worker
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HSA	Health Surveillance Assistant
iCCM	integrated Community Case Management
IFPRI	International Food Policy Research Institute
IIP – JHU	Institute for International Programs at Johns Hopkins University
IMCI	Integrated Management of Childhood Illness
IMNCI	Integrated Management of Neonatal and Childhood Illness
IRC	International Rescue Committee
ITN	Insecticide Treated Net
IYCF	Infant and Young Child Feeding
MAM	Moderate Acute Malnutrition
MOH	Ministry of Health
MUAC	Mid Upper Arm Circumference
NGO	Non-Governmental Organisation
ORS	Oral Rehydration Salts
OTP	Outpatient Therapeutic Programme
RaCE	Rapid Access Expansion Programme
RDT	Rapid Diagnostic Test
RUSF	Ready-To-Use Supplementary Food
RUTF	Ready-To-Use Therapeutic Food
SAM	Severe Acute Malnutrition
SBC	Social and Behaviour Change
SFP	Supplementary Feeding Programme
SMART	Standardized Monitoring and Assessment of Relief and Transition
TB	Tuberculosis
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
WFH	Weight-for-Height
WHO	World Health Organization

EXECUTIVE SUMMARY

Nutrition is crucial to both individual and national development. Recent estimates suggest that improving access and coverage of specific nutrition interventions could save hundreds of thousands of lives every year. In spite of this potential, the reach of many of these interventions remains limited. Integrated Community Case Management (iCCM) of childhood illnesses **may be a logical platform, perhaps currently a missed opportunity, for increasing the reach and coverage of treating malnourished children, and potentially for preventing malnutrition.**

The objective of this review is to map out and describe operational experiences in linking nutrition and Community Case Management/integrated Community Case Management interventions, with the goal of identifying emerging lessons and identifying gaps in knowledge. The decision to undertake this review was an outcome of a meeting held in London in May 2014 to examine potential linkages between iCCM, Community Health Workers (CHW), and malnutrition. That meeting concluded with an agreement to work towards building and sharing the evidence base for effective service delivery in different contexts.

This review utilized two principal methods of data collection: desk review and key informant interviews. Documents reviewed included peer-reviewed journal articles, programme reports, global and national CCM/iCCM and nutrition guidelines, programme proposals and study designs. Four countries were selected for more in-depth review: Bangladesh, Ethiopia, Niger and South Sudan. To supplement and enhance programmatic and implementation-related information gathered during the desk review, 22 key informant interviews were carried out with individuals from seven Non-Governmental Organisations (NGOs), three donor agencies, WHO headquarters staff representing expertise in iCCM and in nutrition, and UNICEF staff at headquarters, regional, and country levels.

Analysis of implementation experiences brought to light four categories of approaches to integrating or linking iCCM and nutrition. In this review, these categories are referred to as “typologies”. The typologies provide an organizing framework for describing, exploring and comparing existing experiences and evidence, analysing advantages and disadvantages, and defining knowledge gaps. **The construct of the four typologies is useful for examining current and past experiences, however it is likely that the way forward may be through a combination of typologies, or through the addition of new alternative approaches to linkage or integration.**

Typology 1

Advising on “feeding the sick child” within existing iCCM services

Typology 2

Linkages with Social & Behaviour Change activities on child nutrition

Typology 3

Linkages between iCCM activities and acute malnutrition treatment through assessment and referral

Typology 4

Treatment at community level of uncomplicated Severe Acute Malnutrition

Typology 1



TYPOLGY 1 focuses on providing advice to the caregiver of the sick child during the sick child consultation. According to the UNICEF/WHO iCCM protocol, the iCCM worker advises the caregiver as part of home care. The task is limited to advising (providing information on the recommended behaviour) concerning home treatment of illness (how to give ORS, zinc, antibiotics, antimalarials), and when to return to the CHW or seek medical care. Although every CHW implementing iCCM is supposed to advise the caregiver of a sick child to continue feeding and fluids, the review found little data about the quality or quantity of feeding-related advice. No data was found on the effect of this advice on the health status of the child. Although the review found no data on cost for this typology, it is assumed that costs of strengthening the messaging would be relatively low, requiring the review and revision of global and national iCCM training manuals and recording forms to ensure that continued feeding of the sick child is emphasized and made more explicit. Typology 1 is probably the simplest of the four identified typologies to carry out or strengthen.

TYPOLGY 2, linkages with social and behaviour change activities on child nutrition, provides a strong platform for reaching a wide population with preventive messages. Many nutrition programmes focus on improving infant and young child feeding practices through a range of approaches from delivering health education messages to implementing social and behaviour change (SBC) activities. Most of the social and behaviour change experiences reviewed are resource-intensive and require home visits complemented by social mobilization and mass communication activities. In the UNICEF/WHO iCCM materials, information on disease prevention is limited to key advice related to home care including advising caregivers to give more fluids and continue feeding, to sleep under bednets in malarial areas, and to ensure full vaccination. Because messages are tightly context-specific, the implementation of Typology 2 implies the availability of skilled personnel, as well as adequate finances to carry out the needed formative research and message development. It also suggests an additional load on the iCCM CHW to carry out the home visits, although this could be avoided by using different cadres. The evidence identified came from small to medium size interventions.

Typology 3



TYPOLGY 3, linkages between iCCM activities and acute malnutrition treatment through assessment and referral, is already part of the standard UNICEF/WHO protocol. According to the protocol, iCCM workers measure every sick child over six months of age with a MUAC strap and assess for bilateral pitting oedema. An important variation on this typology is the use of active screening or active case detection through home visits or at growth monitoring group activities. This allows measurement of every child, sick or well, and may be the standard in many countries or projects. Despite the inclusion of assessment and referral for acute malnutrition in the UNICEF/WHO iCCM standard protocols, little hard evidence was found concerning how well or even whether this action was carried out during a sick child consultation, the quality of the assessment, whether the referral advice was followed, and ultimately whether it resulted in adequate treatment. This typology requires a strong programme in place to treat cases of acute malnutrition at health facilities and a functioning referral system, in addition to a well-trained, extensive network of CHWs. It also needs the appropriate national policies, protocols, and data systems for both illness management and nutrition, and a supervisory structure to ensure the adequate use of MUAC. Although there is some indication that active case-finding increases coverage of treatment for childhood illness, no data was found showing whether the same is true for acute malnutrition.

TYPOLGY 4, treatment at community level of uncomplicated Severe Acute Malnutrition, has been implemented by several NGOs and governments adapting CMAM protocols. These experiences fall into two categories: 1) the assessment, classification and treatment for acute malnutrition were added onto the existing responsibilities of the iCCM worker, and; 2) the iCCM worker was linked to or connected with a second community-based cadre with responsibilities and skills for addressing acute malnutrition. The contexts for the various experiences differ widely, ranging from development to emergency in several different countries. With the exception of Ethiopia, most experiences to date have been (or will be) conducted at a small scale with strong supervision. Available evidence is thus restricted to a smaller number of experiences but provides insight into a larger number of topic areas. In contrast to the previous three typologies, the review found data on a number of additional factors including time spent by the CHW, cost

Typology 2



Typology 4



of implementation, and policy implications. Typology 4 is arguably the most complex of the four identified typologies. Implications for implementation cover training time, training complexity, quality of care, supervision, policy, supply, costs, and issues of protocol adaptations. In discussing which approaches key informants would or would not recommend, community-based treatment of uncomplicated severe acute malnutrition elicited strong reactions on both sides of the argument.

In addition to identifying what was known about integrating nutrition and iCCM/CCM, this review sought to identify remaining gaps in knowledge in order to help focus future implementation and research directions. In contrast to the abundant evidence supporting the need to integrate or link, and the equally abundant evidence for each of the two domains separately, the paucity of hard evidence of how linkages could be done confirms the limited experience. Future work will need to examine the best combination of actions – probably crossing over the proposed typologies -- to ensure better coverage of interventions that identify and ensure treatment and prevention of childhood illness and acute malnutrition. The list of questions put forward in this review is vast but a subset is included in the main body of the report. Much of what is not known relates to large-scale implementation, feasibility, and the transferability of experience from one context to another.

One frequent theme arising throughout the review process, in both the desk review and the key informant interviews, is the primordial importance of context; what works in one country or part of a country may not be appropriate for another. There are a number of other common lessons that arose from this review:

- a.** The profile of the CHW is decisive. The gamut runs from a paid, literate CHW with a relatively small catchment area and a substantial amount of training, to a volunteer, illiterate CHW with a large number of households to cover and one week of training.
- b.** The organisation of work and current responsibilities of CHWs help determine the best approach, for example whether the integration of nutrition activities should build on a health education platform or on a treatment platform.
- c.** A division of responsibilities whereby the CHW who does treatment is complemented by others who do active case-finding, home visits, and/or IYCF messaging has the potential of increasing coverage while not overloading one particular cadre.
- d.** iCCM is only one delivery platform; nutrition could be added to others, including the Expanded Programme on Immunization and antenatal care activities.
- e.** The political context is also decisive. In places with a high prevalence of acute malnutrition, low access to treatment and poor health infrastructure, for example South Sudan, there is a stronger argument for community-level treatment. At the same time there is more opportunity for the CHW to see acutely malnourished children and thus to practice and retain the relevant skills. The same argument may apply to areas in emergency situations.
- f.** There is a palpable tension between the “nutrition” and “health” sectors. This tension relates to available funding (donor attention), funding streams, and management structures. This could be likened to a similar tension often found in iCCM between vertical malaria programmes and more horizontal child health programmes in countries. The advantages to both sectors of linking should be clearly articulated, using terminology acceptable by all concerned.
- g.** Other sectors and concerns must be taken into consideration. Examples include gender issues (men are family decision-makers), social protection schemes, and food security.
- h.** Key informants agreed that it was reasonable to expect all iCCM CHWs to assess, refer and counsel acutely malnourished children. There was agreement amongst a number of respondents that iCCM could be an effective platform for reinforcing IYCF messages, strengthening feeding practices during illness, and following up acutely malnourished children.
- i.** Respondents brought up the challenges of integrating nutrition and health at the national level, related to coordination across MOH directorates, funding streams, and the challenge of ensuring that useful nutrition indicators were included in the Health Management Information System (HMIS).

INTRODUCTION & BACKGROUND

According to The Lancet Maternal and Child Nutrition Series, 2013¹, the global prevalence of child stunting is slowly decreasing, but in 2011 still affected at least 165 million children under five years of age. Wasting affected at least 52 million children. Undernutrition, including foetal growth restriction, suboptimum breastfeeding, stunting, wasting, and deficiencies of vitamin A and zinc, cause 45% of all child deaths, some three million per year. The same series estimates that 90% coverage of early and exclusive breastfeeding plus appropriate complementary feeding could save as many as 221,000 lives per year; the same coverage of the management of moderate acute malnutrition would save 435,000 lives, and of Severe Acute Malnutrition would save between 285,000 and 482,000 lives.



Nutrition is crucial to both individual and national development. The evidence in [the Lancet] Series furthers the evidence base that good nutrition is a fundamental driver of a wide range of development goals. The post-2015 sustainable development agenda must put addressing all forms of malnutrition at the top of its goals. (The Lancet Maternal and Child Nutrition Series, 2013, Executive Summary)

Despite the widespread need, only about 15% of children who suffer from Severe Acute Malnutrition receive adequate treatment. Even in countries where Community-based Management of Acute Malnutrition (CMAM) exists, coverage remains low with many sub-national services reaching less than 50% of all cases².

CHALLENGE:

There is a long way to go to meet the needed 90% rate of coverage postulated in The Lancet series.

Integrated Community Case Management (iCCM) of childhood illness is a strategy to identify and treat the major diseases affecting mortality in children under five years of age. It is based on an interaction during a sick child encounter. In parallel with the approach

of Integrated Management of Childhood Illness (IMCI) at the health facility level, iCCM takes a holistic approach, reviewing all danger signs and providing needed treatment, prevention and follow-up for the child's condition(s). In most countries, the iCCM protocol (following the UNICEF/WHO package Caring for the Sick Child in the Community³) includes the identification of acute malnutrition by measuring Mid Upper Arm Circumference (MUAC) and bilateral pitting oedema, and the immediate referral of children with Severe Acute Malnutrition (SAM). It also includes advice on continued feeding of any sick child treated at home, as well as advice on sleeping under bednets and ensuring the correct vaccination status.

iCCM may be a logical platform, perhaps currently a missed opportunity, for increasing the reach and coverage of treating malnourished children, and potentially for preventing malnutrition.

The hypothetical advantages to linking iCCM and nutrition services are manifold, given the considerable overlap between disease and malnutrition. Interventions to prevent or decrease malnutrition or infectious disease are expected to decrease child mortality, and interventions that accomplish both will have the greatest effect⁴. In many countries, Community Health Worker (CHW) programmes are in place. It is cautioned at the outset of this review that shifting tasks and responsibilities to CHWs is sometimes considered by governments and partners as a cost-saving approach to increasing access to care. As will be described later, the implementation of effective CHW programmes requires solid support in the form of supervision, training, supply and logistics, and functional referral systems. To ensure that this support is in place, CHW programmes need to be firmly situated in a process of overall health systems strengthening.

¹ The Lancet Maternal and Child Nutrition Series Executive Summary, 6 June 2013

² UNICEF/Coverage Monitoring Network/ACF International (2012) The State of Global SAM Management Coverage 2012 (New York & London, August 2012)

³ This package, published in 2011, was designated as the "gold standard" for iCCM training by the

Steering Committee of the iCCM Taskforce

⁴ Pelletier DL et al. Epidemiologic evidence for a potentiating effect of malnutrition on child mortality. *Am J Public Health.* 1993 Aug;83(8):1130-3.

Advantages for the child and community of linking nutrition and iCCM include:

- Ensuring more holistic and comprehensive management of the sick and well child;
- Increasing access to acute malnutrition services;
- Increasing efficiency of screening, by using sick child visits to identify and follow up acutely malnourished children;
- Providing a single point of care for different health and nutrition services for the caregiver;
- Earlier identification of malnutrition, leading to faster recovery times, lower mortality, reduced need for inpatient care, and less costly treatment;
- Providing the CHW an opportunity to communicate the linkages between disease and malnutrition.

In addition, there are potential programmatic advantages to linking nutrition and iCCM:

- Integrated services can be more cost-effective.
- Motivation of the CHW may be improved: since Ready-To-Use Therapeutic Food (RUTF) provides quick, visible improvements in children, job satisfaction and community appreciation for the CHW who treats acute malnutrition can increase.
- It is more likely that child nutrition, both curative and preventive, is given adequate attention in child health programming, tools and interventions.
- Merging funding from CMAM-specific and iCCM-specific streams may ensure more sustainable support.

Although it may be interpreted that most of the advantages listed above are seen from the nutrition perspective (what's in it for nutrition programmes?), there are also firm arguments from the iCCM perspective.

- The children most likely to die from diarrhoea, pneumonia or malaria are those who are mal / undernourished, with malnutrition underlying one-third of all child deaths.
- There is also substantial evidence that children respond better to treatment (e.g. for malaria) if their nutritional status is addressed.
- Reducing malnutrition should also reduce morbidity (thus reduce caseload) and reduce the duration of illness.
- Addressing the underlying vulnerability of the child is likely to increase the effectiveness of iCCM as well.
- Nutritional screening activities provide significant opportunities for identifying cases of diarrhoea, pneumonia and malaria and thus increasing coverage of treatment.

There are also significant and obvious disadvantages to linking nutrition with iCCM. These cover, most notably, concerns of overworked, often underpaid (or volunteer) CHW and the familiar related issues of sustainable quality of the care provided, retention, motivation, supervision, supply, referral systems, and limited resources.



The effort being made to treat Severe Acute Malnutrition in Niger is tremendous, and this needs to be supported. The problem in 2012 was that a massive plan for treating Severe Acute Malnutrition was prepared and implemented, but it excluded other health needs, in particular malaria prevention and immunisations. The response was tailored to the malnutrition crisis, and failed to take account of the fact that even if you provide children with appropriate nutrition, you can still lose them to malaria or a respiratory infection which could have been prevented by a pneumococcal vaccination. There is a need for an integrated response, rather than for pushing one response to the exclusion of others, which can have a detrimental effect on the survival of children.

JOSÉ ANTONIO BASTOS
MSF SPAIN PRESIDENT APRIL 2013

About the Review

There are multiple converging and competing points of view on whether and how best to link iCCM and nutrition interventions. The objective of the current review is to map out and describe operational experiences in linking nutrition and Community Case Management/integrated Community Case Management interventions, with the goal of identifying emerging lessons and identifying gaps in knowledge.

The decision to undertake this review was an outcome of a meeting held in London in May 2014 to examine potential linkages between iCCM, CHWs, and malnutrition. That meeting concluded with a statement of intent that nutrition should be effectively integrated into iCCM, and an agreement to work towards building and sharing the evidence base for effective service delivery in different contexts. Moreover, curiosity about the current status of implementing linked activities had been stimulated at the iCCM Evidence Symposium in Ghana in March 2014, with the presentation of a cross-sectional survey conducted by UNICEF to explore iCCM policy and implementation in sub-Saharan Africa.

Methodology

The literature on iCCM and on child nutrition is vast. Because the present review was carried out with the aim of describing experiences and consolidating available evidence of programmes or projects that link iCCM and nutrition interventions, the analysis was restricted as much as possible to experiences that reflect this.

This review utilized two principal methods of data collection: desk review and key informant interviews.

The desk review aimed to map and describe operational experiences and existing evidence about linking nutrition and CCM/iCCM interventions. Documents reviewed included peer-reviewed journal articles, programme reports, global and national CCM/iCCM and nutrition guidelines, programme proposals and study designs.

Documents were solicited through the review Steering Group⁵, CORE Group listserv, iCCM Task Force listserv, and global and regional offices of WHO and UNICEF. The reviewers sought additional materials through web searches and individual organisational contacts. The USAID Maternal and Child Survival Project conducted a secondary analysis on data from the UNICEF cross-sectional survey to determine if any additional information was available on nutrition interventions reported in conjunction with iCCM.

Four countries were selected for more in-depth review: Bangladesh, Ethiopia, Niger and South Sudan. The reviewers sought extensive information on each of these countries from documentation and from key informants. Experiences were reviewed for details related to context, interventions implemented, costs, and evidence base.

The experiences are:

- **Bangladesh:** Save the Children project in South Bangladesh (with the Feinstein International Center at Tufts University)
- **Ethiopia:** National Health Extension Programme
- **Niger:** International Federation of Red Cross and Red Crescent Societies, French Red Cross, Niger Red Cross
- **South Sudan:** Malaria Consortium, International Rescue Committee, Population Services International, Save the Children

⁵ Action Against Hunger, UNICEF, WHO, Save the Children, International Rescue Committee and Population Services International

The focus on a small number of selected countries was intended to balance the global scope of the review with a more in-depth and detailed examination of specific programmatic experiences. Countries were identified by the Steering Group, based on prior exploration of programmes with documented operational experiences linking iCCM and nutrition interventions.

To supplement and enhance programmatic and implementation-related information gathered during the desk review, the reviewers carried out 22 key informant interviews. Interviews were conducted using pre-defined questionnaires. The key informants included individuals from seven Non-Governmental Organisations (NGOs), three donor agencies, WHO headquarters staff representing expertise in iCCM and in nutrition, and UNICEF offices at headquarters, regional, and country levels. The original list of key informants was provided by the Steering Group, and augmented based on recommendations. Every effort was made to reach a variety of organisations and include representation of both nutrition and iCCM expertise within organisations. A list of organisations interviewed can be found as Annex 1.

For the purpose of this review the following definitions were used:

Nutrition interventions

This term covers a range of actions, including one or more of the following list:

- **Identification, referral and/or follow up of acute malnutrition cases** (severe and/or moderate)
- **Treatment of acute malnutrition cases** (severe and/or moderate) **at facility**
- **Treatment of acute malnutrition cases** (severe and/or moderate) **at home** (or in the community close to home)
- **Deworming**
- **Micronutrient supplementation**
- **Advising on feeding of the sick child**
- **Advising /counselling on Infant and Young Child Feeding (IYCF)** (including early and exclusive breastfeeding and complementary feeding)

Community Health Worker

(CHW)

Various terms used include community health workers, community-owned resource persons, health surveillance assistants, field or extension workers, lady health workers, community drug distributors. Generalizations about the profile of CHWs are difficult, however the main focus of the term in this review is on CHWs as lay (non-medical) health workers. In various programmes, they may be men or women, young or old, literate or illiterate, paid or unpaid.

iCCM vs CCM

(integrated community case management vs community case management)

The difference is subtle. CCM can be case management of any condition, at the community level. iCCM is integrated, not single-disease, and not combined (e.g. not: first look for and treat pneumonia, then look for and treat diarrhoea). It is in many ways a simplified version of IMCI. It has also, by design, been limited to those conditions that can be fatal for children and that can be treated relatively easily: pneumonia, diarrhoea, malaria, plus the identification of acute malnutrition.

It should be emphasized that "iCCM" is not intended to stand alone in its implementation. It is part of a larger set of actions that cover caring for the newborn at home and caring for the child's healthy growth and development (see box in Discussion section).

Linkage/integration

These are different ways to describe the connection between iCCM and nutrition interventions. iCCM in its generic form includes the identification of acute malnutrition using MUAC and oedema of both feet, and referral of the child to a feeding programme or rehabilitation centre. In this case, the two programmes or types of actions are linked but are not integrated. On the other end of the spectrum is the identification and treatment of acute malnutrition by the CHW. This could be considered integration.

Limitations

The review examined numerous and assorted documents, ranging from global policies and protocols to reports of time-bound or small-scale projects.

The methodology and scope of this review present a certain number of important limitations:

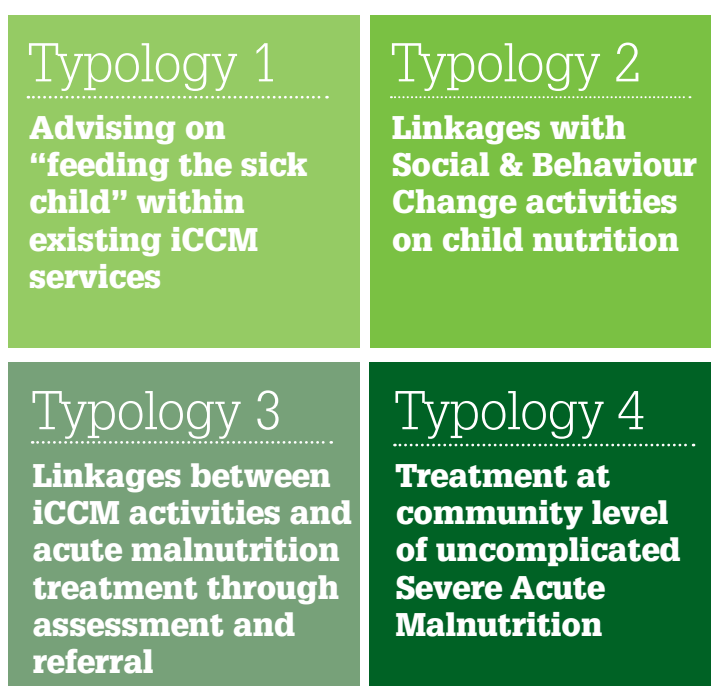
- There is almost no hard data available on the impact or effect of linking or integrating iCCM and nutrition; most of what is available concerns only one set of interventions or the other. All relevant data found has been presented in the section on Findings.
- The “nutrition universe” is diverse, and there are many expectations on what linkages between iCCM and nutrition should be or should accomplish. This increased the challenge of grouping the key informant interviews into like statements, and the numerous interviews generated as many questions as they answered. It is also noted that key informants were largely representatives of agencies; no national implementation partners or staff of ministries of health were included. This could be useful for a follow-on exercise.
- The broad definition of “nutrition interventions” made comparison and generalization across experiences challenging.
- Few countries implement iCCM at national scale, and only Ethiopia and Rwanda have nutrition integrated at that level. Nearly all information gathered focused on countries in Africa, with the South Bangladesh project as the notable exception. Some information was also reviewed from Afghanistan and the Philippines but this was mostly focused on iCCM. There is some indication that Malawi may also have nutrition integrated at a national level but the reviewers found no documentation to support this. Despite the enthusiastic support of multilateral organisations and NGOs to request materials through regional and country networks, the response was less than anticipated. This may be an indication of the small amount of written material available.



REVIEW FINDINGS

The review identified numerous experiences that demonstrate linkages or integration between nutrition actions and iCCM. Annex 2, Community-level nutrition actions identified, shows the breadth and variety of nutrition-related actions across countries and experiences. The table is included to demonstrate the elusive quality of defining “nutrition interventions” and “linkage with iCCM”. Many actions are limited to identifying and referring acute malnutrition; others include regular deworming and vitamin A distribution; others cover acute malnutrition treatment. Some are strictly IYCF and preventive messaging. In addition, some actions identified are outside the scope of iCCM and may or may not be linked programmatically.

Analysis of implementation experiences brought to light four categories of approaches to integrating or linking iCCM and nutrition. In this review, these categories are referred to as “typologies”. These typologies are not mutually exclusive, and many implementation experiences include a combination of several among the four.



Findings from the desk review are organized according to these typologies. Under each typology there is a description, examples of implementation experiences, and supporting evidence identified. Key informant views on the types of typologies or interventions to recommend or not, based on their experience, are summarized in the Discussion section of findings.

Typology 1

Advising on “feeding the sick child” within existing iCCM services

Description

In this typology, advice on feeding during illness is provided to the caregiver of the sick child during the sick child consultation. The interactions between illness and malnutrition in children are direct and well documented^{6,7}. Optimal feeding practices support healthy immune function, rapid and sustained recovery, and growth. Optimal feeding, during and after illness, is critical not only for recovery from the current illness but necessary to reduce susceptibility to future illness and malnutrition⁸.

According to the UNICEF/WHO iCCM protocol, the iCCM worker advises the caregiver as part of home care. The task is limited to advising (providing information on the recommended behaviour). It does not involve counselling, which implies listening, reflecting back and using a problem-solving process. The standard materials recommend that the CHW discuss four main points with the caregiver of any sick child treated at home (see Figure 1, extracted from the “Sick Child Recording Form”). In principle, this advising is done in any country that implements iCCM.

<input type="checkbox"/> If living in household with someone on TB treatment	<input type="checkbox"/> Advise caregiver to take the child soon for TB screening and TB preventive medicine.
<input type="checkbox"/> If Yellow on MUAC strap (no HIV)	<input type="checkbox"/> Counsel caregiver on feeding or refer the child to a supplementary feeding programme, if available.
<input type="checkbox"/> For ALL children treated at home, advise on home care	<input type="checkbox"/> Advise caregiver to give more fluids and continue feeding. <input type="checkbox"/> Advise on when to return. Go to nearest health facility immediately or if not possible return if child <ul style="list-style-type: none"> <input type="checkbox"/> Cannot drink or feed <input type="checkbox"/> Becomes sicker <input type="checkbox"/> Has blood in the stool <input type="checkbox"/> Advise caregiver on use of a bednet (ITN). <input type="checkbox"/> Follow up child in 3 days (schedule appointment in item 6 below)

⁶ Black RE et al and the Maternal and Child Nutrition Study Group. Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet* 2013; published online June 6. [http://dx.doi.org/10.1016/S0140-6736\(13\)60937-X](http://dx.doi.org/10.1016/S0140-6736(13)60937-X)

⁷ UNICEF. Pneumonia and diarrhoea: Tackling the deadliest diseases for the world's poorest

children. (2012)

⁸ LINKAGES. Facts for Feeding. Feeding Infants and Young Children During and After Illness. 2006. Washington DC, USAID. Academy for Educational Development.

Examples of implementation

All iCCM protocols and materials considered in this review include some form of home care advice. An earlier review of iCCM training materials in ten African countries⁹ revealed that much of the home care advice concerns information on when the child should seek medical care (or return to the CHW), and on the correct use of bed nets. Nutritional advice for the sick child in Democratic Republic of the Congo (DRC), Ethiopia, Liberia, Rwanda, South Sudan and Zambia, covers feeding and fluids for all sick children, while in Madagascar, Mali and Senegal this advice is limited to cases of diarrhoea. The training materials reviewed from Guinea include a separate section on nutrition counselling for the malnourished child; however, advice on continuing feeding and fluids for children consulting for diarrhoea, pneumonia or fever is not evident.

Supporting evidence identified

A study on the quality of care provided by iCCM-trained Health Surveillance Assistants (HSAs) in Malawi¹⁰ shows that these workers counselled caregivers about the dose, frequency and duration of treatment for over half of children provided ORS, antibiotics or antimalarials (61%), and 81% of caregivers described correctly how to give these treatments. Just over half (55%) of caregivers of children with diarrhoea were advised to give extra fluids and to continue feeding the child during the illness episode.

In the project in South Bangladesh, caregivers were advised on fluids and continued feeding during a sick child consultation for cases of diarrhoea¹¹. The project evaluation showed that this was done correctly by 81% of “iCCM-only” CHWs, and 68% of CHWs trained to do iCCM and treat acute malnutrition, for an overall performance of 73%. The same CHWs provided counselling and feeding information during routine household visits, which may or may not be considered part of iCCM services.

In a concept paper to identify effective approaches to reinforce nutritional counselling within iCCM implementation, Save the Children states:

“

Research and programme evidence suggest that caregiver and health worker support of nutrition during and after illness is frequently suboptimal¹².

...Unequivocally in many contexts, recommended feeding practices are poor, with responsive and active feeding not being practiced. Health workers sometimes share and reinforce (inappropriate) beliefs, though more frequently they do not actively provide nutritional counselling as a part of treatment and follow-up¹³.

The evidence from Malawi and South Bangladesh is from studies published in peer-review journals. Malawi is implemented as a nationwide scale-up; the study cited covers six districts and 131 HSAs. The South Bangladesh experience is a small-scale trial covering one intervention and one control Upazila (see Typology 4). The information from the ten-country review is descriptive and hypothetical, based on the contents of training materials and planning documents. It is noted that all of the evidence found concerns process: whether and how well certain activities were carried out. No evidence of effect or impact was identified.

⁹ Review of Integrated Community Case Management Training and Supervision Materials in Ten African Countries, MCHIP 2013

¹⁰ Gilroy K et al Quality of sick child care delivered by Health Surveillance Assistants in Malawi.

Health Policy Plan. (2013) 28 (6): 573-585. doi: 10.1093/heapol/czs095

¹¹ Puett C et al. Does greater workload lead to reduced quality of preventive and curative care among

community health workers in Bangladesh? Food and Nutrition Bulletin, 33(4), 2012. The United Nations University

¹² Piwoz E. Improving Feeding Practices During Childhood Illness and Convalescence. Lessons Learned in Africa. 1994. Washington, DC, USAID Academy for Educational Development, SARA project.

¹³ Personal communication, Save the Children

Typology 2

Linkages with Social & Behaviour Change activities on child nutrition

Description

Recent analyses of child growth patterns illustrate that growth faltering (growth rates below those appropriate for a child's age and sex, by height and/or weight) in early childhood is greater than suggested by previous analyses and starts earlier¹⁴. Growth faltering in children happens mostly from three to 18–24 months of age, justifying the scale-up of the promotion of all optimal IYCF practices, including during illness and recovery.

Many nutrition programmes focus on improving infant and young child feeding practices through a range of approaches from delivering health education messages to implementing Social and Behaviour Change (SBC) activities¹⁵. The linkages between these approaches and iCCM appear to fit into several categories:

- The CHW providing iCCM is part of a larger team that includes volunteers focusing on health education and prevention.
- The same programme that manages iCCM also operates social and behaviour change programmes focused on a larger population.
- Health education messages, including nutrition, are included in the curriculum and responsibilities for the iCCM CHW. In some cases this situation exists when the iCCM responsibilities are added on to a CHW cadre originally focused on health education.

Examples of implementation

There is an overwhelming number of SBC experiences that promote improved nutrition practices in countries. This review describes a limited selection that seemed to be linked at some level to iCCM.

Bangladesh, Ethiopia & Viet Nam Alive & Thrive



The Alive & Thrive programme was implemented on a relatively large scale in Bangladesh, Ethiopia and Viet Nam (VN). Activities included counselling during home visits (Bangladesh, Ethiopia) and at health facilities (VN), group sessions, mass media and local media. In Bangladesh, approximately 1.7 million mothers of children under two received counselling

on IYCF by a BRAC frontline worker. The Viet Nam experience is in 15 provinces.

In Ethiopia the programme is called “strong and smart families” and is promoted through the Health Extension Workers (HEWs) and the Health Development Army in the four most populous regions of the country. The level of linkage

with iCCM services is not specified in the documents available, but because iCCM is implemented in Bangladesh in the projects described (Essential Health Care and Maternal Newborn Child Health programmes), and in Ethiopia through HEWs, the linkage has been inferred in these two countries.

¹⁴ Victora CG et al. Worldwide timing of growth faltering : revisiting implications for interventions. *Pediatrics*. 2010 ;125(3).

¹⁵ An SBC approach is a strategic, interactive process that aims to change not only individual behaviours but also social conditions. It requires understanding the situation, designing a focused

strategy, developing interventions and materials, implementing, monitoring, evaluating, and adjusting. Source: MCHIP, Child Survival Child Health Grants Program Technical Reference Materials, Social and Behavior Change, 2014

National iCCM Materials in Ten African Countries



The ten-country review of iCCM training materials found that six countries (Democratic Republic of the Congo, Guinea, Liberia, Madagascar, Mali, and Senegal) provided significant training time focused on disease prevention. Prevention messaging including hand washing, exclusive breastfeeding, avoiding exposure to indoor air pollution, instructions for re-dipping bed nets, and indoor spraying. This

prevention advice is generally included with the training chapters and algorithms for each specific illness.

The materials reviewed for South Sudan also cover causation and prevention by disease, but specifically state that this information should only be discussed with the caregiver in situations where the child will be treated at home. When

there is need for urgent referral, prevention should not be discussed.

In Guinea, the iCCM training materials and job aids include a module on nutrition, with recommendations defined in six-month age blocks. It is important to note that the original role of the CHWs in Guinea was promotive and iCCM was later added on.

Source: Review of Integrated Community Case Management Training and Supervision Materials in Ten African Countries, MCHIP 2013

Rwanda experience World Relief



World Relief is implementing an Innovation Child Survival Project (2012 – 2015) with USAID funding in southern Rwanda. In support of the Ministry of Health's the Ministry of Health's Community-Based Nutrition Programme (CBNP) protocol, World Relief is focusing on addressing the weaknesses in the current behaviour change communication approaches and testing an approach called "Nutrition Weeks" to replace the standard cooking demonstrations and nutrition talks.

"Nutrition Weeks" are scheduled

three times a year at a time when women are less busy in the fields. They target pregnant women and all households with children under the age of two (mothers, husbands and grandmothers are encouraged to participate) in order to prevent malnutrition. During Nutrition Weeks, participants spend two hours per day for five days in a small group of up to ten women, focused on learning about the nutrient value of local foods and building the relevant skills to incorporate their use into a nutritious diet. Patterned after Positive Deviance/Hearth,

the women work together to prepare and feed their children age-appropriate, nutrient-dense meals using locally-available foods provided by participants. They learn about and practice responsive feeding along with other behaviours associated with the prevention of malnutrition. CHWs reinforce key nutrition messages during home visits.

The World Relief project also supports CHWs providing iCCM services; these same CHWs are among the volunteers running the Nutrition Weeks intervention.

Source: Personal communication; MCHIP, Summary of Operations Research within the USAID Child Survival Grants Program <http://www.mchip.net/sites/default/files/mchipfiles/World%20Relief.pdf>

Supporting evidence identified

The review identified the following evidence for this typology:

- World Relief is in the process of conducting operations research on the Nutrition Weeks intervention in Rwanda. Results from their third annual report indicate that Nutrition Weeks are effective in promoting behaviour change for better children's diet: results in the intervention area were 55% higher than in the comparison area for Minimum Acceptable Diet, a composite indicator that includes dietary diversity and meal frequency. Responsive feeding remained high at 97% (7% baseline (BL), 96% year 2) in Kaduha (intervention area), and 95% (13% BL, 92% year 2) in Kigeme (comparison). Age-appropriate introduction of semi-solid foods remained consistent at 79% (52% BL, 81% year 2) in Kaduha (intervention) and 75% (58%BL, 79% year 2) in Kigeme (comparison)¹⁶.
- A process evaluation conducted in Bangladesh and Viet Nam by the International Food Policy Research Institute (IFPRI) in 2013 found sizable improvements in feeding practices in Alive & Thrive (A&T) programme areas between 2010 and 2013. Changes in exclusive breastfeeding in intervention areas in Bangladesh were almost 25 percentage points higher than in comparison areas. The percentage of children who had minimum dietary diversity almost doubled, from about one-third to two-thirds of children in programme areas. No changes were seen in comparison areas. In Viet Nam, exclusive breastfeeding rates rose from less than 20% to more than 60% in A&T areas¹⁷.

Evidence from all three countries above was extracted from programme reports and presentations, and represent small-to-medium-scale experiences.



¹⁶ World Relief Innovation Child Survival Project Rwanda, Third Annual Report 2014

¹⁷ Menon et al, presentation entitled Early impact assessment of a large-scale initiative to improve infant and young child feeding (IYCF) in Bangladesh and Vietnam suggests improvements in IYCF

practices and highlights importance of potential to benefit. International Food Policy Research Institute, 2014

Typology 3

Linkages between iCCM activities and acute malnutrition treatment through assessment and referral

Description

According to the standard UNICEF/WHO protocol, the iCCM worker measures every sick child over six months of age with a MUAC strap and assesses for bilateral pitting oedema. Red MUAC and bilateral pitting oedema are danger signs, and the CHW refers the child to a health centre for immediate care. There is space on the referral slip to note this. This process is consistent with CMAM recommendations. The treatment protocol for a yellow reading on MUAC is less well-defined. The CHW should refer the child to a feeding

programme if one exists nearby; if this is not possible, the recommended action is counselling on complementary feeding.

An important variation on Typology 3 is the use of active screening or active case detection through home visits or at growth monitoring programme group activities. This allows measurement of every child, sick or well, and may be the standard in many countries or projects.

Examples of implementation

- According to the ten-country review of iCCM materials, it is the policy in all countries with the exception of Senegal to use MUAC to identify malnourished children within iCCM. (Note that the iCCM CHW does not have responsibility for nutrition work in Senegal). All countries except Senegal and Liberia use a red MUAC reading as a danger sign, thus sending the child for immediate referral.
- The potential list of examples is large. Of the 45 countries in the UNICEF cross-sectional survey, 31 reported including “CCM of malnutrition”. This was defined as “screening and referral by CHWs of severe malnutrition”¹⁸.

¹⁸ Rasanathan K et al Community case management of childhood illness in sub-Saharan Africa – findings from a cross-sectional survey on policy and implementation. *J Global Health*, 2014 (in press)

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The use of active screening or active case detection through home visits or at growth monitoring programme group activities...may be the standard in many countries or projects



South Sudan Malaria Consortium



Malaria Consortium worked in two counties in Northern Bahr el Ghazal starting in 2010 focusing on integrating iCCM and CMAM. Malaria Consortium worked with two cadres of community volunteers: a literate Community Nutrition Worker (CNW) trained to provide community-based treatment for acute malnutrition (Typology 4) and an illiterate Community Drug Distributor (CDD) who was trained to conduct assessment and referral for SAM in addition to providing iCCM services.

CDDs were provided with a six-day training on diagnosis and management of childhood illnesses, including performing and interpreting the MUAC and oedema assessment for undernourished children. The CDD gives the caregiver of

a child fitting the cut-off criteria for admission into the Outpatient Therapeutic Programme (OTP) a 'malnutrition referral triangle'. The referral triangle is a laminated picture of the reason for referral (in the case of SAM, the picture is of a child with a MUAC tape). The child is referred to the Community Nutrition Worker (CNW) at the nearest OTP for diagnosis and admission into the OTP.

Children requiring referral under the iCCM programme (suffering from a severe case of malaria, pneumonia or diarrhoea and/or presenting with danger signs) are given a referral triangle according to their diagnosis (laminated triangle with a picture of a case of diarrhoea, pneumonia, or malaria) and referred to the nearest facility.

Additionally, the CNW at either the referral site (OTP) or in the community, screens children for malnutrition, using the same criteria (MUAC, assessment of oedema). The CNW should also assess the child for complications of malnutrition. If the child is found to have SAM with complications (unable to pass an appetite test or presenting with other medical conditions) the child is referred to the nearest stabilization centre. As the CNW are literate, they are able to complete referral forms that are given to the caregiver to present to the nurse at the stabilization centre.

The CDDs are responsible for following up referred cases under the iCCM component of the programme and the CNWs follow those referred under the OTP component.

Source: Personal communication & Keene, E., Learning Paper: Integrating severe acute malnutrition into the management of childhood diseases at community level in South Sudan, 2013



Rwanda

Kabeho Mwana



Concern Worldwide, International Rescue Committee and World Relief implemented a five-year programme entitled Kabeho Mwana (“Life for a Child”) in Rwanda. The project was designed to offer community case management of childhood illness and stimulation of key community-level health promotion and disease prevention actions. The programme covered six underserved districts, reaching over one-fifth of the country’s estimated 1.5 million children under five.

The three NGO partners started in 2006 building the Ministry of

Health’s capacity to implement IMCI at health facility level, and collectively trained, equipped, and supervised over 6,000 Community Health Workers in community case management of pneumonia, diarrhoea, and malaria. In 2009, with the acquisition of additional funding from a new source, CMAM was integrated into the project.

CHWs were trained to conduct active (during home visits and growth monitoring and promotion sessions) and passive (during sick child consultations) case finding of MAM and SAM using MUAC and/or weight-for-

age, and referred children to the appropriate health facilities. Children with SAM were referred to the health centre. Children with MAM were referred to either Positive Deviance/ Hearth sessions or Community Kitchens depending on the geographic area. Community Kitchens included a combination of cooking demonstrations and administration of Ready-to-use Supplementary Food (RUSF).

The project also used Care Groups and CHWs to include messages on the prevention of malnutrition into their behaviour change communication messages (Typology 2).

Source: Concern Worldwide, *Integrating Community Management of Acute Malnutrition into Child Survival Programs: Concern Worldwide’s Experience in Rwanda*

Niger

Red Cross



In conjunction with its project “Community-Based Nutrition”, the French Red Cross has trained volunteers from the Niger Red Cross in 85 villages. These volunteers build community awareness through messages relating to health and child nutrition (Typology 2). They hold monthly weighing sessions for children aged 0-36 months, and do active screening of children 37-59 months for acute

malnutrition using MUAC measurement. Children with a MUAC under 125 mm are referred to a health facility where they are weighed and their height is measured.

At the health facility, the nutritional status of these children is evaluated, and they are treated if they are suffering from Moderate Acute Malnutrition (MAM) or SAM.

Moderately acute malnourished children are systematically treated with vitamin A, iron, folic acid and mebendazole; their vaccination status is checked, and the mother is given supplementary food (Corn Soy Blend, oil and sugar in the form of a premix) to prepare as a porridge. In cases of SAM without complications, children are given RUTF, administered according to the child’s weight.

Source: Personal communication

Pakistan Lady Health Workers



According to the Pakistan national guidelines for the management of acute malnutrition among children under five and pregnant and lactating women, community outreach is carried out by community providers, including Lady Health Workers, Lady Health Visitors and community health workers. Community volunteers can also be recruited to assist with case finding and follow up. In order to reach as many malnourished children as possible, community providers must actively identify children who need care and refer them for treatment. Children can be

screened through house-to-house visits, at health facilities and outreach programmes, at community meetings, health campaigns and growth monitoring sessions. Active case-finding and follow up is ongoing.

Children are identified as malnourished using MUAC and assessment for oedema. The criteria used are the same as the admission criteria for OTP and Supplementary Feeding Programme (SFP). This should ensure that children referred by community providers are admitted to the programme. A simple referral slip is used.

Caregivers who have seen their malnourished children recover are likely to be motivated and to encourage others to seek treatment. Some caregivers will emerge as leaders and can play an active role in case finding and in some cases in follow up. Community meetings with stakeholders and focus group discussions with community members and/or caretakers may be held periodically to raise awareness about the programme and to investigate any issues such as high default.

Source: Personal communication

Moderate acute malnutrition in Mali



In Mali, the national guidelines for community case management include both iCCM and malnutrition. Responsibilities are divided between two types of community workers: the relais communautaire (community relay) and the agent de santé communautaire (ASC). The draft National Strategic Plan on Essential Care in the Community emphasizes the challenge of community-level management of moderate malnutrition, and includes a relevant process indicator (proportion of children under five presenting with moderate acute malnutrition managed correctly by the ASC).

The relais communautaire identifies and treats diarrhoea with ORS and zinc, gives advice and demonstrations on various family planning methods, and advises on newborn care. He or she also identifies fever, cough or difficult breathing, and a red MUAC reading, and refers these cases to the ASC.

The ASC is attached to a health facility. In addition to the tasks of the relais, the ASC also confirms malaria using a rapid diagnostic test, treats uncomplicated malaria with artemisinin-based combination therapy, treats pneumonia with amoxicillin, gives nutrition

advice for and treats moderate acute malnutrition with locally available enriched foods, refers cases of severe malnutrition, provides micronutrients and antiparasitics, provides post-natal care for mothers and newborns (cord care, thermal care, special care for low-birth-weight babies), refers cases of severe illness, and maintains registers for surveillance purposes.

This example fits squarely under Typology 3, with the variation of CHW-level treatment of moderate acute malnutrition.

Source: Plan Stratégique National des Soins Essentiels dans la Communauté 2014-2018

Supporting evidence identified

Despite the inclusion of assessment and referral for acute malnutrition in the UNICEF/WHO iCCM standard protocols, little hard evidence was found concerning how well or even whether this action was carried out during a sick child consultation, whether the referral advice was followed, and ultimately whether it resulted in adequate treatment. Relevant information may be available in health facility surveys (numbers of SAM or MAM cases seen in a health facility) or other surveys at a national scale. The review found the following:

- Assessments of quality of care indicate that CHWs may not use MUAC correctly (anecdotal evidence indicates that this problem may not be limited to CHWs). For example, the UNICEF 2013 evaluation of CMAM¹⁹ found that the procedures for taking anthropometric measurements needed strengthening and greater standardization. CHWs did not always use MUAC effectively in Pakistan's Khyber Pakhtunkhwa (KP), Nepal and Ethiopia, where the MUAC tape was either too loose or tight, which affected readings. It is noted that other data available for Ethiopia show that 94% of HEW MUAC classifications matched the gold standard²⁰.
- Little data are available on actions taken after the child with a red MUAC reading is referred. This represents an important gap in linkages between the screening and referral process.
 - The Malawi Quality of Care study showed that HSAs used MUAC in 64% of cases. There was no assessment of the subsequent actions, i.e. whether these children were appropriately referred or counselled, and if they were referred, whether they were admitted for treatment.
 - In Niger, between December 2013 and June 2014, the number of SAM cases identified and referred by CHWs in the Rapid Access Expansion Programme (RaCE) increased from 94 to 392²¹. This represents 5.5% of children seen. There is no information in the reports available about the proportion of families who complied with the referrals, nor about the treatment received and the outcome.
 - The UNICEF CMAM evaluation showed that referrals were effectively implemented in Pakistan's KP where 60% of children were referred to the outpatient services by CHWs using a referral slip. However, in the other four countries (Chad, Ethiopia, Kenya and Nepal) CHWs did not record the number of referrals, and data indicating percentages of children referred or admitted to CMAM services were not available.
 - In the same evaluation, CHWs and health workers suggested that some caretakers did not follow through on referrals because of long distances to the health facility, frequent migrations of the pastoral communities, preference for traditional healers, and stigmas associated with HIV, poverty and a malnourished child. Similar observations were made by Paluku et al in Ghana²².
 - The Kabeho Mwana project in Rwanda provided RUTF to more than 8,000 severe acutely malnourished children who would not otherwise have received this service. Project materials state that integrating CMAM into the child survival project reinforced community outreach services including community assessment, community mobilization, active case finding and referral, case follow-up and referral, and behaviour change communication. They further state that awareness of the problem of acute malnutrition has been raised at all levels, and a national protocol for CMAM has been developed and approved for implementation by the Ministry of Health²³.

¹⁹ Evaluation of community management of acute malnutrition (CMAM), Global Synthesis Report, UNICEF May 2013

²⁰ Assessment of iCCM implementation strength and quality of care in Oromia, Ethiopia. Institute for International Programmes and UNICEF, Final report 2013

²¹ World Vision NiCe-RaCE Niger 2015, Rapport: 1er juillet 2013 au 30 juin 2014

²² Paluku B, Akortey Akor S, Neequaye M, Sagoe-Moses I: Report on the Review of the Integration of Community-Based Management of Severe Acute Malnutrition into the Ghana Health Services. Washington DC: FANTA-2 Bridge/FHI 360, Aug/Sept. 2010

²³ Concern Worldwide, Integrating Community Management of Acute Malnutrition Into Child Survival Programs: Concern Worldwide's Experience in Rwanda

- The Malaria Consortium, South Sudan project recognizes that there are data collection issues with recording the number of referred cases that actually reach the point of referral. In order to address this, they are working to develop an effective method of tracking referrals and counter-referrals from low-literate CDDs²⁴.
- Although not directly related to the detection of malnutrition, a health system strengthening intervention in peri-urban Mali focused on removing access barriers to care through CHW active case-finding, in tandem with the removal of user fees for the poor, strengthened clinical infrastructure, a rapid referral network to link community members to the health system, and a package of prevention services addressing conditions of poverty. Unfortunately the study was unable to quantify the contributions of CHW active case finding to reducing under-five morbidity and mortality²⁵.

Finally, it should be noted that recommended actions for the CHW following a yellow MUAC reading are variable (see Table 1). This may imply the need for a globally-vetted protocol on the treatment of MAM, or it may reflect the context-specificity of using locally-available diets. Further information would be useful on what happens when a MUAC reading is yellow, and on the successes and challenges of MAM treatment.

TABLE 1

EXAMPLES OF POLICIES FOR YELLOW MUAC READING

COUNTRY	POLICY
DRC	Refer moderate malnutrition cases to a health facility
Ethiopia	Refer to targeted supplementary feeding programme (Food Distribution Agents) at Woreda level to receive corn soy blend and oil; assess the child's feeding according to the food box, counsel the mother, and follow up in five days (or 30 days if no feeding problem detected)
Guinea	Training materials show only red or green on the MUAC strip, but CHWs have mebendazole and vitamin A to use if instructed to do so by the health worker
Mali	The CHW treats moderate malnutrition at the health facility; guidelines also include albendazole, iron, folic acid, and vitamin A
Rwanda	Training materials suggest the use of iron folate supplements for moderate malnutrition, but refer the child to the health facility until this becomes available at community level
South Sudan	Advise caregivers on infant feeding and follow up to see if the recommendations have been applied appropriately
Zambia	Advice to give for a yellow MUAC reading is in the training manual but not on the recording form

Evidence for Typology 3 was extracted from peer-review journal articles, quality of care studies, programme implementation reports, and multi-country evaluation documents. These represent a range of scale of implementation and of types of support provided.

²⁴ Personal Communication

²⁵ Ari D. Johnson et al, *Assessing Early Access to Care and Child Survival during a Health System Strengthening Intervention in Mali: A Repeated Cross Sectional Survey*. PLoS ONE 8(12) e81304

Typology 4

Treatment at community level of uncomplicated Severe Acute Malnutrition

Description

In this typology the CHW assesses, classifies, treats and follows up cases of uncomplicated severe acute malnutrition at the home. It is important to note that complicated SAM cases are always referred to an in-patient facility. It is also important to note here that the review found experiences and evidence related to assessment, treatment and follow-up, but not related to additional elements of disease management such as prevention of relapse.

Several NGOs and governments adapted CMAM protocols to extend acute malnutrition treatment to the community level. These experiences fall into two categories:

- 1 | **The assessment, classification and treatment for acute malnutrition were added onto the existing responsibilities of the iCCM worker.**
- 2 | **The iCCM worker was linked to or connected with a second community-based cadre with responsibilities and skills for addressing acute malnutrition.**

In the experiences reviewed, the South Bangladesh project and the Ethiopian Health Extension Programme fit in the first category. Malaria Consortium, South Sudan fits in the second category with a Community Drug Distributor for iCCM and a Community Nutrition Worker for acute malnutrition.

In an additional variation on implementation, it should be noted that in Ethiopia the HEW treats acute malnutrition at a fixed location (health post), whereas in the South Bangladesh and South Sudan experiences the treatment takes place in the community or home. Whilst it is acknowledged that the location of the services may influence access and performance of services, there is presently insufficient data to provide a more detailed analysis of each approach.

Examples of implementation

Table 2 provides an overview of selected experiences (both implemented and planned) for providing SAM treatment at the community level. The table provides a comparison of the various country/programme contexts. Annex 3 provides additional information for these same experiences with a comparison of CHW and programme profiles.

TABLE 2

CHWS PROVIDING TREATMENT FOR SAM: COUNTRY CONTEXT

Note: Last three are in design/proposal stage and are expected to be implemented in 2015

EXPERIENCE	GOVT/ NGO	SCALE	LOCATION OF TREATMENT	SAM RATES	CONTEXT (Emergency/ Development)	COMPLEMENTARY CADRES
Ethiopia Health Extension Programme	Govt	National	At health post for OTP services and community for at screening active	2.7% (mini EDHS 2014)	Development	Health Development Army (or 1 to 5 network = 1 female HDA for 5 households) - volunteers for case finding, health education & follow-up
South Bangladesh Save the Children	NGO	261 CHWs in one district of one Upazila	Community	N/A	Development	N/A
South Sudan Malaria Consortium	NGO	50 CNWs in two counties; 1683 CDDs	iCCM is community (home) based, OTP is a mixture of health facility and community (home) based	Very high	Emergency; Chronic emergency overlaid with spasmodic acute emergencies	Volunteer Community Drug Distributors providing iCCM for malaria, pneumonia, diarrhoea and assessment for malnutrition at community level
South Sudan International Rescue Committee	NGO	1 county: 619 villages (630 Community-Based Distributors (CBD's), 41 CBD supervisors)	Community	Very high	Emergency	Community Nutrition Volunteers who conduct mass screening and referral
Pakistan Lady Health Workers Action Against Hunger	Govt/NGO	15 per Union Council	Community	2.5-5.5% in 2012	Development	N/A
Mali Agent Sante Communautaire Action Against Hunger	Govt/NGO	1 CHW in each town with >1500 inhabitants and at more than 5km from Health Centre	Community	1.5% to 3.5% in Kayes Region	Development	Relais Communautaire - volunteers for health education and screening

It is recognized that the contexts for the various experiences differ widely, ranging from development to emergency in several different countries. With the exception of Ethiopia, most experiences to date have been (or will be) conducted at a small scale with strong supervision.

In several cases, the iCCM worker is complemented by another community-based cadre that focuses on health education and prevention. Malaria Consortium, South Sudan is the only example where treatment of acute malnutrition and iCCM were split into two different cadres at the community level.

Some of the examples have built (or will build) on a paid government cadre with an eighth to tenth grade education and extensive training. Exceptions to this are the South Sudan experiences where Malaria Consortium is using literate volunteers and International Rescue Committee (IRC) is planning to train illiterate volunteers. IRC is currently in the process of adapting a protocol for iCCM with acute malnutrition for use by illiterate volunteers to be piloted in a research project in South Sudan.

The experiences from South Bangladesh, Angola, South Sudan and Ethiopia are further described below. While the Angola experience does not link with iCCM, the treatment of acute malnutrition by community health workers is included in this review for the evidence it demonstrates on CHW capacity.

South Bangladesh



The South Bangladesh experience was a prospective cohort study to examine the feasibility and effectiveness of adding SAM treatment to the CCM package already being implemented in one Upazila. It was led and supported by Save the Children, Pepsico, Global Alliance for Improved Nutrition (GAIN), and Tufts University.

PROFILE AND TRAINING:

Selected CHWs had been previously trained in preventive care and counselling (including nutrition), then had a 3-day training on the identification and treatment of diarrhoea and pneumonia (note: not malaria). Before adding the SAM component, all CHWs had at least two years of experience. The SAM training lasted two days.

ACTIVITIES:

CHW SAM activities included active case-finding (MUAC and checking for oedema) either during growth monitoring sessions or home visits, and treatment of uncomplicated cases. All children under three years of age were screened monthly. Each CHW covered 150-225 households, or about 900 people. CHWs made 10-11 household visits per week for iCCM. This increased to 13-14 for iCCM + SAM. Most illness treatment was done during home visits; some but not many mothers brought children to the CHW's home for illness.

The CHWs managed and distributed RUTF as well as antibiotics and folic acid, and followed up each child weekly. During the implementation period, the CHWs would bring

paperwork to the supervisor (in a community setting) once a month at which time they were given problem-solving-based refresher training and support. In addition there was a bimonthly two-day refresher course, about 25% of which was spent on SAM issues.

SUPERVISION:

Supervisory visits were carried out one to two times per month. These visits were by regular supervisors and by a team of programme officers specifically hired by the NGO to provide technical guidance for CCM and SAM. The supervisory ratio was one to 25-40 CHWs, below the optimum level 1:10 or 1:20 recommended in policy literature. The Upazila health centre medical staff were trained to support the CHWs. RUTF was supplied by the NGO.



Angola World Vision



The World Vision CMAM programme was implemented in Angola in response to high rates of Global Acute Malnutrition (GAM) following the 2012 drought. Due to weak health infrastructure and a lack of access to health centres, activities include recruiting and training Community Health Activists (CHAs) to screen children for acute malnutrition, provide treatment and referrals, and deliver nutrition education. The strategy of using CHAs was similar to that for community case management of childhood illness. On average, the project

had 2,044 active CHAs, with each CHA serving an average of two to five villages. The project covered 76 Communas in 21 municipalities.

Conducted in late 2013, an independent evaluation found that actions had been successfully implemented, with coverage estimated at 82.1% in areas reached by the programme, and the cure rate for SAM being 93.8%. The CHA approach made CMAM more accessible to the communities, and strong advocacy by implementing partners increased the profile of malnutrition within the national

government. Some challenges include: inconsistent supply of the Ready- to- Use- Therapeutic Food, inadequate numbers of CHAs to cover all target areas and unclear incentive protocols. However, very few projects to date have implemented CMAM using this type of approach, and the Angola experience demonstrates the potential particularly in contexts where health system capacity is very low. Further research is recommended to refine this approach and to identify solutions to implementation challenges.





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With the exception of Ethiopia, most experiences to date have been (or will be) conducted at a small scale with strong supervision.

South Sudan Malaria Consortium



South Sudan became a country in 2011 following a five year transition period. Decades of conflict have led to a collapse of basic infrastructure. The lack of infrastructure is overlaid with a range of acute crises resulting from flooding, disease outbreaks and renewed localized and international conflicts leading to in a large population movement and displacement. There is a very large burden of SAM and GAM.

Malaria Consortium worked in two counties in Northern Bahr el Ghazal starting in 2010 to address Severe Acute Malnutrition and iCCM. They built on an existing platform of Community Drug Distributors (CDDs) providing iCCM for malaria, pneumonia, and diarrhoea.

Since CDDs were largely illiterate, Malaria Consortium initially trained literate, volunteer CDD supervisors to manage the OTP sites. In an internal evaluation, they found that supervisors didn't have the time to manage both iCCM supervision (a mobile task) and run the OTP sites. In phase two, a separate cadre, Community Nutrition Workers (CNWs) were recruited and trained to manage SAM treatment at community-based OTP sites. The CDDs continued to provide case

findings and referrals to the OTP sites in addition to their iCCM duties.

PROFILE AND TRAINING:

The Community Nutrition Workers are literate volunteers recruited from the community. They are provided with a five-day initial training. They receive refresher training on a quarterly basis and on-the-job training during supervision visits.

ACTIVITIES:

The CNW spends two days at the OTP site and three days in the community. In their community time, they provide health education on preventing malnutrition and active case finding (MUAC screening and assessment of oedema, referral to the OTP according to the protocol, and informing caregivers of OTP hours). CNWs also provide home visits for follow up of referred cases. They provide health education and hygiene promotion to caregivers of undernourished children, providing essential education on good nutrition, when to bring the child back, importance of breastfeeding, basic hygiene including preparation of food, hand washing and safe disposal of child faeces.

SUPERVISION:

Five paid OTP nutritional officers/supervisors directly supervise 10 – 11 CNW volunteers each. CNWs receive a minimum of two interactions with supervisors per month. These supervisory interactions take place when the CNWs visit the health posts to restock their commodities and during monthly data collection. During this visit, supervisors take the opportunity to incorporate on-the-job training. Additionally, supervisors try to visit two to four CNWs per week to provide on-the-job supervision in their communities and follow up sick/referred children.

CNWs are volunteers; however they receive cash incentives of 300 South Sudanese Pounds per month. A performance-based element was introduced into the CNWs' incentive structure in Phase 2. CHW cash incentives became dependent on the provision of completed reports within the expected time frame to the expected standard. They are also supplied with commodities to assist the CNW in their daily work; ex. a medical box to secure medical and nutritional supplies, materials to provide health education to caregivers of undernourished children whilst waiting for admission into the OTP, gum boots, rain coats.

Ethiopia National Health Extension Programme



The Ethiopia National Health Extension Programme began in 2004. The core of the programme is the construction of Health Posts in all of the estimated 15,000 kebeles (villages) in Ethiopia and the training and assignment of two Health Extension Workers (HEWs) in each Health Post.

PROFILE AND TRAINING:

HEWs are locally-recruited women with tenth-grade education. They are trained for one year, and are formally employed and salaried.

RELEVANT ACTIVITIES:

Overall, the HEW delivers 16 packages of services including health promotion, immunization, family planning, hygiene and sanitation and other disease prevention measures, as well as a limited number of high-impact curative interventions. iCCM covers five major killers of children under five; pneumonia, newborn problems, diarrhoea, malaria and Severe Acute Malnutrition. In iCCM, HEWs provide deworming, vitamin A supplementation, and identification of anaemia by palmar pallor. There are a number of preventive interventions. They also treat SAM in the health post; CMAM grew out of the Community Therapeutic Centre

(CTC) work done during the 2003 nutrition emergency.

CMAM currently covers community outreach/mobilization, OTP and Stabilization Centre or Inpatient care, and in some cases MAM management depending on resource availability. CMAM is part of the national CMAM programme supported by different partners, except for the MAM component²⁶.

Community outreach consists of active case finding, referral, admission and home follow-up. HEWs and Health Development Army (HDA) volunteers (one per five households) conduct community screening with MUAC and oedema check for early case finding using three contact points: house to house visit, during outreach and at the health post when children come for basic curative and preventive services. The HDA volunteers refer SAM cases for admission to OTP, give basic nutritional advice to mothers, and provide home follow up weekly for cases and also for finding defaulters. The HEWs conduct an appetite test and manage uncomplicated cases; this includes RUTF, antibiotic, mebendazole if needed, and follow-up after one week. Malnutrition is broken

out into four categories: Severe complicated malnutrition, underweight, severe uncomplicated malnutrition, and MAM. Various combinations of treatments include vitamin A, amoxicillin, “treat to prevent low blood sugar”, RUTF, registration in outpatient therapeutic programming, mebendazole, referral to supplementary feeding programme, and counselling²⁷.

SUPERVISION:

HEWs receive skill-enhancing supervision monthly by the health centre staff, and quarterly by the Woreda level. This is complemented by four supervisory visits focusing on programme issues, two by central-level staff and two by Woreda level²⁸.

A study in two regions²⁹ found that HEWs spent 51% of their working time at the health post and 37% in the community. About 16% of time was spent on curative health activities and 43% on health promotion and prevention. The remaining time included travel, training and supervision, administration, and community meetings. HEWs spent the majority (70%) of their time with individuals, families, and community members.

²⁶ Evaluation Of Community Management Of Acute Malnutrition (CMAM) Ethiopia Country Case Study, UNICEF 2012

²⁷ Review of Integrated Community Case Management Training and Supervision Materials in Ten African Countries, MCHIP 2013

²⁸ Ethiopia National Implementation Plan for Community-based Case Management of Common Childhood Illness

²⁹ Mangham-Jefferies et al. How do health extension workers in Ethiopia allocate their time? Human Resources for Health 2014, 12:61

Supporting evidence identified

- South Bangladesh:** This study confirmed that the CHW-based diagnosis and treatment of uncomplicated SAM increased the proportion of malnourished children that access care, with a high likelihood of recovery. The coverage rate reached 89%, and recovery of SAM cases was 92%, with a defaulter rate of 7.5%³⁰. It is postulated that the high recovery rate was due in part to the early detection of SAM through active case-finding, and thus fewer complications. In addition, monitoring data for the comparison areas showed that children who were identified as SAM and referred to an OTP centre often did not comply with the referral advice; those who were treated at an OTP centre should be likely to complete treatment.

The workload increased significantly after the addition of SAM treatment to the responsibilities of the CHW. Despite this, the quality of CHW performance was not affected. The quality of disease management (iCCM) as measured by case scenarios, remained high. Median adherence to guidelines for managing pneumonia was 87.5% and did not differ significantly between those CHWs doing only iCCM and those doing both iCCM and SAM. Preventive tasks were also carried out with similar quality between the two groups, although those CHWs doing SAM scored somewhat higher³¹.

In a related publication, Puett et al³² concluded after observing 55 cases that CHW treatment of SAM was also of high quality. Fifty eight percent of the CHWs made no errors, and 89% carried out 90% of tasks correctly. In contrast to information reported under Typology 3, nearly all the CHWs observed used and read MUAC correctly. In addition, caretaker satisfaction was high, with an excellent level of trust having been built between the CHW and the catchment population.

- Ethiopia:** There is strong integration between CMAM, Integrated Management of Neonatal and Childhood Illness (IMNCI), iCCM, Community-Based Nutrition (CBN) and immunization services. Community mobilization for all these services is carried out through similar modalities and systems using the same community health workers. An evaluation carried out by the Institute for International Programs at Johns Hopkins University (IIP-JHU)³³ in two zones of Oromia found that 53% of children were correctly assessed for iCCM conditions and 64% were correctly treated. This compares favourably to care provided by community-based health workers in other countries as well as to higher-level health workers in Ethiopia.

At the same time, children with malnutrition were correctly classified for malnutrition only about half the time (53%). The most common errors were not checking for oedema and not carrying out the appetite test. In an interesting twist, children with uncomplicated malnutrition were generally managed correctly (59%), whether or not they had been correctly classified. On the other hand, children with complicated malnutrition were usually managed incorrectly, regardless of whether classification was correct.

The IIP-JHU review identified several additional areas that would benefit from improvement, including the assessment of danger signs, referral of children with severe illness, management of complicated malnutrition, and provision of vitamin A and mebendazole.

³⁰ Sadler K et al. Community case management of severe acute malnutrition in southern Bangladesh : an operational effectiveness study. Medford : Feinberg International Center, Tufts University.
³¹ Puett C et al. Does greater workload lead to reduced quality of preventive and curative care among community health workers in Bangladesh? *Food and Nutrition Bulletin*, 33(4): 2012, the United Nations University.

³² Puett C et al. Quality of care for severe acute malnutrition delivered by community health workers in southern Bangladesh. *Maternal and child nutrition* (2013) 130-142.
³³ Miller N et al. Integrated Community Case Management of Childhood Illness in Ethiopia: Implementation Strength and Quality of Care. *Am J Trop Med Hyg*. Aug 6, 2014; 91(2): 424-434. doi: 10.4269/ajtmh.13-0751

- **South Sudan:** Malaria Consortium produced a Learning Paper detailing lessons learned and recommendations based on an internal evaluation of their Phase 1 implementation. The Learning Paper reported high programme performance, with cure rates of 89-94%, and default rates of 2-6%³⁴.

While there were no programme evaluations available for review, the project collects routine monitoring data and bi-annual Standardized Monitoring and Assessment of Relief and Transition (SMART) survey assessments.

In contrast to the previous three typologies, the review found data on a number of additional factors for Typology 4. These include time spent by the CHW, cost of implementation, and policy implications.

- **Time:** The review identified two examples of time analyses:
 - The Puett et al evaluation in South Bangladesh showed that, for CHWs who already conducted home visits as part of their typical responsibilities, the addition of SAM management added three to four visits per week, for an overall time difference of about three hours per week. The data did not differentiate between time spent on case-finding and on case management, although much of the additional time was spent following up on SAM cases.
 - The Ethiopia study revealed that HEW spend 5.5% of their time on nutrition, of which more than half is curative activities. Just over 7% of time is spent carrying out iCCM.
- **Cost:** The current review identified two examples of costing in situations where SAM treatment is integrated with iCCM: the South Bangladesh study, and the UNICEF-led evaluation of CMAM in Ethiopia.
 - The South Bangladesh study showed that CCM of SAM cost US \$180 per child recovered and US \$26 per Disability-Adjusted Life Year (DALY) averted. This is similar to other priority health interventions (immunization, TB treatment), leading to the conclusion that the intervention is cost-effective. The two items that represented the greatest costs were RUTF (including storage and shipping), for 24%, and management (including salaries and overheads) for 53%.
 - In Ethiopia the cost per treated SAM case, excluding routine drugs, was estimated to be US \$110. If fixed health service costs were removed, the cost per child was about \$73. The cost associated with the RUTF comprised about 50% of the cost per child; and 33% was for clinical services.
- **Policy and Protocol:** There are a number of potential implications for national policy and protocol when considering CMAM implementation at the community level. These cover the use of the appetite test; dosages of RUTF; discharge criteria; policies concerning CHW prescription and dispensing of specific medications; availability of medications in appropriate formulations. These are presented in the Discussion section of this report.

Evidence for Typology 4, similar to that for Typology 3, was extracted from peer-review journal articles, quality of care studies, programme implementation reports, and multi-country evaluation documents. Typology 4 evidence is restricted to a smaller number of countries but provides insight into a larger number of topic areas.

³⁴ Keene, E., *Learning Paper: Integrating severe acute malnutrition into the management of childhood diseases at community level in South Sudan, 2013.*

DISCUSSION

As an introduction to the typology-by-typology discussion, Table 3 presents selected advantages and disadvantages for each of the four typologies, and a set of relevant questions.

The discussion of findings is presented by typology, with key informant feedback included at the end of each. Across the board, respondents brought up the importance of context for recommending any particular typology. Informants cautioned that there was a great deal of variability across iCCM delivery platforms, as well as across national policies for CHWs including payment, training, profile, size of catchment areas, and other responsibilities. They discussed the importance of understanding the country situation and system before attempting to link or integrate. The dearth of hard evidence available to support any specific typologies was frequently mentioned.

One general objective of linking iCCM and nutrition interventions is to increase coverage of treatment for acute malnutrition. Interventions falling under Typologies 1 and 2 focus on prevention and would not address this objective. Passive and active case-finding under Typologies 3 and 4 would be expected to increase coverage. No data was found to support this assumption. However, a comparison of outcomes between the intervention and control populations in South Bangladesh shows that those children treated by a CHW had a 92% cure rate, while those referred to care at a health facility had a cure rate of only 1.4%. In the referred group, 53% refused referral (Sadler et al), in part because many of the caretakers receiving referrals faced barriers to accessing facility-based care, including the cost of treatment and lack of trust in the services at the health facility³⁵. These numbers, coupled with the coverage rates (89% in the intervention area, and an estimate of less than 5% in the control area³⁶) indicate that providing treatment close to home can have a significant positive effect.

Mozambique National CHW Programme

The current experience in Mozambique is a demonstration of a combination of Typologies 1, 2 and 3. The Ministry of Health (MOH) is aiming to harmonize various cadres of community based health workers into one. The MOH-supported CHW, called Agente Polivalente Elementar (APE) receives four months of training and is paid a stipend of about US\$ 40 per month. At the time of this writing the stipend is paid by the government, with specific support from partners in selected provinces or districts, with the vision that the APEs will be eventually absorbed into the Government's payroll.

Each APE covers a defined number of households, and provides a package of preventative/ educational and diagnostic actions (for malaria and acute malnutrition). The APE also provides curative services for malaria, diarrhoea, and pneumonia. After a recent review, proposed changes include the addition of vitamin A supplementation (approved) and in the future counseling and testing on TB and HIV, and family planning services. Discussion on incorporating the treatment of acute malnutrition is ongoing. If this is agreed, the experience in Mozambique will cross all four Typologies in this review.

Source: Personal communication, Maaiké Arts, UNICEF, and Mozambique APE flip-chart

³⁵ Puett C, Alderman H, Sadler K et al. (2013) 'Sometimes they fail to keep their faith in us': community health worker perceptions of structural barriers to quality of care and community

utilisation of services in Bangladesh. *Matern Child Nutr* (e-publication ahead of print version).
³⁶ Mark Myatt, personal communication

TABLE 3

ADVANTAGES, DISADVANTAGES AND INFORMATION NEEDS BY TYPOLOGY

TYPOLGY	ADVANTAGES	DISADVANTAGES/RISKS	TYPES OF INFORMATION NEEDED
1 Advising on "feeding the sick child" within existing iCCM services	<ul style="list-style-type: none"> • Already included in iCCM process and training materials • Low cost to implement 	<ul style="list-style-type: none"> • Limited reach (only sick children during consultation) • Unknown effect (content) 	<ul style="list-style-type: none"> • Does the CHW follow the iCCM guideline and give adequate advice (content and process)? If not, why not? • Do caregivers follow the CHW's advice? • Does this have any effect (does the advising lead to improved nutritional status)? • Could the iCCM protocol be modified to improve the content and process?
2 Linkages with Social & Behaviour Change activities on child nutrition	<ul style="list-style-type: none"> • Proven effectiveness of IYCF messages through SBC • Potential wide (population-based) reach • Availability of UNICEF/WHO materials for CHWs • Addressed prevention of / risk factors for malnutrition 	<ul style="list-style-type: none"> • Time and resource-intensive • Requires expertise to develop appropriate messages • Complex: home visits or interpersonal communication complemented by social mobilization and mass communication • Requires strong coordination between iCCM implementation and SBC activities 	<ul style="list-style-type: none"> • Is it realistic to expect one CHW to do iCCM and promote IYCF? Or is it better to have at least two cadres? What would be the costs and effectiveness for each option? • How close does the link need to be between iCCM and SBC? • Does IYCF messaging have an effect on nutrition behaviours and nutritional status? • Which has the greater impact: integrating iCCM and SBC, or SBC standing alone? • Does a follow-up visit to a sick child provide a specific opportunity for SBC activities? • What skill sets are needed to combine curative and preventive activities? • What are the best models for training (including sequencing)?
3 Linkages between iCCM activities and acute malnutrition treatment through assessment and referral	<ul style="list-style-type: none"> • Already included in iCCM process and training materials • Low cost to implement • Can be augmented by active case-finding 	<ul style="list-style-type: none"> • Requires strong, functional referral and counter-referral system • Requires availability and accessibility of adequate care for acute malnutrition in health facilities 	<ul style="list-style-type: none"> • What is the added value of referral through iCCM, compared to referral by nutrition-focused CHWs or mechanisms? (measured by a comparison of completed referrals) • Is referral advice followed? • What strategies could be implemented to improve referral mechanisms? • How can admission criteria for treatment best be harmonized between assessments made by the CHW and by the referral site? • What is the quality of CHW/iCCM assessment of acute malnutrition (MUAC, oedema)? • Does active case-finding alone increase coverage? Are results different if case finding is carried out by the iCCM worker or by a specific nutrition cadre? • How can the assessment and referral skills of the CHW be improved and sustained?
4 Treatment at community level of uncomplicated Severe Acute Malnutrition	<ul style="list-style-type: none"> • No need for referral, thus potential to increase coverage of treatment for acute malnutrition • Reinforces link between nutrition and disease • May increase community and CHW satisfaction 	<ul style="list-style-type: none"> • Additional time and workload burden on CHW • Quality of care (iCCM and/or acute malnutrition) could be compromised • Training time and complexity increased • Costs • Logistics of RUTF supply • Supervision • National policy on CHW use of antibiotics • Requires equivalent treatment policy and practice at CHW and health facility treatment sites (e.g. admission criteria) 	<ul style="list-style-type: none"> • How much additional time would be needed per day/week to manage cases of SAM? Does the additional workload affect the quality of service delivery? • How much additional training would be required? • Can the acute malnutrition treatment (SAM, MAM) protocols be simplified for use by CHWs (parallel to IMCI protocol simplified to become iCCM)? This would include medication, RUTF dosages, and materials adapted for low-literate workers. • Can CHWs carry out the necessary additional tasks to assess the child's potential for SAM treatment (appetite test, weight-for-height)? • Would active case-finding be an important element to add or is the sick child visit (initiated by the caregiver) enough? • What is the added value in terms of coverage of services, cost-effectiveness, and treatment outcomes? • Operational issues to be investigated including supply chain management when RUTF is introduced; minimum caseload to ensure quality of care; typologies of CHW, size of catchment populations; impact of treating acute malnutrition on motivation of CHW; minimum level of supervision.

Typology 1 Discussion

Typology 1, advising on “feeding the sick child” within existing iCCM services, is probably the simplest of the four identified typologies to carry out or strengthen. Since the advising guidance is included in the UNICEF/WHO iCCM materials, there are no issues concerning policy or protocols.

Although every CHW implementing iCCM is supposed to advise the caregiver of a sick child to continue feeding and fluids, the review found little data about the quality or quantity of feeding-related counselling.

No data was found on the effect of this advice on the health status of the child. Given the complexity of actions needed to assess and treat a child, it may be postulated that there is a limit to how much the CHW can do and how much information a caregiver can absorb at one time. This may be even more significant given the scenario of a worried caregiver.

In order to avoid an overload of information and tasks at a sensitive moment in time, it may be more realistic to reinforce the advice on feeding during a follow-up visit, at the child’s home or at the CHW health post. At that point in the process, messages could be more specific, for example encouraging increased breastfeeding for any child under two years old, and appropriate complementary foods for those over 6 months.

Although the review found no data on cost for this typology, it is assumed that costs of strengthening the messaging would be relatively low, requiring the review and revision of global and national iCCM training manuals and recording forms to ensure that continued feeding of the sick child is emphasized and made more explicit. It may also mean revising training and supervision tools. This could have implications for formative research to target specific problems, and for the time, exercises and skills needed for adequate training.

It should be emphasized that the reach of this typology is limited, targeting only those caregivers who consult the CHW for a sick child.

Key informants did not raise any issues related to this typology.



Typology 2 Discussion

Typology 2, linkages with social and behaviour change activities on child nutrition, provides a strong platform for reaching a wide population with preventive messages. In contrast to Typology 1, the potential reach is vast, and there is some evidence of effect and impact. It is recognized that social and behaviour change activities may be beyond the purview of iCCM, and may be the responsibility of nutrition programmes or a health education unit.

Most of the social and behaviour change experiences reviewed are resource-intensive and require home visits complemented by social mobilization and mass communication activities. Because messages are tightly context-specific, this implies the availability of skilled personnel, as well as adequate finances to carry out the needed formative research and message development. It also suggests an additional load on the iCCM CHW to carry out the home visits, although this could be avoided this by using different cadres, as is being done in Ethiopia.

When asked about recommended approaches for linking or integrating nutrition and iCCM, some key informants brought up community-based education around IYCF. Some informants focused on the importance of prevention, while others expressed concerns about the challenges involved in changing behaviour and the resource intensiveness of approaches such as breastfeeding support groups. In general, when respondents talked about prevention and IYCF, they were not discussing integration with iCCM.

In the UNICEF/WHO iCCM materials, information on disease prevention is limited to key advice related to home care including advising caregivers to give more fluids and continue feeding, to sleep under bednets in malarial areas, and to ensure full vaccination. Other preventive messages were excluded from this package to maintain the focus of the consultation for the sick child on the immediate care for that child. As shown in the box, the other two parts of the package contain a strong nutrition component. Each of the three parts requires five days of training. This is in stark contrast to the ASC training in Mali, for example, where nutrition has a two-hour slot in a 15-day training.

Caring for the Newborn at Home:

During five scheduled home visits the CHW:

- promotes antenatal care, and skilled care at birth
- teaches good self-care during pregnancy
- counsels on care for the newborn in the first week of life
- recognizes and refers any pregnant woman or newborn with danger signs to a health facility
- provides special care for low-birth-weight babies

Caring for the Child's Healthy Growth and Development:

During home visits, in a village clinic, or during other opportunities for interaction, the CHW counsels families on practices that they can carry out at home for:

- infant and young child feeding
- child development (through communication and play)
- family's response to a child's illness
- illness prevention (immunization, handwashing, use of treated bednets)

Caring for the Sick Child in the Community:

The CHW assesses, classifies and treats sick children age 2 months to 5 years. The treatment interventions include the use of four simple medicines: an antibiotic, an antimalarial, Oral Rehydration Salts (ORS) and zinc tablets. The CHW:

- assesses sick children
- identifies and refers children with danger signs to a health facility
- treats pneumonia, diarrhoea & malaria
- identifies and refers children with severe malnutrition
- advises on home care and prevention of illness
- refers children with other problems that need medical attention

Typology 3 Discussion

Implementation of Typology 3, linkage via assessment and referral of acute malnutrition, requires a strong programme in place to treat cases of acute malnutrition at the health facilities and a functioning referral system, in addition to a well-trained, extensive network of CHWs. It also needs the appropriate national policies, protocols, and data systems for both illness management and nutrition, and a supervisory structure to ensure the adequate use of MUAC.

In some countries, there may be additional advocacy needed to simplify admission criteria for referral. The Malaria Consortium in South Sudan negotiated a modification to the national protocol to adjust admission criteria to be based on MUAC and oedema only.

Typology 4 Discussion

Typology 4, treatment of acute malnutrition at community level, is the most complex of the four identified typologies. Implications for implementation cover training time, training complexity, quality of care, supervision, policy, supply, costs, and issues of protocol adaptations.

- **Training time:** the UNICEF/WHO standard iCCM training lasts five to six days, with a significant proportion of that time spent in clinical practice. Adding training on management of acute malnutrition, whether this is incorporated throughout the training (as in Ethiopia, and IRC South Sudan) or added onto previously-existing materials (as in South Bangladesh), may require that total training time exceeds one work-week, or may lead to a decrease in clinical practice time.
- **Training complexity:** the current iCCM materials and process are based on a philosophy of simplicity and clarity, where one observation leads to one action. No judgment is required. There is anecdotal evidence that adding only one medication (paracetamol, for example) increases significantly the complexity of learning: a child with fever might need two medicines with different dosages. It is noted that in the South Bangladesh experience, CHWs do not treat malaria, and in South Sudan, they do not use Rapid Diagnostic Tests (RDTs), thus the incorporation of SAM treatment remains within the same level of complexity as standard iCCM.
- **Quality of care:** Data from both Ethiopia and South Bangladesh indicate that the combination of SAM treatment and iCCM did not have a negative effect on the quality of either. The Malaria Consortium project in South Sudan reports that programme performance is well above SPHERE standards and defaulter rates are significantly lower than the 9% standard rate as reported in *Access For All, Vol. 1*³⁷.
- **Supervision:** The more a CHW is expected to know and do, the greater the expectations on the supervisor. The Malaria Consortium experience in South Sudan found that they needed to hire staff with a nutrition background to adequately supervise volunteers managing OTPs.
- **Policy:**
 - No global statement exists to date to support the necessary policy changes, ministerial engagement and cross-ministry collaboration for integrating the treatment of acute malnutrition with iCCM

³⁷ Guerrero and Rogers (2013) *Access for All, Volume 1: Is community-based treatment of severe acute malnutrition (SAM) at scale capable of meeting global needs?* (Coverage Monitoring Network, London, June 2013)

guidelines. Integrating treatment of acute malnutrition into national iCCM guidelines will require engagement from ministries of health, and in countries where nutrition sits in a different ministry it will require cross-ministry collaboration.

- Policy allowing CHWs to prescribe and dispense medications: While iCCM workers currently treat children using ORS, antibiotics, antimalarials, and zinc, country-specific treatment guidelines for SAM may indicate additional medications, or different dosages or age ranges. SAM treatment at the community level implies that the CHW be allowed to dispense an antibiotic that may or may not be the same as for pneumonia, as well as in some cases a deworming medication, iron, folic acid, or vitamin A. In addition, some countries have not put in place policies to allow CHWs to use antibiotics at all; this may be an important consideration for SAM treatment at the community level.
- Availability of medicines in appropriate formulations and packaging: Certain medications given at the community level within the iCCM protocol may already be in paediatric formulations (dispersible amoxicillin, for example), or color-coded for illiterate CHWs and caregivers (amoxicillin and Artemisinin-based Combination Therapy in Uganda), while those indicated for facility-based treatment of SAM are not at present.
- **Supply:** Ensuring adequate and continuous supplies of RUTF at the community level presents predictable logistics issues related to distribution, stock-outs, pre-positioning, security, stock management, etc. Many of these issues currently exist with distribution to a health facility level and would be even more difficult at the community level. In Angola, inconsistent supply of RUTF was a major constraint on project activities, and there were months when no RUTF was available. In Ethiopia, although RUTF is in theory included in the HEW supply kit, in practice its bulky nature prohibits distribution through the same channels and a temporary parallel system has had to be established.
- **Cost:** Data from South Bangladesh indicates that community-level treatment of SAM is cost-effective. In both Ethiopia and South Bangladesh, RUTF represented the most significant cost input.
- **Treatment protocol adaptations:**
 - Appetite test: The standard CMAM protocol³⁸ requires an appetite test as one means of differentiating complicated versus uncomplicated SAM. The appetite test is administered by a professional health worker in a health facility or OTP site. Protocols in Angola (World Vision), Bangladesh, Ethiopia, South Sudan (Malaria Consortium) and South Sudan, (IRC) all include an appetite test administered by the CHW. Some key informants raised questions on whether the appetite test can be accurately administered and interpreted at the community level.
 - RUTF dosage: The standard CMAM protocol determines RUTF dosage based on the weight of the child. NGOs adapting or simplifying the protocol have made modifications to address the complexity of conducting accurate weights, especially with a low-literacy and numeracy volunteer. World Vision/ Angola and Action Against Hunger/Myanmar both provided a fixed dose of RUTF instead of basing dosage on a child's weight. The IRC is considering a protocol in South Sudan based on dosage. not using weight (currently under research).
 - Discharge criteria – The standard criteria for discharge is no oedema for at least two weeks and either Weight-for-Height (WFH) ≥ 2 Z-scores or MUAC ≥ 125 mm. Many national protocols may still include criteria of weight gain which, in addition to not being recommended by WHO and UNICEF is also more complicated for community volunteers to manage. The IRC protocol for South Sudan will incorporate longitudinal MUAC for tracking progress and discharge.

³⁸ World Health Organization: Updates on the management of severe acute malnutrition in infants and children Guideline. 2013

In discussing which approaches key informants would or would not recommend, community-based treatment of uncomplicated acute malnutrition elicited strong reactions on both sides of the argument.

Those informants who supported community-based treatment talked about the importance of providing life-saving treatment to those who would not otherwise be able to access it and the potential impact on decreasing mortality by addressing malnutrition in tandem with pneumonia, malaria and diarrhoea. A number of people provided a parallel to the evolution of iCCM and stated that many of the concerns raised about treating acute malnutrition at the community level had also been raised about community-based treatment of pneumonia, malaria and diarrhoea.

Some key informants suggested that community-based treatment may only be relevant to areas with very low coverage and access, and high levels of malnutrition.

Two respondents who supported community-based treatment expressed concerns about a typology of treatment with different community-based workers for iCCM and acute malnutrition. Their concerns focused on duplication of services, lack of integration, and the perception that one worker could effectively incorporate four “diseases”.

While a few people raised concerns about the lack of scaled, tested examples of acute malnutrition treatment at the community level, others talked about the challenge of negotiating government policies, or of getting government buy-in for larger scale implementation without MOH advocacy support from partners, particularly UNICEF.

There were also strong negative reactions. Comments included:

“

Basic volunteers (like CHAs in Ghana) should not manage SAM in the community

“

I would caution against using non-paid/ volunteers to deliver OTP as it brings issues around staff retention and turn-over, logistics, service quality, reporting as well as accountability

“

We would NOT recommend treatment of SAM by the CHW. The appetite test can be difficult to administer, and requires a certain amount of judgment. We would not recommend a simplified version of SAM treatment. Growth monitoring should remain at the level of the health facility.

“

I am not sure about the viability of SAM treatment by CHWs

Knowledge Gaps

In addition to identifying what was known about integrating nutrition and iCCM/CCM, this review sought to identify remaining gaps in knowledge in order to help focus future implementation and research directions. Those questions directly related to the implementation of a particular typology are presented in the table of advantages and disadvantages.

Additional questions and suggestions raised by key informants include:

- What can reasonably and realistically be done in terms of nutrition at different levels of the health system?
- What works, for whom, in what circumstances and why? (Context)
- How can nutrition best be incorporated into policies, training tools, evaluation, and tools?
- How can health and nutrition best be firmly linked at the institutional level?
- How much work / how many tasks can one CHW absorb and what is feasible for a CHW to do in addition to the iCCM tasks? (related qualification: without compromising quality of care for iCCM or for nutrition?)
- If we add a module (i.e. nutrition) to iCCM training, does it change the competencies needed for the worker?
- What are the costs, cost-effectiveness, and cost benefits of integration?
- There need to be studies on issues related to equity, coverage, sustainability and scalability.
- Research should be done on how to simplify protocols for SAM treatment for the illiterate worker and the evidence of effectiveness of the training
- Can a CHW effectively detect complications of SAM?
- What are ways to ensure the supply and positioning of RUTF?
- How can RUTF be included on the essential drugs list?
- There is a need to develop and validate better nutrition indicators.
- There is no standardized protocol for MAM treatment, as there is for diarrhoea, pneumonia and malaria. This could help the field move forward in implementation.

Discussions and meetings preceding this review also produced lists of questions. For example, a presentation at the Technical Meeting on Nutrition 2014, in Oxford put forward this list:

- **MOTIVATION:** How long can we sustain motivation of CHWs? What are the factors that affect CHW motivation particularly when providing additional services?
- **POLICY ENVIRONMENT:** What is the minimum in terms of policy involvement (or environment)?
- **PROTOCOLS:** Do CMAM protocols need to be simplified/aligned with iCCM? What would it look like?
- **NUTRITION PACKAGES:** What bundles of interventions should be delivered and in what order? Which aspects of nutrition (i.e. IYCF, MAM, SAM, micronutrients) are appropriate in each context? How can we promote continuity of care?
- **HEALTH SYSTEMS:** What are the lessons about Health System Strengthening that we can take into iCCM and nutrition?

LESSONS & CONCLUSIONS EMERGING FROM THE REVIEW

Generalizable conclusions are elusive. One frequent theme arising throughout the review process, in both the desk review and the key informant interviews, is the primordial importance of context; what works in one country or part of a country may not be appropriate for another. There are a number of other common lessons that arose from this review:

- a. **The profile of the CHW is decisive. The gamut runs from a paid, literate CHW with a relatively small catchment area and a substantial amount of training, to a volunteer, illiterate CHW with a large number of households to cover and one week of training.**
- b. **The organisation of work and current responsibilities of CHWs helps determine the best approach, for example whether the integration of nutrition activities should build on a health education platform or on a treatment platform.**
- c. **A division of responsibilities whereby the CHW who does treatment is complemented by others who do active case-finding, home visits, and/or IYCF messaging has the potential of increasing coverage while not overloading one particular cadre.**
- d. **iCCM is only one delivery platform; nutrition could be added to others, including the Expanded Programme on Immunization and antenatal care activities.**
- e. **The political context is also decisive. In places with a high prevalence of acute malnutrition, low access to treatment and poor health infrastructure, for example South Sudan, there is a stronger argument for community-level treatment. At the same time there is more opportunity for the CHW to see acutely malnourished children and thus to practice and retain the relevant skills. The same argument may apply to areas in emergency situations.**
- f. **There is a palpable tension between the “nutrition” and “health” sectors. This tension relates to available funding (donor attention), funding streams, and management structures. This could be likened to a similar tension often found in iCCM between vertical malaria programmes and more horizontal child health programmes in countries. The advantages to both sectors of linking should be clearly articulated, using terminology acceptable and accepted by all concerned.**
- g. **Other sectors and concerns must be taken into consideration. Examples include gender issues (men are family decision-makers), social protection schemes, and food security.**

Two additional points from discussions with key informants complement the lessons drawn from documents reviewed:

- h. **Key informants agreed that it was reasonable to expect all iCCM CHWs to assess, refer and counsel acutely malnourished children. There was agreement amongst a number of respondents that iCCM could be an effective platform for reinforcing IYCF messages, strengthening feeding practices during illness, and following up acutely malnourished children.**
- i. **Respondents brought up the challenges of integrating nutrition and health at the national level, related to coordination across MOH directorates, funding streams, and the challenge of ensuring that useful nutrition indicators were included in the Health Management Information System.**

This paper is the result of reviews of documented programme experiences and published evidence, complemented by discussions with key informants, on linking or integrating nutrition interventions and integrated community case management of childhood illness. Based on the experiences reviewed, four non-exclusive typologies of linkage and integration emerged. The typologies provide an organizing framework for describing, exploring and comparing existing experiences and evidence, analysing advantages and disadvantages, and defining knowledge gaps.

The construct of the four typologies is useful for examining current and past experiences, however it is likely that the way forward may be through a combination of typologies, or through the addition of new alternative approaches to linkage or integration.

Nutrition is currently included in the UNICEF/WHO standard iCCM package with home care messaging on feeding of the sick child, assessment using MUAC and bilateral pitting oedema, and referral of children with acute malnutrition. Discussion of future directions for strengthening the linkages or integration of nutrition and iCCM could be more clearly articulated on two levels: 1) optimal implementation of the nutrition components already included in iCCM (Typologies 1 and 3); or 2) adding treatment of acute malnutrition onto iCCM (Typology 4).

In contrast to the abundant evidence supporting the need to integrate or link, and the equally abundant evidence for each of the two domains separately, the paucity of hard evidence of how linkages could be done confirms the limited experience. Future work will need to examine the best combination of actions – probably crossing over the proposed typologies -- to ensure better coverage of interventions that identify and ensure treatment and prevention of childhood illness and acute malnutrition. The list of questions put forward in this review is vast but an important subset has been suggested. Much of what is not known relates to large-scale implementation, feasibility, and the transferability of experience from one context to another.



ANNEX 1

KEY INFORMANT ORGANISATIONS

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Action Contre la Faim/Action Against Hunger

Children's Investment Fund Foundation

CMAM Forum

DFID

International Rescue Committee

Malaria Consortium

Micronutrient Initiative

Save the Children

UNICEF Ethiopia

UNICEF Headquarters

UNICEF West and Central Africa Regional Office (WCARO)

USAID

World Health Organization

World Vision





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Future work will need to examine the best combination of actions - probably crossing over the proposed typologies - to ensure better coverage of interventions that identify and ensure treatment and prevention of childhood illness and acute malnutrition.

ANNEX 2

COMMUNITY-LEVEL NUTRITION ACTIONS IDENTIFIED

COUNTRY/ACTION IN COMMUNITY	IDENTIFY ACUTE MALNUTRITION	ACTIVE CASE FINDING	TREAT UNCOMPLICATED SAM	FOLLOW-UP AT HOME	MEBENDAZOLE	IRON FOLATE OR IRON + FOLIC ACID	VITAMIN A	PROMOTE EBF	PROMOTE COMPLEMENTARY FEEDING	IDENTIFY MAM	REFER YELLOW MUAC	TREAT MAM
Afghanistan	x	x	x	x			x	x	x	x	x	
Angola World Vision/Africare	x	x mass screening	x	x				x	x	x		
Bangladesh Save the Children	x	x	x	x				x	x			
Bangladesh A&T								x	x			
DRC	x				x		x					
Ethiopia National HEW programme	x	x HDA volunteers	x at health post or OTP	x	x	x	x	x	x	x	x	Counselling
Ethiopia A&T								x	x			
Guinea	x				x		x					Counselling for the malnourished child
Kenya⁴	x MUAC only			RUTF in community			x selected communities	x	x		?	
Liberia	739											
Madagascar	x				x		x					

Mali¹													X	X	X	X	X	X						Advise	
Malawi																								X	
Niger French Red Cross /IFRC																									X
Niger Concern Worldwide Tahoua (2009–2014)																									X
Niger HKI, Gaya district																									X
Pakistan LHWs																									X
Pakistan LHWs, Save the Children																									X
Rwanda iCCM																									X
Rwanda World Relief																									X
Rwanda Concern Worldwide,x World Relief, and IRC Kabeho Mwana (2006–2011)																									X
S Sudan Malania Consortium																									X
Zambia																									X

SHADED ROWS = carried out with iCCM (or included in iCCM materials)
UNSHADED ROWS = carried out separately from iCCM, or information not available
Sources for the information in this table include: iCCM training materials
 (10-country review), policy documents, implementation plans, study results
¹Mali: one study on health system strengthening by Johnson et al showed value of active case-finding of diarrhoea, pneumonia, malaria by CHW/home visits
 This was accompanied by rational of user fee infrastructure development, community mobilization and prevention programming. No mention of nutrition, SAM or MUAC
²Ethiopia: HFW also checks for anaemia (pallor)
³From National Implementation Plan iCCM

⁴ MUAC on consultation ledger in ARI module, but not in other modules or in training text

ANNEX 3

CHWS PROVIDING TREATMENT FOR SAM: CHW AND PROGRAMME PROFILES

EXPERIENCE	PAID/VOL	AVERAGE RATIO CHW TO HOUSE-HOLD HHs	EDUCATION	TRAINING	SUPERVISION	DISEASES COVERED
Ethiopia Health Extension Programme	Paid; FT government salaried position	2:1,000 HHs	10th Grade	1 year; refresher trainings every 2 years; + 5 days of iCCM training including SAM management	1 -2 times per month	16 packages covering disease prevention and control, family health, hygiene, environmental sanitation, health education, communication treatment of pneumonia, diarrhea, malaria, SAM
South Bangladesh Save the Children	Paid monthly stipend	1: 150-225 HHs; 1:900 population	8th Grade	Disease prevention; 3 days iCCM; 2 days SAM	1 -2 times per month	Diarrhea, Pneumonia, and SAM, Severe disease
South Sudan Malaria Consortium	CNW paid monthly stipend	1 CNW: OTP site	CNW's are literate	CNW: 5 day initial training; quarterly refresher training; OTJ during supervision visits	Minimum 2 times per month	CNW: SAM
	CDD do not receive a stipend		CDDs generally illiterate	CDD: 6 day training; OTJ training during supervision		CDD: Diarrhoea, Pneumonia, and Malaria (presumptive treatment)
South Sudan International Rescue Committee	Vol	1:50 HHs	Illiterate	1 week for ICCM	1-2 times per month	Diarrhoea, Pneumonia, Malaria (presumptive treatment), and SAM
Pakistan Lady Health Workers Action Against Hunger	Paid	1:200 HHs; 1:1000 people	8th Grade	15 months then 12 months OTJ	Variable by District Health Officers	Outreach component for PHC, Reproductive Health and SAM
Mali Agent Sante Communautaire Action Against Hunger	Paid; FT salaried position	1:35 - 1:110 HHs in the area of intervention	Certificate of Health Assistant or midwife	3 - 6 months	1-2 times per month by the Head Doctor of the closest Health Centre	Diarrhoea, Pneumonia, Malaria, MAM and SAM

Note: Last three are in design/proposal stage and not implemented

ANNEX 4

OPERATIONS RESEARCH UNDERWAY OR PLANNED

COUNTRY

Bangladesh

TIMELINE

2014 - 2018

AGENCY

The Hospital for Sick Children in Toronto, Canada

PROJECT INFO: Maternal Vitamin D for Infant Growth (MDIG) Trial

Overall goals: The study aims to measure the impact of vitamin D supplement to pregnant women on infant's growth (primary outcome is length of the child). It is placebo controlled randomized clinical trial. Community Health Workers conduct pregnancy surveillance in study area and refer them to the study facility (a MOH run maternal and Child Welfare Clinic) where study physician conducts physical examination and collects bio-specimen from women who consented to participate in the study. CHWs also conduct home visits, follow IMCI guidelines and offer necessary referral and case management at community level to children whom they find ill and with signs/symptoms.

Timeline: 2014 - 2018

Collaborating partners: International Centre for Diarrhoeal Disease Research, Bangladesh, Shimantik; Bill and Melinda Gates Foundation

COUNTRY

Benin

TIMELINE

2010-2014

AGENCY

Center for Human Services

PROJECT INFO: Community-based quality improvement model for increasing CHW motivation

Background: Save- Ouesse (SAO), Dassa- Glazoue (DAGLA), and Allada-Ze- Toffo (AZT) are the three highest need health zones in Benin, as demonstrated by poor MNCH health indicators (MMR: 350/100,000; U5MR: 106/1000; IMR/1,000) and a lack of motivation, low retention, and poor performance of Community Health Workers (CHWs).

Overall goals: Strengthening community-facility partnerships for Community Health Worker support by establishing a community-level quality improvement collaborative model to motivate CHWs and improve their performance and retention for improved access to quality MNCH services and outcomes; Informing Benin's 2010 National Directives for Community-Based Health Promotion policy on CHWs motivation package

Timeline: 2010-2014

Collaborating partner: MOH (assumed)

COUNTRY

Burkina Faso

TIMELINE

2013-2016

AGENCY

Micronutrient Initiative

PROJECT INFO: Demonstration project: Community-based prevention of malnutrition in Burkina Faso

Overall goals: Contributing to the reduction of morbidity and mortality in children 0-59 months in Burkina Faso through well-defined and implemented community interventions to improve the quality of management of acute malnutrition and infant and young child feeding.

Timeline: October 2013-March 2016

Collaborating partners: MI, Terre des Hommes, Institut de Médecine Tropicale (ITM) Antwerp, Brussels, Institut de Recherche en Sciences de la Santé (IRSS), Ouagadougou, Communities of intervention villages, Tougan health district, Bureau Conseil en Santé

COUNTRY

Ethiopia

TIMELINE

2014-2016

AGENCY

Micronutrient Initiative

PROJECT INFO: Extended pilot project: Community-based production of complementary food in Ethiopia

Overall goals: Improving infant and young child feeding practices by increasing the consumption of quality locally-produced complementary food and the utilization of multiple- micronutrient powder in children 6-23 months; Contributing to the reduction of undernutrition among children 6-23 months as part of the National Nutrition Plan in 4 regions of Ethiopia

Timeline: The project activities started in October 2014, and the first phase of this project will run until March 2016.

Collaborating partners: UNICEF provides the main financial resources, with MI and GAIN as implementing partners and also contributing own resources, and other implementing partners including RiPPLE, Ethiopian Orthodox Church, Addis Ababa University (and 4 regional universities), and the Ethiopian Public Health Institute.

COUNTRY

Malawi

TIMELINE

TBC

AGENCY

Save the Children & Partners

PROJECT INFO: Strengthening nutrition counselling for breastfeeding and feeding during illness in CCM. Concept note and proposals submitted.

Overall goals: N/A

Timeline: N/A

Collaborating partners: N/A

COUNTRY**Mali****TIMELINE****2015-2017****AGENCY****ACF****PROJECT INFO: Clinical cohort study: Integrating SAM treatment into the iCCM package currently delivered by CHWs in Mali**

Background: Mali has one of the highest infant mortality rates in West Africa (IMR 194/1,000), with malnutrition being associated with nearly a third of these deaths and affecting 10.4% of children under 5. ACF has supported the health district of Kita, one of 49 “cercles” or state-like areas, since 2007 through the Project for Improving Food and Nutrition Security. Since the 2012 crisis, ACF has expanded into all 41 functional areas of the health district, implementing the project “Strengthening local capacities for integrated management of acute malnutrition and access to food in Kita”. A coverage assessment carried out by ACF in March 2013 found that facility-based treatment of acute malnutrition in Kita was only reaching approximately 25% of the affected population. Awareness and distance were the major barriers for accessing care. Paid Community Health Workers (Agent Sante Communautaire, ASC) have provided iCCM services for the treatment of malaria, diarrhoea, pneumonia and sometimes MAM but have not taken on a significant role in the treatment of SAM.

Overall goals: Examining the impact of integrating early identification and treatment of SAM into iCCM services delivered by ASCs in several municipalities of the “cercle” Kita (where ACF supports CMAM delivered at the health centre level); Filling a gap in the evidence base with respect to the potential delivery of SAM treatment by CHWs and providing a model capable of bridging some of the most common barriers to access faced by traditional service delivery models.

Objective: To compare the effectiveness of SAM treatment services provided at facility level with treatment services provided by trained ASCs in two areas of Kita “cercle” in Mali

Study hypotheses: ■ Treatment of SAM by ASCs will improve early identification of SAM cases compared to the Health Facility Treatment: less complicated cases referred to SC and MUAC at admission closer to threshold levels

■ Treatment of SAM by ASCs will improve access to treatment service: Coverage rates and barriers to access as evaluated by SQUEAC assessments

■ Treatment of SAM by ASCs will improve cost-effectiveness compared to treatment at health facilities.

■ Clinical outcomes of SAM treatment (including cure, death and in particular defaulter rates) will not be inferior in the intervention area where treatment is delivered by ASCs

■ Treatment of SAM by ASCs will provide High Quality of care (error free case management) : >80% error-free case management. **Timeline:** 2015-2017

Collaborating partners: ACF International, Republique du Mali, the Innocent Foundation, and University of Bamako

COUNTRY**Pakistan****TIMELINE****2015-2018****AGENCY****ACF****PROJECT INFO: A cluster randomised controlled trial: Evaluation of the effectiveness and impact of community case management of Severe Acute Malnutrition through Lady Health Workers as compared to a facility-based programme**

Background: Severe acute malnutrition exceeds 10% in many districts of Pakistan, specifically rural Sindh and southern Punjab. Current CMAM models focus on facility-based treatment of SAM, rather than community-based prevention of it. However, evidence indicates that Lady Health Workers are capable of undertaking a complex series of health care tasks. Thus, they can potentially detect and manage SAM in the community and follow up with cases, in order to overcome the difficulty encountered in sustaining quality SAM treatment programmes during and after crises.

Overall goals: Examining the impact of integrating early identification and treatment of SAM with RUTF and IYCF counseling delivered by LHWs at household level in Dady district of Pakistan; Examining the impact on cost-effectiveness and coverage of enabling LHWs to deliver an integrated package including treatment of SAM and IYCF; Filling a gap in the evidence base with respect to the effectiveness of integrating treatment of acute malnutrition into iCCM and the coverage that can be obtained via this mechanism during crises

Objective: To compare the effectiveness of SAM treatment services provided at facility level with treatment services provided by trained ASCs in two areas of Kita “cercle” in Mali

Objectives: ■ To evaluate the effectiveness (rate of recovery, relapse & coverage), of SAM treatment of children under-five years delivered at household level by first level health care providers (Lady health workers) compared with the standard CMAM programme delivered at health facility by Government and ACF staff (primary).

■ To evaluate the cost effectiveness of treatment of SAM provided by LHWs at community level versus treatment delivered at health facility by Government and ACF staff (primary).

■ To evaluate the breast feeding and complementary feeding practices in both study arms (secondary).

Study hypotheses: Provision of SAM treatment at household level in a community through lady health workers will be as effective (recovery rate, survival, cost effectiveness, coverage) as treatment provided at facility level.

Timeline: 2015-2018

Collaborating partners: ACF International, the Aga Khan University, and the Innocent Foundation

COUNTRY**Rwanda****TIMELINE****2010-2014****AGENCY****CARE****PROJECT INFO: Making nutrition a focus for Early Child Development groups**

Background: Kamonyi District in Southern Rwanda has high poverty indices and is a targeted area by the government's poverty eradication programme, Vision 2020, Umurenge. The region has the poorest health indicators (U5MR of 127/1,000 compared to the national average of 103/1,000), large inequities within the health system, poor child health and developmental outcomes, and limited access to basic services for children 1-5 years old from poor families and those in remote areas.

Overall goals: Integrating MNCH/Nutrition and Early Child Development within community-based Early Child Development groups, with support of CHWs for universal coverage and increased uptake of interventions, positive health behaviours, and enhanced child outcomes; Supporting Rwanda government for cross-sectoral integration of the Community Health Policy, National Nutrition Policy, and Early Child Development Policy.

Timeline: 2010-2014

Collaborating partner: MOH (assumed)

COUNTRY**Rwanda****TIMELINE****2011-2015****AGENCY****World Relief****PROJECT INFO: Integrating group learning into national nutrition programme**

Background: Nyamagabe district in Southern Rwanda suffers from poor soil quality, high poverty, and high levels of under-nutrition that contribute to high infant and child mortality rates (U5MR: 54/1,000; IMR: 38/1,000). Child malnutrition is a major problem due to low uptake of Community-Based Nutrition Programme (CBNP) interventions.

Overall goals: Improving community behaviours critical to the 1,000 days period to improve child nutrition by integrating participatory group learning sessions ("Nutrition Weeks") into the national community-based nutrition programme; Informing the MOH to guide the implementation, scale-up, and impact of its new CBNP interventions on behaviour change to improve child nutrition

Timeline: 2011-2015

Collaborating partner: MOH (assumed)

COUNTRY**South Sudan****TIMELINE****TBC****AGENCY****IRC****PROJECT INFO: Pilot project: Home-based treatment of severe malnutrition by illiterate Community Health Workers in South Sudan**

Background: iCCM has been established in South Sudan since 2004, while facility-based CMAM services have only existed since 2013. The IRC has created a simplified SAM protocol for use by illiterate CHWs in order for SAM to be integrated into iCCM of malaria, diarrhoea, and pneumonia and considered the 4th condition for treatment at the home level.

Overall goal: Measuring the impact of the simplified protocol on programme coverage and quality, compared to facility-based treatment.

Objectives:

- Simplify the treatment protocol of Severe Acute Malnutrition to provide home-based treatment by illiterate community health workers in South Sudan

- Evaluate the quality and coverage of home-based treatment of Severe Acute Malnutrition compared to facility-based treatment

- Describe the impact to the iCCM programme by adding on a fourth treatment (severe malnutrition), in addition to diarrhoea, malaria, and pneumonia

Study hypotheses:

- Illiterate community health workers using a simplified SAM treatment protocol are able to provide quality SAM treatment that is comparable to standard facility-based services

- Home-based treatment of SAM will improve coverage of SAM treatment in South Sudan compared to facility-based services

- The addition of SAM will not reduce the quality of care (error free case management) for diarrhoea, pneumonia, and malaria.

Timeline: The first phase of this project began in 2014 to simplify the SAM protocol. The second phase of project implementation and research will begin in 2015.

Collaborating partners: TBD

COUNTRY**Zambia****TIMELINE****N/A****AGENCY****Boston University****PROJECT INFO: Cluster randomised controlled trial: Improving early child development in Zambia (rural Pemba and Choma Districts in Southern Province)**

Background: A cadre of health care workers called child development agents conduct fortnightly visits to homes to screen children for signs of malaria, pneumonia, and diarrhoea. Although they are not delivering iCCM, they are connected to the CHWs and health centres that can provide the necessary services.

Overall goals: Establishing a new cadre of health workers, child development agents (CDA), with the sole mission to monitor and support all aspects of child development under the age of 2; Determining the feasibility of adding screening with MUAC for MAM and SAM during monthly home visits to the responsibilities of the child development agents in order for them to ensure immediate treatment through local CHWs or facilities; Reducing stunting and improving early childhood development; Integrating screening for acute malnutrition into iCCM in Zambia Objective: Integrate early child development support (including management of acute malnutrition) in routine health and community-level care. Study hypotheses: Stunting decreases in the study population from 35% to 15% and cognitive development indicators improve?

Timeline: N/A

Collaborating partners: The implementers are the Boston University Center for Global Health and Development, Zambia Center for Applied Health Research and Development, Harvard School of Public Health, Centre for Infectious Disease Research in Zambia, Ministry of Community Development, Mother and Child Health, MOH, Save the Children, District Community Medical Offices from Choma and Pemba, and Southern Provincial Medical Office, with Grand Challenges Canada, Saving Brains and UJMT Fogarty Global Health Fellows Training Program as the funders.

COUNTRY**N/A****TIMELINE****N/A****AGENCY****WHO****PROJECT INFO: WHO is supporting a study evaluating three home-based feeding regimes for uncomplicated SAM: centrally-produced RUTF; locally-produced RUTF; and augmented home-prepared foods.**

ANNEX 5

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