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Special Supplement

Community-based Therapeutic Care (CTC)

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Trading in markets is a vital livelihood activity for many families in Ethiopia.

Valid International, 2003

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South Sudan, Concern, 2004.

OTP sites are accessed by boat and motorbike in South Sudan

Glossary

ACF	Action Conte le Faim
CHA	Community Health Assistant
CHAM	Christian Health Association of Malawi
CNW	Community Nutrition Worker
CTC	Community Therapeutic Care
DFID	Department for International Development
DHO	District Health Officer
DPPB	Disaster Preparedness and Prevention Bureau
DPPC	Disaster Preparedness and Prevention Committee
EGS	Employment Generation Scheme
EPI	Expanded Programme for Immunisation
FGD	Focus Group Discussion
GMP	Growth Monitoring Programme
HBC	Home Based Care
HBT	Home Based Treatment
HSA	Health Surveillance Assistant
MAM	Moderate Acute Malnutrition
MoHP	Ministry of Health and Population
MSF	Medecine Sans Frontiere
MUAC	Mid Upper Arm Circumference
NRU	Nutrition Rehabilitation Unit
OTP	Outpatient Therapeutic Programme
PLWHA	People Living With HIV/AIDS
PPS	Population Proportional Sampling
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Programme
TBA	Traditional Birth Attendant
TFP	Therapeutic Feeding Programme
WFP	World Food Programme
WHO	World Health Organisation

1 Introduction

1.1 Scope of this supplement

This supplement presents a collection of articles written by people who have been involved in Community-based Therapeutic Care (CTC) programmes. The contributions come from Valid International's CTC research and development team, operational agencies implementing CTC programmes, independent practitioners and academics involved in the research and development of CTC. There has been substantial accumulated experience of CTC over the past four years (see Table 1). Many of these programmes have included specialised research inputs from anthropologists, food technologists, health systems specialists, ethicists, economists, statisticians, epidemiologists and sociologists providing a wide range of evidence-based perspectives on CTC.

The supplement aims to provide a broad range of opinions and experiences of CTC to inform a wide audience about the CTC model of intervention and its relationship with other humanitarian interventions. In presenting these perspectives, we hope to define clearly what CTC is and how it works, clarify CTC's relationship to Centre-based Therapeutic Feeding, and clarify the differences between CTC and other more recent models of Home-based Treatment. The supplement aims to share some of the difficulties and lessons we have learnt during the process of developing the CTC approach and also presents some of the initial monitoring data collected from CTC programmes.

This supplement is organised into sections based on field experiences relating to CTC. Section 2 describes CTC approach. Section 3.1-3.4 describes four country programme experiences of CTC, while sections 4.1- 4.5 deal with technical and management issues of CTC including articles from NGOs starting up CTC programmes and a discussion of cost issues. Finally sections 5.1-5.4 use case studies to address issues around cultural, horizontal (accross programmes), institutional and temporal integration. CTC was initially adapted for emergency interventions, thus most of the articles in this supplement describe experiences and the lessons learnt in emergency settings. More recent work has focussed on adapting the approach to the longer-term problems of food insecurity and malnutrition related to HIV/AIDS. The

Table 1 CTC projects and approximate numbers of severe acute malnourished (SAM) and moderate acute malnutrition (MAM) treated

Country	Year	Agency	Ongoing or completed	No. SAM treated (OTP + SC)	No. MAM treated (SFP)
Ethiopia - Wolayita	2000	Oxfam	Completed	1185	-
Ethiopia - Hadiya	2000	Concern	Completed	170	3000
N Sudan - Darfur	2001	SCUK	Completed	806	25633
N Sudan- Darfur	2002	SCUK	Completed	446	6019
Malawi - Dowa	2002	Concern	Ongoing	1900	7564
Ethiopia - South Wollo	2003	Concern	Ongoing	794	11573
Ethiopia - Wolayita	2003	Concern	Completed	194	3346
Ethiopia - Wolayita	2003	Concern	Ongoing	445	4359
Ethiopia - Sidama	2003	SCUS	Ongoing	1232	3571
Ethiopia – Hararge (Golo Oda)	2003	SCUK	Completed	232	2332
South Sudan - BEG	2003	Concern	Completed	610	3844
South Sudan - BEG	2003	Tearfund	Completed	696	5433
Ethiopia - Hararge	2004	Care US	Ongoing	280	-
Total				**8990**	**76674**

articles on the 'demand drive model', CTC and HIV, CTC in Malawi and integrating CTC with local people, infrastructure and agriculture explore the issues arising from these 'newer' forms of CTC.

1.2 Changing the way we manage acute malnutrition

Foreword by Steve Collins

The development of the CTC model of care has aroused considerable controversy and professional disagreement. These tensions may be viewed as manifestations of the classical debate between clinical healthcare and public health provision. Up until the start of the CTC programme, the predominant influence behind therapeutic feeding was clinical, with important developments achieved by clinicians, clinical nutritionists or pathophysiologists. The focus was on understanding the disease process in malnutrition, and on researching and developing effective, curative, clinical regimes (1;2). Progress was spectacular. In the past 15 years, new treatment regimes, in particular using F75 and F100, implemented through TFCs, have had major impacts in reducing case fatality rates and improving recovery for severely malnourished individuals (3). By contrast, there has been little improvement in the population level impacts and every year, acute food insecurity and famine still kills thousands of children and adults (4). The CTC approach is rooted in public health principles and has focused on the sociological, epidemiological and food technology aspects of interventions. It provides a framework that better harnesses the interventions that we already have, to achieve impact at the population level (5).

Without effective, individual level interventions, public health measures cannot be successful. The clinical and medical advances, and more recently, the development of solid F100 (RUTF), have been essential stepping stones towards developing the CTC approach. However, the optimal strategies to address SAM require that clinical knowledge and curative regimes be fitted into a broader public health framework. This requires balancing individual medical issues with broader concerns, such as coverage, cost, uptake, compliance and impact. The reality is that many TFC programmes fail to deliver large scale public health impact due, in large measure, to poor coverage (6).

The first formulation of CTC started in 1998 during the famine in South Sudan. In particular, during an extensive evaluation of the MSF Holland's selective feeding programmes in Bahr El Gazal, it became clear that the current centre-based model of care could not deliver impact and instead, placed the population at additional risk. Despite their professional approach, MSF-H's programmes had failed to deliver. In such an extreme situation as South Sudan during 1998, the only way to achieve substantial impact was to focus on ensuring that those who were treatable with simple, quality supplementary feeding were admitted to and remained in programmes. In other words, to prioritise coverage of the masses of acutely malnourished over inpatient care.

While most people find the idea of programmatic triage - whereby programmes are tailored to prioritise coverage even at the expense of those at the point of death- distasteful, the reality is that in the majority of scenarios where humanitarian agencies intervene, resources and capacity are insufficient to provide the state of the art inpatient care to all of those who require it. Programmes that do not take the resource and capacity realities of nutrition crises into account not only achieve sub-optimal impact, but also risk making a situation worse. TFCs and NRUs are high risk environments; the patients are immuno-suppressed and often infected; the conditions are cramped, and water and sanitation are often difficult. In these conditions, water, hygiene, sanitation, medical and nutritional protocols must be scrupulously adhered to, if cross infection is to be avoided. Although this might be possible for the large INGOs implementing TFCs, the vast majorities of TFCs are implemented by smaller, less experienced NGOs or local hospitals and in these, standards are often not met. The result is high levels of morbidity within units, as well as low coverage of the population outside of units. There are many examples of this: Somalia in 1992 (7) where congregation of populations and epidemics of measles and shigella decimated the populations, Liberia in 1996 (8), S Sudan in 1998 (9) and Ethiopia in 2000.

Prioritising interventions according to public health and developmental principles, rather than prioritising individual cure rates, will require a reanalysis and rethink and a commitment to change at all levels within organisations engaged in therapeutic feeding. This will take time as TFCs are large scale interventions, employing large numbers of NGO workers and absorbing large amounts of donor funding. They are well adapted to the volunteer model of humanitarianism that flourished in the 1990s. There are generic models of implementation as encapsulated in many of the INGO nutritional guidelines. This all makes TFC implementation relatively independent of culture and a well run TFC in Somalia appears very similar to a well run TFC in Angola. This means that with good health training, even first time volunteers can implement TFCs relatively effectively, if they have access to one of the high quality manuals that agencies such as MSF and ACF have produced. By contrast, CTC implementation must be highly tailored to the context in which it operates; it is more dependent on local staff, and relies much more fundamentally on community participation and the local infrastructure. The success of CTC requires culturally specific negotiation and facilitation with local communities and local structures. Such negotiation requires compromise and understanding on the part of the whole team and consequently, is not really suitable work for inexperienced volunteers, however enthusiastic and no matter what manual they have.

In conclusion, it is hoped that this supplement will allow the readers to see CTC in context, as building upon and complementary to TFC care and the clinical management of acute malnutrition, while at the same time, a shift away from the individual focus towards a public health approach.

Ethiopia, SCUK, 2003

Children waiting to measured in Ethiopia.

2 CTC Approach

by Steve Collins (Valid International)

2.1 Main principles of CTC

Community Therapeutic Care (CTC) is a community-based model for delivering care to malnourished people. CTC seeks to provide fast, effective and cost efficient assistance in a manner that empowers the affected communities and creates a platform for longer-term solutions to the problems of food security and public health. Central to CTC are basic public health and developmental principles. The most important are:

- Coverage achieved by providing people with good access to services and engaging with local communities and infrastructure.
- Engagement with, and the participation of, local communities and structures.
- Appropriate levels of intervention, commensurate with resources.
- Sectoral integration.
- Capacity building.
- Timeliness.

All CTC programmes aim to treat the majority of severely acutely malnourished people in their homes, not in Therapeutic Feeding Centres (TFCs) or Nutritional Rehabilitation Units (NRUs). The aim is to utilise and build on existing capacities, using only a few highly professional staff (few expatriate staff) to facilitate the process, rather than using large external teams and creating parallel structures. In doing so, CTC helps equip communities to deal more effectively with future periods of vulnerability. CTC is complementary to traditional TFCs and Supplementary Feeding Programmes (SFP), integrating them into a broader framework that better takes into account the social, economic and political realities of food insecurity and malnutrition. Through decentralizing distributions, engagement with communities, working with local health care providers and outreach, CTC improves access to services, case finding and follow up, all traditional weaknesses of the 'Therapeutic Feeding' model of intervention (10).

Most of the interventions that make up a CTC programme are usual elements in humanitarian relief operations, i.e. SFP, TFC, RUTF, outreach, food security interventions and nutritional surveys. CTC combines these traditional elements with new interventions, such as Outpatient Therapeutic Programme (OTP), specialised coverage surveys and the local production of RUTF. The approach directs and prioritises resource allocation between them, according to strong public health and developmental principles such as coverage, local ownership and participation.

An important principle in CTC is that programmes must be adapted to the context in which they operate. Consequently, CTC programmes take many different forms, depending on opportunities and constraints. In its simplest form, a CTC programme consists of a SFP, OTP, and measures to engage with and encourage the participation of the local community. Other CTC programmes might include the fuller range of intervention instruments, such as SFP, OTP, mobilisation & engagement, outreach, SC, food security and local production of RUTF.

2.2 CTC classification of acute malnutrition

During the development of CTC, a modified classification of acute malnutrition has emerged that fits better with the new range of therapeutic options that CTC proposes. The present WHO classification consists of moderate and severe categories, defined according to anthropometry and the presence of bilateral pitting oedema (1). This classification was appropriate and operationally relevant when the modes of treatment were inpatient Therapeutic Feeding Centres (TFC) for severe acute malnutrition, and outpatient Supplementary Feeding for moderate acute malnutrition. However, CTC has three treatment modes and in order to be operationally relevant, the new system of classification adds a category of 'malnutrition with complication' to the present severe and acute categories. This new classification is presented in Table 2.

Malnutrition with complications is characterised by anorexia and life threatening clinical illness. It can occur in either severely or moderately acute malnourished people. In practice, the assessment of whether malnutrition is complicated or not dictates whether patients are admitted for inpatient care or treated as outpatients from the start. A failure to use the 'malnutrition with complication' category results in several negative consequences for both patients and nutritional projects. The data from CTC programmes to date demonstrate clearly that children with severe acute malnutrition but no complications, do not require inpatient care in order to recover (see table 3). Admitting such patients into TFCs needlessly exposes them to additional risks of nosocomial infections, while forcing the carer, usually the mother, to separate from her family and other children. This increases malnutrition in siblings and undermines the economic activity and food security of the household (5). In addition, unnecessarily admitting people without complications into inpatient TFC care, takes up space at TFCs. At the same time, by not invoking a category of 'malnutrition with complications,' programmes do not admit cases of moderate malnutrition with complications into inpatient care, thereby leading to increased morbidity and mortality.

2.3 CTC Nomenclature

There is a clear nomenclature describing the differing constituent elements of a CTC programme. This allows us to be more specific about how CTC works in practice, and clear/transparent/obvious about vital differences in prioritisation between CTC and other Home Based or Ambulatory Treatments (HBT) and TFCs (12).

Table 2 CTC classification of acute malnutrition (11)

Acute malnutrition		
Acute malnutrition with complications	Severe acute malnutrition without complications	Moderate acute malnutrition without complications
< 80% of median weight for height (-3z scores), **OR** bilateral pitting oedema grade 3 **OR** MUAC < 110mm **AND** one of the following:	< 70% of median weight for height, **OR** bilateral pitting oedema grades 1 or 2, **OR** MUAC < 110 mm **AND:**	70-80% of median weight for height, **AND** no bilateral pitting oedema **OR** MUAC 110-125mm **AND:**
Anorexia	**Appetite**	**Appetite**
LRTI High fever Severe dehydration Severe anaemia Not alert	Clinically well Alert	Clinically well Alert
Inpatient care (WHO/IMCI protocols)	**Outpatient Therapeutic Care (OTP protocols)**	**Supplementary Feeding**

Ethiopia, Valid International, 2004.

Assessing entry criteria in Ethiopia.

Many of the elements in a CTC intervention are normal relief interventions and most of the terms used in CTC are the same as those used in the WHO or other manuals on nutrition. However, there are important differences. The section below uses the definitions of "stabilisation" and "Outpatient Therapeutic Programme" to highlight important differences between the implementation of TFCs and HBT on the one hand, and that of CTC on the other.

Stabilisation

The stabilisation phase in CTC is the initial inpatient phase of treatment of severe malnutrition with complications. The aim of stabilisation is to identify and address life-threatening problems[1], begin to treat infections, start correcting electrolytic imbalances and specific micronutrient deficiencies, and begin feeding. This is the same as in the WHO guidelines for the initial treatment of severe malnutrition (1). However there are important differences between TFC and HBT:

1. In CTC, the stabilisation phase of treatment only applies to patients with acute malnutrition with complications (see table 2). By contrast, all standard TFC guidelines and the Home Treatment model of ACF recommend that all cases of severe acute malnutrition are admitted into inpatient care.
2. In CTC, patients are discharged from the stabilisation phase into outpatient care as soon as their appetite returns and signs of major infection disappear, irrespective of their weight for height or whether they are gaining weight or not. This is different to documented TFCs and the HBT models (3;13).
3. Resource allocation to stabilisation care is accorded a lower priority than the resource allocation to outpatient therapeutic care. CTC programmes only direct resources towards stabilisation care once sufficient resources are available to ensure good outpatient therapeutic programme (OTP) coverage and good community understanding and participation. The articles on community mobilisation, Ethiopia, and South Sudan in this supplement discuss more issues surrounding prioritisation.

In practice, this represents fundamental differences in the prioritisation of resources. In CTC, stabilisation care is restricted to a very small and select group of patients, with the aim of providing good access to outpatient care in a timely manner before children have developed complications. In practice, experience shows that only 10-15% of severe cases require stabilisation care (see table 3). This clearly defined narrow role means that stabilisation centres (SC) are small, require little in the way of infrastructure and need only one or two skilled staff. By contrast, TFC phase 1 care treats ten times more patients and must take place right from the start of TFC programmes.

The difficulties of trying to mix the TFC model of care with CTC became apparent in Malawi, where the national TFC/NRU strategy resulted in an early introduction of inpatient care for all cases of severe acute malnutrition. These inpatient centres soon became crowded and less efficient and drew heavily upon resources and staff time, diverting attention away from coverage, participation and mobilisation activities (see section 5.1.2). The result was that SC staff had more children to treat and less time to devote to each child, leading to reduced levels of care and increased recovery times. This decreased patient throughput, which in turn increased overcrowding. This vicious cycle only stopped when of necessity, CTC was prioritised, with patients admitted and discharged according to the CTC criteria.

Outpatient Therapeutic Programme (OTP)

OTP admits people suffering from severe acute malnutrition defined, essentially, according to standard WHO definitions[2]. There are two groups of admissions into OTP; those who are admitted directly to OTP from the community and those admitted indirectly via a stabilisation centre.

[1] Hypothermia, hypoglycaemia and dehydration.

South Sudan, Tearfund, 2003.

Mother and child with complicated severe malnutrition in Tearfunds stabilisation centre, South Sudan.

Ethiopia, Concern, 2003.

Loading up the car for an OTP distribution day in South Wollo, Ethiopia.

Direct OTP admissions are people with severe malnutrition without complications, admitted into the outpatient programme with no period of inpatient stabilisation treatment. In practice, this category accounts for approximately 85% of OTP admissions (see table 3). It is essential to admit these uncomplicated cases directly into OTP in order to enable CTC programmes to achieve coverage. Direct admission into OTP without inpatient care is an important difference between CTC and HBT.

Indirect OTP admissions are people who presented suffering from malnutrition with complications and who received initial inpatient stabilisation care in a stabilisation centre before being transferred into OTP.

2.4 Coverage

In 2003, specific coverage indicators for selective feeding programmes were included in the SPHERE project's humanitarian guidelines for the first time (14). Impressions from the field and existing data strongly suggest that TFC coverage is usually very low. For example, in one of the few published studies looking at TFC coverage in humanitarian crises, Van Damme estimated coverage rates for TFC programmes treating severely malnourished refugees in Guinea to be less than 4% (6). The recent coverage data obtained during the emergency response in Malawi estimated coverage rates as often only reaching 10% in the rural areas, after 10 months of interventions (15). In some situations, such as camps or urban centres, coverage may be higher. For example, in 2003 in Blantyre, Malawi, coverage rates of 60% were reported (15).

Low coverage can also occur in CTC programmes. Interim results from a CTC programme in South Sudan in 2003 found that a combination of insufficient attention to community mobilisation at the start of the programme and a difficult context, resulted in coverage rates of 35%. Similarly in Malawi 2003, insufficient attention to engaging with the local communities at the start of the programme resulted in coverage rates not rising above 30% for the first three months of the programme (see section 3.2).

Attaining good coverage in emergency CTC programmes requires certain essential steps to ensure physical access, understanding, acceptance and participation:

- Distribution sites should be as decentralised as possible, and where feasible, sited only after dialogue with the communities that they serve. The article on the CTC programme in Darfur (section 3.3) discusses the issues and compromises that must be made to balance decentralisation and physical access, with cost and practicalities.
- Experienced staff should engage in a two way dialogue with local communities to inform them about the programme and listen to their concerns. Where possible, the concerns of the local population should direct programme design. This process of negotiation is central to CTC, and several of the articles in this supplement describe different aspects of this.

Attaining a reasonable coverage of the target population is essential if selective feeding interventions are to achieve impact. The negative impacts of low coverage are hidden; children suffer and die quietly in their homes without ever being registered in a programme or being seen by local workers, at best they appear as abstract mortality statistics. By contrast, those admitted to inpatient facilities become very visible, and form one to one relationships with staff in whom their plight elicits powerful emotions. This all produces considerable pressure to direct resources towards inpatient care, even at the expense of overall programme impact.

The clinical focus of therapeutic feeding research has also directed attention away from coverage. The new manuals based on recent research have increased the medicalisation of therapeutic interventions, proposing treatments that are more complicated (16). In small, well staffed and well run centres these new techniques undoubtedly improve the outcomes for individuals suffering from severe complicated malnutrition. However, the reality of resource and capacity constraints in the contexts where severe acute malnutrition is common, means that this intensity of treatment can only be delivered to a very small proportion of the severely malnourished. Attempts to base large scale strategies on these new protocols alone in Malawi in 2002 and Ethiopia 2003, without instituting widespread OTP programmes, have resulted in very low coverage and as a result, low impact (17). Mature CTC programmes require high quality inpatient stabilisation care. Embedding SCs within CTC helps such protocols work with other interventions to maximise impact, rather than compete with them and divert resources towards only a small percentage of those who need care. To maximise impact through optimising the balance between coverage and individual intensity of treatment, programme planners must ensure that OTP for uncomplicated cases is prioritised and reserve these intensive inpatient techniques for those with complicated severe acute malnutrition.

The absence of a suitable tool to assess coverage has deflected attention away from this vital issue. Previously, an adaptation

[2] We are also investigating the admission into OTP using MUAC criteria.

of the WHO Expanded Programme on Immunisation (EPI) coverage survey method was recommended for assessing the coverage of selective feeding programmes. This method has many disadvantages and results in very imprecise estimates of programme coverage, that have wide confidence limits and are often biased or inaccurate (18). To address this, the CTC programme has invested in developing new survey techniques and in this supplement we present a new method of assessing coverage. This new technique has applications beyond selective feeding programmes and promises to be influential in improving targeting and resource allocation in a range of humanitarian and developmental interventions.

2.5 Participation

Involving local communities and the local health infrastructure from the start of CTC programmes is vital. For example, in Malawi, anthropologists researching CTC and NRU programmes concluded that the existing social fabric of a Malawian village and the support networks therein are still, in spite of the HIV/AIDS epidemic, the most important resource available with which to alleviate the individual and social burden of malnutrition and HIV/AIDS (19). At the beginning of an intervention, time spent working with the local communities and the local MoH might appear to slow down initial implementation. However, in all CTC programmes to date, the ultimate benefits have greatly outweighed these initial frustrations.

CTC projects described in this supplement demonstrate that simple measures enacted in appropriate ways at the right time can minimise the alienation, disempowerment and undermining of community spirit often associated with externally driven interventions. Such measures have greatly increased impact and the potential for successful handover of CTC programmes in the medium term.

2.6 Prioritisation during emergency

This section tries to clarify how emergency CTC programmes prioritise the individual programme elements.

To date, the majority of research and development into CTC has focused on the emergency model of CTC, adapted to a rapid nutritional response in times of food crisis. This emergency model of CTC contains six basic elements that evolve over time: Supplementary Feeding Programme (SFP), Outpatient Therapeutic Programme (OTP), Community mobilisation and sensitisation, Stabilisation Centres (SC), Food Security (FS) and other sectoral interventions and local production of Ready to Use Therapeutic Food (RUTF). To ensure that the underlying principles of high coverage, community participation, and high impact are met, CTC involves a hierarchy of intervention that governs the allocation of resources and prioritisation of activities. A basic public health hierarchy for emergency relief programmes, that prioritises lower-input interventions with a large coverage of the vulnerable population above high-input services treating a relatively few, is well accepted (14). Few would argue that in food insecure areas, giving people access to sufficient basic food, usually through general ration distribution, should almost always be prioritised over therapeutic feeding. Further down the hierarchy, SFP should also be prioritised over therapeutic feeding[3]. CTC extends that hierarchy to within selective feeding, particularly to within therapeutic feeding.

During the initial stages of an emergency intervention, a CTC programme starts as three basic elements: SFP, OTP and community mobilisation. The SFP and OTP elements are designed in a decentralised manner, with multiple distribution points served by mobile registration and distribution teams. An active prioritisation of community involvement in programme activities must accompany these (see section 5.1.2). Some of the negative effects on coverage and on programme impact of not prioritising community involvement from the outset, are described in the article on South Sudan (see section 4.1).

An important lesson from many of the CTC programmes is that community mobilisation and participation is often possible with sufficient commitment, even during the most extreme nutritional emergencies where there may be high degrees of social disruption and fragmentation. However, CTC had not been implemented in highly insecure areas, in areas where access to the population is extremely limited or where there are very dispersed populations. These are contexts that led to the development of the initial CTC concept in 1998 (see section 1). It is only through attempting to promote participation and mobilisation under these conditions that what is feasible can be determined. This is one of the priorities for the next two years of the CTC research and development programme.

During the early stages of an emergency, CTC programme stabilisation care or purpose built TFCs are not prioritised. Experience shows that once dedicated stabilisation centres are set up, the project staff's compassion and desire to help the children they see before them, almost inevitably leads to them diverting a disproportionate amount of time and resources towards the few sick inpatients. Until there is good coverage and access for the majority of people with uncomplicated malnutrition, this diversion of time and resources decreases programme impact (see section 3.3). An important lesson from the CTC programme is that in this context, decisions over prioritisation must be made rationally and implemented through considered programme design, rather than left to the individual choice of overworked project staff in highly emotionally taxing situations. The article on the CTC programme in Ethiopia describes a positive approach to this difficult dilemma (see section 3.1) The article on integration with health services describes some lessons from this experience (see section 5.3).

Once OTP and SFP coverage have been attained and steps to promote community participation and ownership are well established, more resources can be diverted towards other interventions. At this stage, programmes increase attention towards providing inpatient care for those suffering from acute malnutrition with complications, developing the local production of RUTF, and implementing a wider range of activities aimed at addressing food security and other public health interventions.

2.7 Flexibility

Making CTC programmes work as effectively as possible with local people, health providers and infrastructure, requires flexibility. The core treatment protocols in OTP are dictated by objective physiological and medical requirements and are, therefore, fixed. Although short and simple the basic OTP protocols are only three pages long and can be taught to local primary health care workers in a day. The way in which these OTP protocols are delivered is, however, context specific. The staffing of OTP teams, the number and location of distribution points, the frequency of distribution, the selection methods for community nutrition workers, links with traditional practitioners; links with MOH structures, etc., all vary greatly, depending on the opportunities and constraints of the programme location.

By contrast, the TFC model of intervention must, of necessity, be more fixed and less flexible. Current TFC manuals run to 100 - 200 pages and contain highly detailed instructions that must be followed closely in order for a TFC to operate successfully. These rigid guidelines are necessary as TFC contain many immuno-compromised patients in close proximity to one another, an environment where the risks and the potential for cross infection are high. If treatments are to be successful and epidemics avoided, there must be strict adherence to generic measures for hygiene and sanitation, delivery of drugs and foods, water and supervision.

[3] Highly insecure areas wherein provision of a general ration can provoke attacks and oppression of the target population are a possible exception to this basic rule.

Table 3: Summary Information for CTC programmes

									Outcomes OTP and SC combined					
Country	Year	Agency	Figures for Period	Ongoing or completed	No. SAM treated (OTP + SC)*	No. MAM treated (SFP)	Direct OTP Admission %	Coverage ^	Recovery	Default	Death	Transfer**	Non-recovery	Comment^^
Ethiopia - Wolayita +	2000	Oxfam	July 00 - Jan 01	Completed	1,185	-	100%	-	-	-	-	-	-	see note +
Ethiopia - Hadiya ***	2000	Concern	Sept 00 - Jan 01	Completed	170	3,000	100%	-	85.0	4.7	4.1	-	6.5	
N Sudan - Darfur	2001	SCUK	Aug 01 - Dec 01	Completed	836	25,633	98%	30-64%	81.4	10.1	2.9	5.6	-	
N Sudan- Darfur	2002	SCUK	Sept 02 - May 03	Completed	446	6,019	69%	> 60%	65.1	6.5	7.9	20.5	-	
Malawi - Dowa	2002	Concern	Aug 02 - Dec 03	Ongoing	1,900	7,564	19%	73.0% ^	69.4	15.0	8.9	3.0	2.8	
Ethiopia - South Wollo	2003	Concern	Feb 03 - Dec 03	Ongoing	794	11,573	95%	77.5% ^	74.6	9.7	7.5	-	8.3	
Ethiopia - Wolayita (Damot Weyde)	2003	Concern	Apr 03 - Dec 03	Completed	194	3,346	24%	-	69.6	5.2	7.3	10.5	-	4 registered on closure
Ethiopia - Wolayita (Offa)	2003	Concern	Aug 03 - Apr 04	Ongoing	445	4,359	94%	-	83.5	5.3	1.5	9.6	-	
Ethiopia - Sidama	2003	SCUS	Sept 03 - Feb 04	Ongoing	1,232	3,571	81%	78.3% ^	83.8	4.4	1.3	10.1****	0.5	
Ethiopia - Hararge (Golo Oda)	2003	SCUK	Apr 03 - Jan 04	Completed	232	2,332	99%	80.6% ^	85.8	6.0	4.9	3.3	-	49 registered on closure
South Sudan - BEG	2003	Concern	Jun 03 - Jan 04	Completed	610	3,844	92%	-	73.4	17.3	1.4	4.2	3.7	39 registered on closure
Ethiopia - Hararge	2003	Tearfund	Jul 03 - Nov 03	Completed	696	5,433	71%	-	81.8	15.4	1.4	1.4	0.0	58 registered on closure
	2004	Care US	Mar 04 - May 04	Ongoing	280	-	-		Too early in the programme for meaningful outcomes					
Total					**9,020**	**76,674**	**-**	**-**	**76.5%**	**10.6%**	**4.8%**	**-**	**-**	

* for ongoing programmes total treated includes children still registered in the programme and for closed programmes those still registered on closure
** This represents transfers out of the programme to another agency TFC or a hospital that is not supported by the organisation
*** This was the only OTP programme with little mobilisation or community engagement
**** Includes those transferred to the SCUS TFC as we don't have separate TFC/hospital transfer figures.
^^ Children still registered on programme closure are not included in the outcome calculations
^ calculated using centric quadrant sampling design and 'optimally biased sampling' and using a recent period coverage calculation (see Section 4.4)
\+ Data for this programme is excluded from the table. Many children were transferred to a TFC opened half way though the programme. As there was no follow-up of these children outcome data is misleading (Recovery 42.0%, Default 31.0%, Death 2.0%, Transfer 24.8%)

2.8 Choice and rights

The development of CTC has increased the range of options for individuals and communities affected by acute malnutrition. It has also increased the alternatives open to agencies and governments trying to address the problems of acute malnutrition.

The data from CTC programmes to date demonstrate that cases of severe uncomplicated acute malnutrition can be treated successfully in OTP programmes without the need for any inpatient care (see table 3). Upholding the rights of all those affected by severe acute malnutrition to access OTP treatment must be prioritised over providing those with uncomplicated malnutrition the choice of more expensive inpatient care. In all programmes where we have experience, almost all have opted for OTP. For those suffering from severe malnutrition with complications, our experience suggests that approximately three-quarters of the carers of children offered inpatient stabilisation, accept the offer.

2.9 Cost effectiveness

CTC and TFC approaches differ with regard to core expenditure and the potential for economies of scale. The TFC model is a 'fixed capacity model' and once a centre is full, other centres must be built. Apart from some economies relating to central offices and logistical support, building a second or third TFC requires a similar investment in terms of finance, materials and skilled staff, as building the first. This limits the potential for economy of scale. By contrast, the CTC model has high initial and fixed costs to recruit, train, equip and provide transport for the mobile teams, institute the decentralised logistics for food, and interact and mobilise populations. However once these are in place, a CTC programme can expand to treat several thousand severely malnourished people with little more than the extra costs of food and medicine (see section 4.5). These differences mean that the emergency CTC approach is not really suitable in areas with a low prevalence of acute malnutrition or in highly dispersed populations (see below).

2.10 Limitations of emergency model of CTC

The problem of decentralisation

The emergency CTC approach requires that OTP/SFP points are highly decentralised, located near to where the target population lives. The aim is for over 90% of the target population to live within a one day return walk of a point of access. The approach uses mobile teams that rotate between points on a weekly or fortnightly basis to facilitate the delivery of the OTP protocols, either directly themselves or where possible, supporting local clinic staff to do so. A pre-requisite is that teams have physical access to the OTP/SFP points. In our experience, this is not always possible and heavy rains making roads inaccessible, or insecurity, can prevent access. This is an important problem. In order to catch cases of severe malnutrition before they develop complications, people must have good access to OTP sites and must understand and have confidence in the programme. When carers and children have made great effort to attend an OTP distribution, a failure of the mobile team to turn up undermines this confidence, decreases attendance in subsequent distributions and increases barriers to early presentation and treatment. Such problems are partly responsible for the relatively low coverage rates of under 50% in the South Sudan programmes in 2003.

Low density of malnutrition

Even where access is possible, a low prevalence of acute malnutrition or highly dispersed populations make it difficult to balance ensuring access with maintaining cost effectiveness. In dispersed populations or those with a low prevalence of malnutrition, as coverage increases, there is a diminishing return, in terms of impact, of additional investments to create more sites or more mobile teams. For example, in North Darfur in 2001, the SC-UK team opened 110 distribution points using ten mobile teams to serve a population of under 500,000. On average, each OTP distribution site cared for only eight severely malnourished children during the five months of the programme, and could have easily dealt with five times that number with little additional costs other than for RUTF. This suggests that in areas with a low prevalence of acute malnutrition or highly dispersed populations, the emergency CTC model is not appropriate. Approaches are currently being developed to address some of these problems (see section 5.4).

Fragmented or absent communities

It is likely that there will be occasions where weak, absent or fragmented communities may reduce the potential for participation and mobilisation. However, even in the most extreme emergencies involving massive social upheaval, insecurity, displacement and destruction of classical communities, -'community' in terms of factors that contribute to identity, common understanding of meaning and experience, and common cultural perspectives -remain. This sense of community is robust against upheaval and may even be strengthened by external pressure. CTC can work with this wider definition of community to encourage participation, understanding and mobilisation.

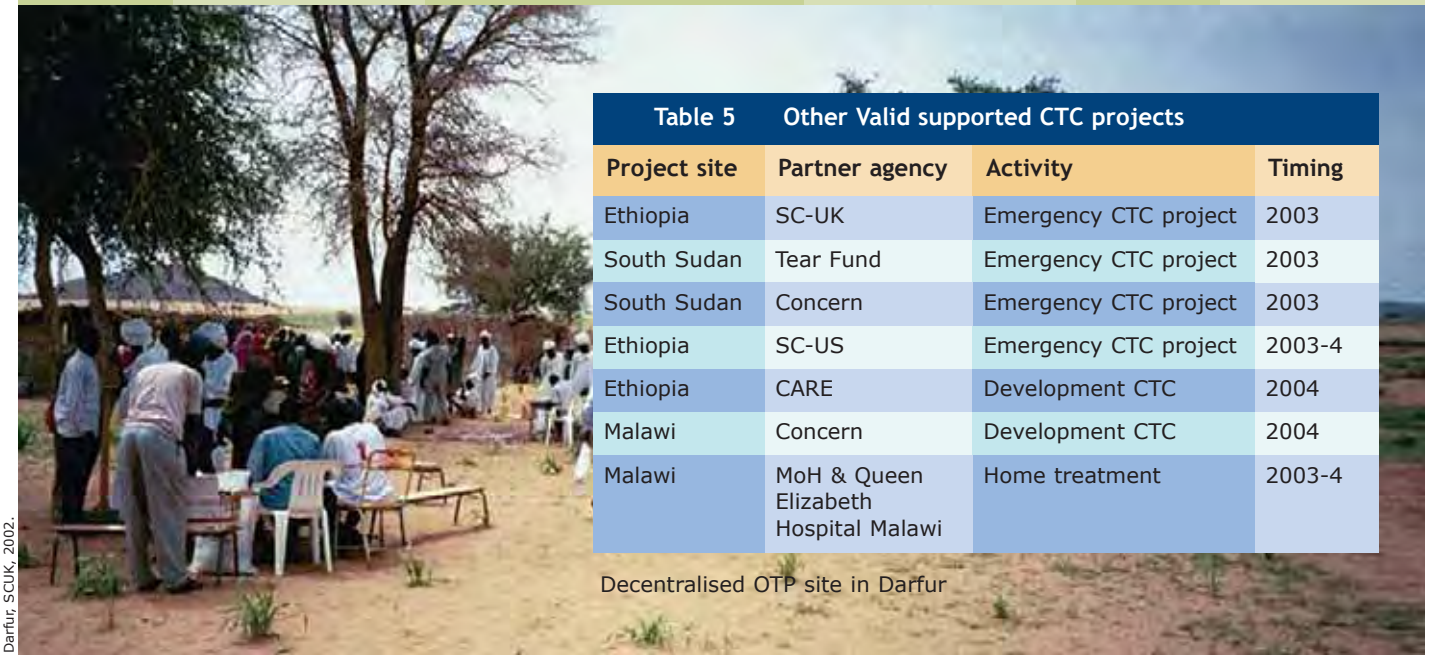
Absence of health infrastructure

In some situations there is an absence of a formal infrastructure system of health care delivery. This situation is described in the articles on South Sudan (see section 3.4 and 4.1). However even in South Sudan, networks of health care providers; traditional healers and traditional structures with a health care function exist and their participation should be actively sought.

2.11 The CTC research and development programme

The CTC research and development programme aims to research, develop and promote the CTC approach to addressing the problems of acute malnutrition. The programme consists of core research, implemented by Valid International (Valid), and operational research/implementation field projects, implemented by a variety of NGO partners technically supported by Valid. The programme began in 2000 with collaboration between Valid, Concern Worldwide (Concern) and Oxfam, to implement initial projects in Bedawacho and Bollosso Sorie woredas in the highlands of Ethiopia. In May 2001, Valid again teamed up with Concern to implement a pilot CTC project in Damot Weyde woreda, Ethiopia, and with SC UK to implement a larger CTC project in North Darfur, Sudan. Although monitoring data and evaluations of these initial projects were positive (20), we felt that the research inputs and data collection were insufficient to really analyse their impact and learn better how to implement the model. Consequently, their use in changing international humanitarian nutrition policy was limited. To address these short-comings, in January 2002 Valid formalised the development process of CTC and started the CTC programme. Within this framework, Valid provides CTC support in the form of project design, improved data collection instruments, and research nutritionists working with the programme specifically to ensure that data collection is appropriate and of a high quality and to provide expert data analysis. These measures have successfully improved data quality and comprehensiveness, furnishing us with a large evidence base with which to improve practice. In July 2002, Concern joined Valid as partners in the CTC research and development programme. To date, there have been ten com-ponent CTC projects (see table 4). In addition, since 2003, Valid has supported various NGOs to implement other emergency, transition and developmental CTC projects (see table 5).

Table 4 Summary of CTC programmes to date					
Project site	**Partner agency**	**Activity**	**Funding**	**Timing**	**Status**
Ethiopia	Concern	Small CTC pilot with emphasis on transition phase	USAID/FANTA, WHO, Concern & Valid	2001-2	Data analysis
N Sudan	SC-UK	CTC	SCF & Valid	2001-3	Data analysis
DRC	SC-UK	CTC	CIDA, SC-UK & Valid	2002	Discontinued
Oxford	Oxford Brookes University	Quality control of Malawi local RUTF Development & testing of 2 alternative RUTFs	IA & Concern	2002-3	Write up
Oxford	Oxford Brookes University	Development & testing of 2 alternative RUTFs	USAID/FANTA	2003	Write up
Malawi	Concern	CTC	IA & Concern	2002-4	Data analysis
Ethiopia	Concern	CTC	USAID/FANTA	2003-4	Data analysis
Malawi	MoH & Queen Elizabeth Hospital Malawi; Washington State University, USA	Home treatment	USAID/FANTA	2003	Write up
Malawi	Concern	Integration of CTC and HIV	USAID/FANTA/SARA	2004	Ongoing
Malawi	Concern	Field testing of alternative RUTFs	IA & Concern	2004	Ongoing



Darfur, SCUK, 2002.

Table 5 Other Valid supported CTC projects			
Project site	**Partner agency**	**Activity**	**Timing**
Ethiopia	SC-UK	Emergency CTC project	2003
South Sudan	Tear Fund	Emergency CTC project	2003
South Sudan	Concern	Emergency CTC project	2003
Ethiopia	SC-US	Emergency CTC project	2003-4
Ethiopia	CARE	Development CTC	2004
Malawi	Concern	Development CTC	2004
Malawi	MoH & Queen Elizabeth Hospital Malawi	Home treatment	2003-4

Decentralised OTP site in Darfur

2.12 Future developments for CTC

The existing data indicate that emergency CTC can achieve high coverage and good recovery rates, when implemented in an emergency context with the support of international NGOs (21). There remains a need to test the approach in a wider variety of emergency contexts such as in areas of high insecurity or in an urban environment. However, a more important challenge is adapting CTC to make it more suitable for implementation by local governments and other local actors on a longer term basis. Central to achieving this is to develop mechanisms that encourage demand for CTC and devolve responsibility for implementing CTC further towards the community (see section 5.4).

CTC 'in-situ'

In order to address the problems of dispersed, inaccessible populations, attempts are being made to develop an 'in-situ' approach to CTC. This approach further devolves responsibility for delivering care from staff at distribution sites to the villagers themselves. Teams are investigating how community nutrition workers can screen and admit children to CTC using MUAC alone and how the community can organise local transport (donkey, camel, etc) to collect the RUTF and supplementary food and distribute it to those who require it. Teams are also looking at how the medical input and quality control aspects can be performed by an OTP health worker, travelling from village to village by appropriate local transport. Developing this approach will take some time. There are ongoing studies into the use of MUAC by community nutrition workers, the means of selecting representative and competent community nutrition workers (CNW), and the development of suitable and transparent local structure to oversee the implementation of CTC at village level. Pictorial cards are also being developed to enable illiterate carers to better monitor and record the progress of children in a programme. Elsewhere, teams are looking at the feasibility of having more field-based teams moving from site to site by foot and mule, coupled with pre-positioning of RUTF and supplementary foods.

Ethiopia, Concern, 2003.

Carers waiting at an SFP distribution in Ethiopia

Closer integration with existing MoH programmes

The article from Dowa district Malawi (see section 3.2) describes how the CTC programme already operates through the same health centres, staff and community agents as the national growth monitoring programme (GMP) in Malawi. At present, the Dowa GMP has excellent coverage of children less than one year of age. This presents an opportunity to target these young children, who are susceptible to moderate malnutrition and stunting, through the existing MoH structure using the current weight for age criteria.

We hope that the development of new recipe, low cost, locally made RUTF, nutritionally adapted to supplementary feeding, might enable the same MoH clinics to target children with acute moderate malnutrition in a cost effective way. Providing a relatively low cost effective supplement could stimulate the uptake of the growth monitoring programme in this older age group and help integrate the longer term treatment of malnutrition within existing services. Using local crops and local facilities to make RUTF should help to improve local markets for farmers[4] and stimulate local economies. Producing these foods at local hospitals or clinics is extremely cost efficient and provides a potential to generate small scale economic benefits for these institutions.

RUTF

RUTF is an energy dense mineral/vitamin enriched food that was originally designed to treat severe acute malnutrition (22). It is equivalent in formulation to Formula 100 (F100) currently recommended by the WHO for the treatment of malnutrition (1). Recent studies have shown that it promotes a faster rate of recovery from severe acute malnutrition than standard F100 (23). RUTF has many additional properties that make it extremely useful in treating not only malnutrition, but also chronic illness such as HIV. It is oil based with a low water activity that, in practice, means it is microbiologically safe, will keep for several months in simple packaging and can be made easily using low-tech production methods. It can have a wide range of protein content and, as it is eaten uncooked, it is an ideal vehicle to deliver many micronutrients.

Hitherto, RUTF has been made from peanuts, milk powder, sugar, oil and a mineral/vitamin mix, according to a recipe, called Plumpynut, developed by Nutriset (22). Until 2003, the only source of Plumpynut® was from Nutriset's factory in France at a cost of approximately $USD 3500/MT, plus additional cost for transport from Europe. The high price and European manufacture of RUTF was an important barrier to the cost effectiveness and wide-scale uptake of CTC. The CTC research programme has therefore facilitated the development of fairly large scale local manufacture in Malawi, at both urban and district levels[5]. This local manufacture has approximately halved the price and also meant that economic benefits go to the target countries, rather than remain in Europe. We are also developing alternative form-ulations that do not contain milk powder or peanuts and can be made from a range of local grains and pulses. These new RUTF are eaten uncooked and have a low water content, making them suitable vehicles to deliver not only vitamins and antioxidants, but also probiotics and prebiotics. Probiotics are usually bacteria from the lactobacillus family that have many beneficial therapeutic functions, greatly reducing the incidence of post operative infection, shortening recovery times and reducing the need for antibiotics in immuno-compromised patients (24;25), and treating lactose intolerance, viral diarrhoea and antibiotics-associated diarrhoea in other patient groups (26). We believe that probiotic enhanced RUTFs have huge potential in the fight against HIV/AIDS and are currently researching the effectiveness of these in Malawi.

Developing new RUTFs that can be made locally from local crops and used locally to treat malnutrition and HIV is central to the future of CTC. There is great potential for locally produced RUTF to bind the treatment elements of CTC more closely with food security/ agricultural interventions, local income generation and Home Based Care for HIV (see below and sections 4.3 and 5.2.2).

CTC offers several important opportunities to integrate the treatment of malnutrition into wider home-based strategies to address HIV/AIDS. It is hoped that the new locally produced probiotic enhanced RUTFs will prove to be an effective therapeutic food improving the nutritional management of HIV/AIDS and helping to reduce diarrhoea (see section 5.2.2). The community focus and credibility of CTC with local people also offers a valuable entry point for home-based care of people living with HIV/AIDS (PLWHA). There are many different approaches of home and community-based care, but all have, in common, a holistic view of the problems of PLWHA and their families. At present, however, stigma and the lack of a suitable entry point at community-level often provide barriers to the successful implementation of these projects. CTC projects in Malawi are now examining culturally appropriate and practical ways of capitalising on the credibility afforded by the successful treatment of acute malnutrition to examine working with local structures to deliver longer-term support to PLWHA and HIV/AIDS affected families (see section 5.2.2).

[4] The absence of farmer markets has been identified as a major factor behind the 2002-3 food crisis in Malawi.

[5] Agreement is required with the patent-holder, Nutriset. Normally, Nutriset will permit local production up to 50 tonnes p.a. by a signed agreement with the producer.

3 Case Studies

3.1 CTC in Ethiopia– Working from CTC Principles

By Kate Golden (Concern Ethiopia) and Tanya Khara (Valid International)

In December 2002, nutrition surveys carried out by Concern Worldwide, in collaboration with Amhara Region Disasters, Preparedness and Prevention Bureau (DPPB), reported acute malnutrition levels of 17.2% global malnutrition and 3.1% severe malnutrition (based on weight for height in z scores) in Kalu and Dessie Zuria districts, South Wollo. At the same time, the Federal Disasters, Prevention and Preparedness Committee (DPPC) led multi agency crop assessment reported the harvest to be below 25% of normal, and identified half (50%) of the population as in need of food aid.

The districts have a total population of around 450,000, the vast majority of which live in chronically food insecure rural villages, spread over a densely populated and poorly accessible mountainous terrain (260,000 hectares, population density 180 people/sq km). Concern have worked in South Wollo for the last 30 years, in nutrition, health, agriculture, water and livestock programmes. In response to the 1984 famine, they implemented SFP and TFC feeding programmes in the area and still retain some of the staff who remember those days. Partly due to this legacy, Concern were eager to explore a new approach which might offer some solutions to bringing services to the population of such an inaccessible area.

Initiating CTC

In December 2002, Concern began blanket supplementary feeding in response to the emergency and in January 2003, replaced this with a targeted supplementary feeding programme, providing a two weekly ration of a local blended food. The programme was spread over 18 decentralised sites. When Valid International supported the set-up of the CTC programme in February 2003, an Outpatient Therapeutic Programme (OTP), facility for inpatient care, and an outreach programme were integrated into this existing SFP intervention. The Concern/Valid team worked on an initial target of 2500 severely malnourished children, which was calculated using November 2002 nutrition survey results.

Key features of the programme, reflecting the basic principles of CTC, were:

- **Timely set up**
  Within just a few days, it was possible to add the OTP component to each existing SFP site, with all sites becoming activated within a six week period.

Isolated village in the highlands of South Wollo, Ethiopia.

Ethiopia, Concern, 2003.

- **OTP**
  Treatment for severely malnourished children consisted of a weekly health check, provision of a RUTF ration according to weight, standard medical treatment, and basic nutrition education for carers.
- **Formal training**
  Training of Concern and Ministry of Health (MoH) staff to implement the programme required only two days. This training covered the basics of malnutrition, identification of severe malnutrition, medical assessment, feeding and drug protocols, RUTF education, and record keeping.
- **Sites at existing health facilities**
  Sites were then set up at existing SFP sites, using clinic or health centre facilities wherever possible, for weekly health checks.
- **Ongoing support**
  Close supervision and ongoing training at the distribution sites was then carried out by Concern and MoH supervisors.

Concern outreach workers (who would live and work in the communities they were serving) were also trained on basic malnutrition, the structure of the programme, referral (using MUAC and oedema assessment) and follow-up through home visits for children not responding well to treatment.

Focus on achieving high coverage and good access to services

It was hoped that maximum access to services for the whole population would be achieved by setting up OTP sites quickly, and focusing the activities of outreach workers on mobilising communities through local contacts (traditional leaders, community workers), as well as active case-finding. The aim was to provide OTP services within three hours walk of all villages. In a minority of 'difficult access' areas, carers were given the option of attending sites on a two weekly, rather than weekly, basis thus avoiding subsequent default.

The aim of the strategy in the initial phase of implementation was to focus staff and resources on the OTP, and not to set up any new inpatient care for the severely malnourished until good coverage had been achieved. The provision of inpatient care, for the minority of complicated cases, was established through rapid but low level support for the MoH central hospital and is discussed in more detail in section 5.3

From the outset, the Concern and MoH team worked to maximise the profile and understanding of the programme in the community, by encouraging carers of registered children to take on an informal mobilisation role in their villages, encouraging others, with children in a similar condition, to attend. During the rainy season, when access roads to some sites became impassable, Concern went to great lengths to maintain SFP/OTP distributions, by employing donkeys and pre-positioning food. These actions were vital to avoid interruptions in treatment and maintain carers' confidence in the programme.

Some months into the programme, the team started to conduct Focus Group Discussions (FGDs) at sites to investigate barriers to uptake of the programme. These proved extremely useful, as feedback during the sessions revealed access issues in particular areas and led to the opening of extra sites. FGDs also highlighted dissatisfaction amongst some carers, generated by confusion over the use of MUAC (village level referral) and WFH (admission) selection criteria. This 'bad feeling' was discouraging some carers, after initial rejection, from bringing their children back to the site if their condition deteriorated. It was also deterring others in the community from attending. Based upon these findings, we adopted a system of compensation (soap) for those referred to the programme through outreach workers using MUAC, but who, due to the difference between the MUAC referral criteria and standard weight for height admission criteria, were not subsequently admitted. We received very good feedback on this strategy.

This commitment to maximising coverage bore fruit and a survey, carried out in June 2003, estimated OTP coverage at 77.5% (C.I 65.7% to 86.2%). The survey employed a new method for estimation of coverage using a stratified design, with strata defined using the centric systematic area sampling approach and active case-finding (see section 4.4). A calculation, based on revised targets from a March 2003 nutrition survey (severe malnutrition rates had fallen by this time to 1% based on z scores), shows a similarly high estimate of coverage at 67.7% by May 2003, only three months into the programme.

Integration with, and support of, the existing health structures

Despite running feeding programmes in response to emergencies in the area for the last 30 years, Concern had not previously established close links with the District or Zonal Ministry of Health or involved them actively in programmes. As part of the CTC programme, Concern sought advice from both District and Zonal health departments and began to forge links during planning and implementation of the OTP. The Valid/Concern team jointly decided that Concern would train existing MoH clinic workers to carry out the OTP, linking with Concern SFP distribution teams. Medical supervision for the OTP would be split between Concern Medical Workers and

Ethiopia, Concern, 2003.

A mother and child wait to see the OTP nurse in Ethiopia.

Ethiopia, Concern, 2003.

Concern outreach workers measuring MUAC of potential beneficiaries in their villages, Ethiopia.

Ethiopia, Concern, 2003.

Concern outreach workers measuring MUAC of potential beneficiaries in their villages, Ethiopia.

Ethiopia, Concern, 2003.

All equipment needed for the OTP distributions (apart from the SFP food) fits on top of a landcruiser in Ethiopia.

MoH Supervisors, seconded from the district health offices. Though existing commitments and turnover of MoH staff necessitated periodic retraining and increased Concern supervision, both parties continue to be extremely positive about the partnership. The benefits have continued as the process of handing responsibility for the treatment of severe malnutrition over to health facilities now begins.

The team decided against setting up separate inpatient facilities at the beginning of the programme. Based upon prior experience in other CTC programmes, it was felt that this prioritisation was vital in order not to divert the attention of the field teams away from outreach, mobilisation and the OTP. However, due to the need for inpatient care for a minority of cases, the issue was discussed with the director of the Zonal hospital[1] who agreed for the paediatric ward to act as a referral unit for the phase 1 treatment of severely malnourished requiring inpatient care (those with severe medical complications, poor appetite or severe oedema).

Though initial progress in gaining acceptance of updated therapeutic feeding and drug protocols was slow, close dialogue with the medical director and respect for the constraints being experienced by staff led to great improvements in the care of the severest cases. This is demonstrated in the outcome indicators achieved (see table 6) with hospital mortality rates falling within Sphere standards despite the cohort of children representing the most severe cases. Before the start of the programme, the medical director of the hospital had reported that 50% of severely malnourished children treated in hospital died.

Outcomes

To date (Jan 2004), outcome indicators for the CTC programme in South Wollo have compared favourably with the Sphere Project's international standards for therapeutic care (table 6).

Weight gains and Length of Stay

Initial calculation of average weight gain of children discharged and recovered was 4.4g/kg/d and total length of stay was 81 days. The long length of stay and low weight gains in the programme reflect some of the challenges faced by a home-based programme, as factors inherent to the home environment (e.g. poor water sources, endemic malaria, poor quality family foods and sub-optimal caring practices) will affect the recovery time of some children. It also reflects using 85% WFH as discharge criteria, despite the presence of the SFP[2] to minimise readmissions. However, subsequent CTC programmes have successfully used 80% WFH as discharge criteria where an SFP is in place. Though testing for TB in the hospital identified some cases, the predictive quality of the testing was poor and therefore the impact of chronic diseases, such as TB and HIV/AIDS, on length of stay is likely to be more significant than data suggested.

Outreach

A system of outreach home visits, using a checklist for discussion and observation, was put in place at the beginning of the programme. The aim of these visits was to investigate possible reasons for non-response and offer support in terms of health and nutrition education. Efforts were also made to make sure, through advocacy with government and community targeting committees, that all OTP beneficiaries were registered for EGS[3]. This process was complicated by the community targeting process, which is based mainly on economic vulnerability (i.e. doesn't necessarily identify households with a malnourished child as vulnerable), and the fact that targeting normally takes place periodically (every 3-6 months), whereas families were entering the OTP every day. Though the general consensus of follow-up visits and of an anthropological study carried out by Valid International was that sharing of RUTF was not a major issue, it is likely that a degree of hidden sharing was happening, and that the root of this lay in resource scarcity rather than lack of knowledge.

[1] Serves a population of 2.4 million.
[2] On discharge from the OTP children were referred to the SFP for a minimum of 2 months.
[3] Employment Generation Schemes - form by which General Ration is distributed in Ethiopia.

Mountainous terrain proved a challenge to gaining access to the population of South Wollo, Ethiopia.

Ethiopia, Concern, 2003.

Outreach workers followed up all defaulters within the programme in order to better understand the causes, encourage return and to uncover any 'hidden' deaths (table 7). The main reasons found for default were that the mother or child was sick or that the carer had moved out of the programme area. Particularly during the rains, lack of access to sites also became a main cause of default, but one that all efforts were made to reduce.

Future Challenges: moving into a period of handover

Following a relatively good harvest for most of the population at the end of 2003, the need for an acute emergency response in this project area is diminishing. The CTC programme has begun a six-month transition period to gradually hand a more streamlined programme over to the community and the government health structure. Planning this handover has required the active participation of all stakeholders, with the Concern team and partners in the MoH and the community coming together to plan roles and responsibilities, and jointly predict and solve problems.

Priorities over this transition period are:

1. To work closely with the MoH to strengthen their capacity to manage and supervise the programme and to maintain a simplified monitoring and reporting system.

- In order to maintain a manageable system for clinics, all children will now be seen on a 2 weekly basis.
- Concern will likely continue to provide RUTF over the next year but is currently in the process of setting up local RUTF production. This will dramatically reduce costs and therefore, open up possibilities for government purchase.
- The provision of medicines for OTP will also be an issue. At present it is not known whether the MoH will be able to maintain the free OTP service and if they cannot, what impact this will have on service uptake and compliance. A government 'free paper' welfare system does exist to cover hospital expenses for the poor and part of the strategy will be to improve this system (currently takes 3 days to receive the paper) for critical cases referred from the clinics.
- Logistical support for the delivery of supplies to the dispersed network of clinics will likely need to continue initially for the short term, although alternatives are being investigated, particularly those involving more community participation. The system for referral to the zonal hospital of cases of complicated malnutrition, previously transported by Concern, is also being discussed.

2. To hand over sustainable screening, referral and follow-up activities to community volunteers at the village level.

- At the time of writing, more than 2,000 volunteers have been elected by their communities and trained in the use of MUAC and confirmation of oedema, so they may continually screen and refer severely malnourished children to the nearest clinic for treatment. At present, paid Concern outreach workers are still in place to support these volunteers, but it is hoped that local and district level

Table 6: CTC Interim Outcome Monitoring data, Ethiopia (Jan 03 - Jan 04)

Exit	Hospital		OTP		Combined	
	n	%	N	%	N	%
Discharge	152	90.5%	440	66.0%	440	74.6%
Default	-	-	57	8.5%	57	9.7%
Death*	16	9.5%	28	4.2%	44	7.5%
Transfer**	-	-	93	13.9%		
Non-recovered***	-	-	49	7.3%	49	8.3%
Total	168	100%	667	100%	590	100%
Still in project	0		204		204	

* All OTP deaths were followed up. All were in the under 2 age group and did not occur in the early stages of treatment (average length of stay was 50 days). Ten were children admitted with oedemas, 10 occurred in children who had already spent some time in the hospital and 3 occurred when the carer refused to be transferred to the hospital. The main causes of death reported by the families were diarrhoea and suspected malaria and cough.

**The percentage of transfers from the OTP to the Hospital is high, partly due to a proportion of children with poor weight gain being sent for investigation of underlying chronic disease (e.g. TB). Of 93 transfers, 19 returned with positive TB results (based on x-ray) and subsequently continued in the OTP whilst receiving standard Directly Observed Treatment Short Courses (D.O.T.S). The outcomes of all transfers are represented in the combined results.

***After 4 months in the programme, cases who had not yet attained the discharge criteria of ≥85% WHM were reviewed by the supervisory team. Those over 80% WHM were discharged non-recovered if their weight was remaining stable and if all alternatives (counselling, home-visit, or hospital referral for investigation of chronic disease), had been pursued. Many of these cases were found to be children with some physical disability.

administrators will be able to assume responsibility for overseeing and motivating these volunteers so that referrals are sustained in the future.

- The strategy of using MUAC as entry criteria, rather than WFH, came from consideration of the problems of having different referral and admission criteria and the need for a practical measure that community volunteers could use at a village level. The rejection issue, discussed above, is heightened due to the absence of the SFP and the compensation strategy would be impossible for the MoH to sustain. We are currently investigating the implications of this strategy and of lowering height cut-offs for the use of MUAC in a stunted population.
- We also hope that working links can be forged between community volunteers and the clinics for effective follow-up of absent or sick children and other activities, e.g. vaccination campaigns.

3. To make modifications to the programme to compensate for the lack of an SFP.

- The high logistic demands of a decentralised SFP programme preclude this being implemented by the government as a normal activity.
- As all aspects of the programme will now be handled through the clinics, a system for nutrition education, both at the point of entry into the programme and subsequently linking through community volunteers/carer groups, will be needed.
- One concern, in the absence of the SFP, is that without assistance for the continued recovery of the OTP beneficiaries after discharge, readmissions will increase. As the harvest was fairly good for most areas, improved food security within the household should mean that children are able to continue their recovery through the use of local foods at home. An education programme promoting the preparation of quality complementary foods and continued breastfeeding, through clinic workers and community volunteers, is being developed to try to aid this process. However general food security and the nutrition situation, including the level of readmissions, will need to be closely monitored in order to identify and act if the situation deteriorates.

Table 7: Information on Defaulters, Ethiopia (Jan 03 - Jan 04)

Total defaulters	Traced	Average time to default	Deaths*
n	n (%)	days	N
57	45 (79%)	78	6

*Including these deaths in the overall statistics would give a mortality rate of 5.1% for OTP.

Conclusions

There have been a number of major lessons learnt from the Wollo CTC experience. First, the partnership with the central hospital for the provision of phase 1 care successfully allowed the field team to concentrate on treating the majority of severely malnourished children in OTP, without compromising care for complicated cases. The other advantage of this strategy of low level, but consistent, support for the hospital is that a sustainable service for the provision of standard phase 1 is now available for all children in the hospital's catchment area.

Focus on outreach has also been key to the success of the programme, leading to excellent coverage of both severe and moderate malnutrition through flexibility in addressing issues such as mobilisation and access. Though the strategy has been reliant on externally recruited outreach workers, they have become firmly rooted in the communities they serve, particularly in the more remote areas. As a result, natural links have been forged with other community workers, including agricultural extension and family planning agents, teachers, and community leaders, building a basis for a more sustainable strategy in the future.

In the challenging terrain of South Wollo, logistics proved one of the most demanding aspects of the programme. Getting teams to and from distribution sites was a challenge, particularly during the rains when various access roads became impassable. For future programmes, having more field-based teams that are able to move from site to site by foot and mule, coupled with pre-positioning of food, would be recommended. Dialogue with the community on appropriate solutions to access, from the outset, may also yield less costly alternatives.

One of the failings of the Wollo CTC programme was the limited sectoral integration between the CTC programme and longer term food security, and water and sanitation programmes that were running at the same time. Though the team did make great efforts to ensure that programme beneficiaries were tied into the EGS general ration, in retrospect, by integrating sectors (targeting of agricultural inputs or water supply improvement in particularly affected areas), we could have done more to address the underlying causes of malnutrition for beneficiary families.

Finally, the full potential for sustaining both community and MoH participation and ownership of the programme, over the long-term, remains to be seen. This process inevitably requires careful evaluation and flexibility. At all levels, it will involve balancing the needs for effective targeting, and treatment of severely malnourished children with the objective of community and MoH management of the programme.

The South Wollo highlands, Ethiopia.

Ethiopia, Concern, 2003.

3.2 Integrating CTC in health care delivery systems in Malawi

By Kate Sadler & Tanya Khara (Valid International), Alem Abay (Concern Malawi)

In February 2002, the Malawi government declared a national nutritional emergency and the UN launched an international appeal for emergency assistance. The national Ministry of Health and Population (MoHP) and the humanitarian community began to develop strategies for the treatment of the large numbers of severely malnourished that were predicted. Nationally, a strategy of upgrading the 115 Nutritional Rehabilitation Units (NRUs) across the country was adopted, with the aim of each NRU being able to provide centre-based therapeutic treatment by the end of the year. UNICEF and several non-governmental organisations (NGOs) provided therapeutic products, training and support for this strategy. At the same time, the MoHP gave Concern Worldwide and Valid International (Valid) permission to pilot CTC in two districts in central Malawi.

In Dowa District, the CTC programme was set up for delivery through the existing health system, with Concern and Valid providing mobile CTC teams to deliver training and on the job support for health system staff. The programme consisted of:

- Decentralised supplementary feeding programmes (SFP) delivered through 17 MoH/CHAM (Christian Health Association of Malawi) health units on a fortnightly basis.
- Decentralised outpatient therapeutic feeding programmes (OTP) delivered through 17 MoH/CHAM health units on a weekly basis.
- Stabilisation centres (SC) for phase 1 treatment delivered through four nutritional rehabilitation structures.
- Community-based case-finding, referral and beneficiary follow up using traditional authority structures, mother-to -mother networking and community based health staff.
- Integrated agricultural extension through Concern's food security programme.
- Local production of RUTF at one CHAM health unit.

Outcome Indicators

To date (Dec 2003), outcome indicators for this CTC programme compare reasonably well with the Sphere Project's international standards for therapeutic care (table 8).

Importantly, CTC programme coverage, a key determinant of impact in any humanitarian intervention, is high, approximately three times greater than TFC coverage achieved with international NGO support in the neighbouring District of Mchinji[1], and far higher than the national average. These findings are summarized in table 9.

This combination of acceptable outcome indicators and high coverage has produced high impact for the emergency CTC programme. However, in the context of Malawi, where poverty and under-nutrition are long-term structural problems, this short term impact, achieved with high levels of external input, ultimately bears little relevance to the main problems facing the state and people. From the start, one of the main attractions of the CTC model has been the possibility that short-term emergency interventions may lay a foundation for longer term, more sustainable, benefits. The rest of this article focuses on the post-emergency measures that were taken to try and realise this potential.

Integrating CTC services into the district health system and community

One of the central principles of the CTC model is for CTC programmes to integrate with local health structures and services. This bridges the natural friction between the priorities of a short term, high input emergency intervention and those of a longer term, resource scarce development intervention. For this, a strong partnership at a District Authority management and supervision level is essential, if local services are to commit to CTC in the longer term. From the outset, the Dowa programme worked well with the existing MoPH and CHAM structures, supporting primary health care unit staff to carry out OTP and SC protocols. However, the majority of the day to day planning, problem solving and supervision was done solely by Concern, with very little input from District Authority managers. To some extent this has hindered the full integration of CTC services into Dowa health structures.

Although now in the process of trying to integrate all aspects of CTC delivery into the District health system and community structures in Dowa district, this is presenting further challenges and has highlighted some of the strengths and weaknesses of the initial CTC implementation in Dowa. The lessons learnt from

Table 8: Interim monitoring results from Dowa District, Malawi, CTC project, Aug 2002-Dec 2003

	Stabilisation Centre		OTP		Combined	
Exits	n	%	N	%	N	%
Discharged	1299	87	1160	69	1160	69
Death	101	7	47	3	148	9
Default	25	2	242	14	267	16
Referred to hospital/SC	50	3	217	13	50	3
Other	20	1	26	2	46	3
Total	1495		1692		1671	

Table 9: Direct estimations of CTC coverage in Dowa and TFC Mchinji districts, Malawi, March 2003

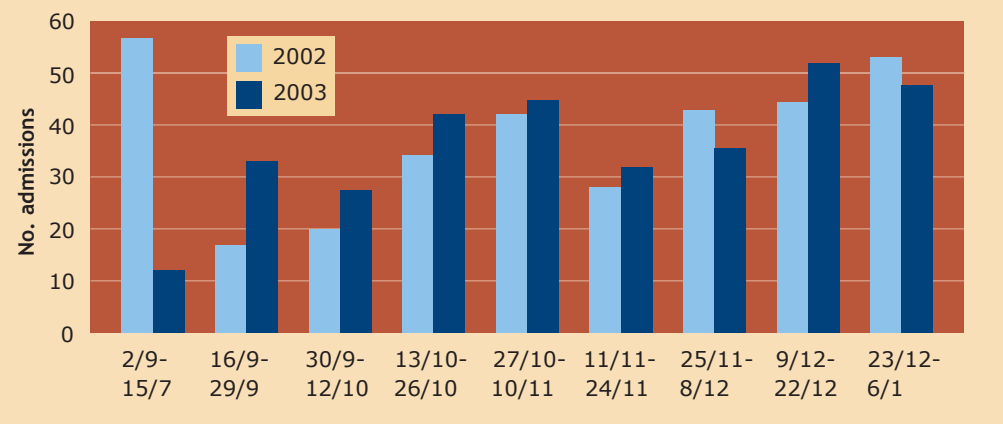
Project	CTC in Dowa	TFC in Mchinji
No. of severely malnourished identified	76	136
No. of children in feeding programme	46	29
Coverage (%)	61	21
95% Confidence interval (%)	48.7 - 71.6	14.8 - 29.2
Coverage WFP/UNHCR method (%)	73	28
95% Confidence interval (%)	63.6 - 80.1	20.8 - 35.8

HSAs helped by Concern supervisors record the progress of OTP children in Malawi.

Valid International, Malawi, 2003.

[1] Feeding Programme Coverage Survey for Severely Malnourished Children Dowa and Mchinji Districts, Malawi. April 2003. T. Feleke & M. Myatt.

Figure 1: Admissions to the OTP in Dowa District Sept-Dec 2002 and 2003



Malawi, Concern, 2003.

A traditional healer in Malawi.

this process will direct systems for the expansion of CTC into other Districts in Malawi.

Platform provided by the emergency programme

Several aspects of the emergency CTC programme are aiding the transition process:

- CTC now appears to be very popular with the target population. Though mistakes were initially made due to the programme's failure adequately to consider community structures in the rush to implementation (see section 5.12 on community mobilisation), figure 1 shows that uptake of services remains as high now as it was one year ago[2] . This is important, as since July 2003, presentation of cases to the CTC has been as a result of mother-to-mother notification and mobilisation by the traditional authority structures, in collaboration with MoH community health workers (Health Surveillance Assistants - HSAs), rather than active outreach performed by NGO workers. This method of mobilisation can be sustainable.
- Data from anthropology studies conducted in March 2003 indicate that there had been a shift in the perceptions of traditional practitioners. This group are now more likely to attribute malnutrition to nutritional causes and refer people to the CTC for treatment. Traditional practitioners represent the first line treatment of malnutrition in Malawi and are therefore, potentially a vital outreach and referral resource. This method of case finding could be sustainable.
- There are now a large number of trained community and government health workers who understand OTP protocols and are able to implement them, and a widespread network of clinics that are already delivering the OTP protocol every week with minimal input from Concern staff.
- There are three stabilisation centres run by local partners that provide high quality phase one care.
- Links are developing between CTC and general strategies being developed in Malawi for the support of HIV affected people.
- Now that RUTF local production is well established, there is good potential to make production self-sustaining by using cheaper local ingredients, such as soya beans and chickpeas.
- The reputation of Concern and of the CTC programme within Dowa and at the MoH in Lilongwe is now very good. The success of the programme has generated a sense of pride in all those who have been involved in its implementation. As a result, the MoH at national level is keen for CTC to expand to other districts and the Dowa District Health Office is enthusiastic to establish the programme in the longer term.

Existing Challenges

In order to complete a successful handover, a scaled down Concern team are trying to focus on a number of key areas of weakness.

Supervision and monitoring of service delivery and impact

Both the District Health Officer (DHO) and the MCH co-ordinator for the District were consulted in the planning and implementation of the emergency programme. However the degree of collaboration needs to move from one of information sharing, to active involvement in the planning, supervision and reporting process. At present, the MCH coordinator makes ad hoc supervisory visits to health centres and NRUs implementing the CTC programme. The DHO (a clinician) makes monthly visits to each health centre as part of his existing work, during which time he reviews children in the OTP who are not responding well to treatment. However, all supervision and reporting implemented by Concern has, to date, happened in isolation of that implemented by DHO staff. This must be a focus for changeover in the coming months. Regular joint planning and problem solving meetings will give the DHO an opportunity to direct Concern to areas where they need extra support.

Scheduling of joint field supervision visits with existing/established checklists will help the MCH co-ordinator to gradually take on responsibility for this role. This must be coupled with improvements in the sharing of programme monitoring statistics and reporting, both with the DHO and clinics. The strengthening of this system of information sharing is a prerequisite for development of the central reporting role of the DHO in the future (see section 5.3).

Stock movement and accountability

At present, Concern moves both supplementary food and RUTF to health centres and NRUs. In June 2004, the supplementary feeding programme will phase out. This will reduce the weight of food commodities requiring delivery by over 72%, leaving only RUTF requiring transport from the district production site to the local distribution points.

The CTC support team will focus on two potential systems for RUTF delivery in Dowa:

i) Integrating delivery into community-based systems. A Valid anthropologist will explore possible mechanisms for community-based transport systems in Dowa.
ii) It is feasible that RUTF, along with F100 and F75, be included on the list of essential medicines for Malawi. In this case, it could be delivered through the existing drug delivery mechanism in Malawi.

Local health staff at the health centres and NRUs are currently implementing Concern's systems of stock control and Concern is collecting data and monitoring stock usage. Many centres have already implemented WFP SFP distributions according to WFP

[2] Nutrition surveys have highlighted that there is no significant difference in rates of severe acute malnutrition over the seasonal hungry period of 2002 and 2003. Nutrition survey results were 1.1% (CI: 0.1-2.0) in Jan 2003 and 0.7% (CI: 0.2-2.2) in Jan 2004.

guidelines. Thus, similar modified stock control systems could be developed, presenting little change from those already familiar to centre staff. At a higher level, the Concern CTC team is increasing support to the DHO for central stock control and reporting, in order to facilitate their future accountability to MoH/donor agencies.

Delivery of CTC from health centres and NRUs

All health centres and NRUs are now implementing CTC with little input from Concern. At the centre level, however, the need for support is very variable according to each centre's staff capacity, caseload and motivation. To better focus inputs, the CTC support team is conducting capacity assessments at each site to identify areas that require strengthening. It is likely that strengths at some centres can provide lessons to address weaknesses in others. At this stage, it will be important to look at centres individually and come up with flexible strategies for these issues. This is somewhat of a departure from the previous focus on general protocols. A general challenge at this level is systems of communication. Good follow up of children referred between NRUs and health centres requires some rigour and a functional communication system. Communication is also difficult between health structures and the DHO. Improving communication would improve feedback and enhance the ability of the system mangers to learn and solve problems.

Community-based support systems

From the start of the programme, HSAs have been very involved in the delivery of treatment from health centres, in working with the Traditional Authorities on community sensitisation, following up those in the programme, and tracing defaulters. However, HSAs already have a high workload in Malawi, being responsible for all vaccination, growth monitoring, community outreach and education. The CTC programme in Dowa is now in the process of strengthening links with the non formal sector, as an alternative mechanism for sustaining referral follow up and support at community level. Experience suggests that the high levels of 'positive feedback' associated with recovery from acute malnutrition provide a potent force to generate enthusiasm and motivate individuals at the community level to get involved (see section 5.12)

The evidence is that referrals can be maintained through mother-to-mother networking and the Traditional Authority structures. In addition, HSAs are now beginning to strengthen and, to some extent, formalise their links with networks of volunteers, already active at community level. Volunteers include community growth monitors, traditional birth attendants, agricultural extension workers, village health committee members and mothers that have been in the programme. These volunteers are helping to maintain case finding and referral at village level. However, it is being found that volunteers do require some small incentives if their role is to include assisting the HSAs in the follow up of children in the programme and of those that default from treatment. With the DHO, the team are considering the suitability of providing materials that help communities associate these volunteers with the programme.

Changing perceptions

The success of the consolidation and handover process is not just reliant on the relationship Concern manages to build with the DHO, MoH health staff and HSAs. Communities' understanding of the handover process and of the increased responsibility of the MoH are vital if they are to remain committed to and engaged in the programme. Communities have recently expressed their concern with the lack of transport for referrals between NRU's and OTP sites, as this was carried out during the old programme. Using existing communication channels, it will be important, throughout the handover process, to inform and involve community leaders in programmatic changes (see section 5.12)

[3] The impact of the human immunodeficiency virus type 1 on the management of severe malnutrition in Malawi. L. Kessler et al; Annals of Tropical Paediatrics (2000) 20, 50-56.

Multi-sectoral programming

The close links between Concern's food security programme and CTC are providing an opportunity to tackle some of the root causes of malnutrition in Dowa District CTC (see section 5.21). In principle, CTC is also well suited to providing support for those affected by HIV/AIDS in Malawi, for example:

- CTC provides a mechanism by which people can be cared for in their homes. The opportunity costs associated with home care are less, which could help households and communities affected by HIV/AIDS maintain economic productivity. Care and psycho-social support are also easier to provide in familiar surroundings.
- By treating common complications of HIV/AIDS, such as acute malnutrition, in the home rather than in hospitals or TFCs, CTC has the potential to decrease the frequency and shorten the duration of inpatient admissions, helping to relieve pressure on hospitals. In addition, maintaining people in their home environment reduces exposure to foreign pathogens and should reduce the frequency of nosocomial infections.
- The programme provides new, specially designed, therapeutic diets and medical protocols. There is emerging evidence that the provision of high quality therapeutic foods of a high energy density and an optimal balance of essential micro-nutrients prolong productive life and increases the time before HIV/AIDS leads to illness and death.
- A large proportion of the CTC caseload already comprises people living with HIV/AIDS (PLWHA). A previous study showed that approximately one third of severely malnourished children admitted to a central Malawi NRU were HIV positive[3]. The study took place at the height of the hungry season and the proportion of admissions with HIV would be expected to be higher in the non-hunger periods. HIV infected children are found within families already affected by HIV, therefore using CTC as an entry point could focus initial interventions towards HIV affected families.
- CTC can provide an entry point for health care workers to establish a presence at community level and give them space to plan interventions. This is important as the stigma attached to HIV/AIDS in Malawi society makes identifying affected families very difficult. At the same time, experience has shown that interventions that involve spending long periods researching and planning, without providing visible assistance rapidly, become unpopular in Malawian villages.
- CTC identifies and develops existing social support networks. Malawi and Bantu culture is based around the interdependence of individual, family and village. Caring for people in their community, instead of removing them to hospital, is more culturally acceptable.

Conclusions

The Dowa CTC programme achieved good short term impact. It saved lives and reduced morbidity by achieving high coverage and good cure rates. It also achieved a level of integration at village and health centre level, by implementing the programme through local staff from the Dowa health structure and linking with HSAs in the community. However by its nature, the emergency programme was largely a vertical one and the relationships and links made with existing infrastructure were essentially imposed from the outside. The challenges ahead lie in modifying and further developing these relationships. At a district health level, this involves moving the collaboration that exists from simple information sharing to active involvement in the planning, supervision and reporting processes for CTC. At a community level, it means rooting CTC implementation further into the non formal community health systems of Dowa. Initial signs are that the challenges of transiting smoothly towards local management and sustainable case finding and follow up are being gradually met. Consequently it is believed that this programme holds great opportunities in Malawi, not only for the long term treatment of acute malnutrition, but also for the provision of support to those living with HIV/AIDS.

3.3 CTC in North Darfur, North Sudan: challenges of implementation

By Kate Sadler (Valid International) and Anna Taylor (SC-UK)

North Darfur state lies 1000 km to the west of Khartoum. It is an area the size of France but is inhabited by only 1.4 million people. The state has considerable variation in vegetation, ranging from desert in the north (average annual rainfall of less than 100 mm), to arable land in the south (average annual rainfall of 100 - 300 mm).

The state is divided into six food economy zones, each representing an area where a different livelihood strategy is dominant. The majority of the population practice traditional, subsistence-orientated rain fed agriculture, predominantly of millet. In addition to subsistence farming, there are pastoralist communities who depend on camels, cattle, sheep and goats, and cash crop farmers who cultivate chewing tobacco, sesame, groundnuts, vegetable and watermelon seeds.

The area has a long history of severe food shortages. Major famine, resulting in widespread loss of life, occurred in the late 18th century, 1913-14 and more recently in 1984 - 85. Since this time, there have been cyclical episodes of drought, which have gradually eroded traditional coping mechanisms. In October 2000, annual assessments of food needs concluded that crop production in two thirds of the North Darfur villages was poor or very poor. Subsequently, nutritional surveys implemented by Save the Children UK identified rates of acute malnutrition of > 20% in the under 5 population, and a severe food security situation.

Top: People waiting at a clinic in Darfur, North Sudan.
Below: Child eating plumpynut® in Darfur, North Sudan.

SCUK, 2002.

SCUK, 2002.

In response to this situation, SC UK, with support from Valid International, began implementing a community based therapeutic and supplementary feeding programme, sited in ten of the worst affected districts. The programme was very decentralised, where 104 distribution sites allowed beneficiaries good access to treatment without requiring them to spend prolonged periods away from their fields. Six mobile teams assessed children and provided medical and nutritional treatment at weekly outpatient sites while a network of community nutrition workers screened and followed up children in the villages.

This programme was a short term emergency response to high levels of acute malnutrition. Although it allowed local structures and communities to experience the benefits of such a decentralised approach, it was not without consequences. The sudden programme closure was a de-motivational force for the many community workers and health staff trained to work on the programme. In addition, such a short timeframe does not make efficient use of the high inputs required to train and organise a large field team.

Revisiting CTC in North Dafur

In 2001, annual food needs assessments in North Darfur once again predicted large shortfalls in food availability for 2002. Following nutritional survey assessments in May 2002, SC UK and Valid International again began implementation of an emergency nutrition response. Evaluations of the previous year's community based therapeutic and supplementary feeding programme had highlighted a number of potential advantages for North Darfur over a more centre based treatment programme:

- Decentralisation of treatment sites improves access for a target population who are widely dispersed over a large target area.
- Minimal existing capacity in local health structures favours the set up of small, simple units rather than larger, more resource intensive centres.
- The home-based treatment regimen requires much shorter stays in centres. This reduces disruption to subsistence farming and other activities in the home.

The same approach was therefore adopted for intervention in 2002. Based on recommendations made in the 2001 programme's evaluations, some adaptations were made in 2002 to programme methods and protocols.

A team of four SC UK national staff (managers and nutritionists) and one expatriate advisor, trained 16 field staff and 20 staff from local health structures in the first three weeks of the programme. During the subsequent three week period, the programme scaled up to operate through a system of 57 decentralised distribution sites, positioned strategically to maximise beneficiary access across the target area. From these sites, the SC UK field staff conducted anthropometric screening to identify patients, and administer nutritional and medical treatment for all those registered on the programme. A network of community nutrition workers (one from each village in the target area) provides follow-up support at home. A high proportion of these workers had been trained during the previous year's programme and were keen to be involved in the

intervention again. This made the re-activation of community screening and follow-up easier as both staff and beneficiaries were already familiar with the programme's objectives and methodologies. SC UK also supported four small stabilisation centres (SCs). Based in local health structures, they provided phase 1 care only to children with severe complicated malnutrition whose carers agreed to their being admitted as inpatients.

Key programme activities

Dry supplementary feeding is provided for all moderately malnourished children under five years old. Each child receives 4kg of a fortified blended food (UNIMIX) mixed with oil and sugar, according to national and international protocols.

Medical screening and treatment of all malnourished children is carried out, with subsequent referral for those with complicated malnutrition who are too sick to be managed at home and agree to a period of inpatient admission.

Each distribution team includes a medical assistant who screens patients for acute illness, verifies measles vaccination and vitamin A status and provides a single curative dose of an anti-worm drug. Children found to be ill or unvaccinated are referred to the nearest clinic or dispensary.

An **OTP** is available for all children under five years with

Table 10: Combined SC and OTP Outcomes (March 2003)

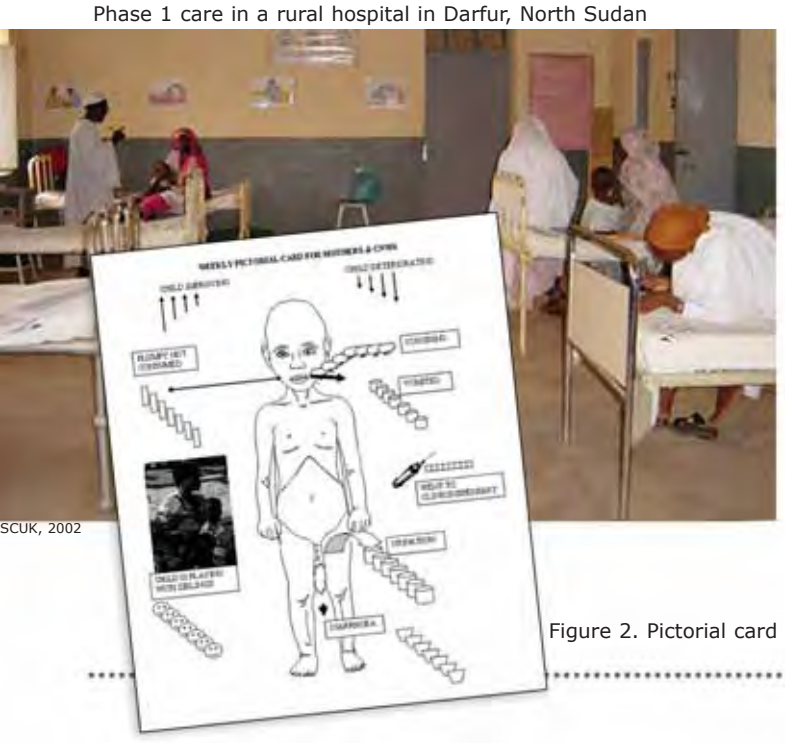
	%
Programme outcomes	(n=299)
Mortality	7
Default	6
Recovery	61
Transfer*	26
Coverage	50-100

*Transfer: The high transfer rate at this stage of the programme is predominantly the result of a protocol introduced to identify children demonstrating poor weight gain. These children were all transferred back to a stabilisation centre in order that any underlying infection could be treated and weight gain improved before programme end, when all children were to be discharged.

Table 11: The proportion of children in the community screened

District	% coverage from CNW reports (Nov 2003)	% coverage from mid-term coverage survey (Nov 2003)
Mellit	61	93
El Fasher	77	90
Sayah	95	92
El Kuma	75	88
El Malha	90	55

Phase 1 care in a rural hospital in Darfur, North Sudan



SCUK, 2002

Figure 2. Pictorial card

Box 1 Key aspects of treatment in the OTP

Nutritional and medical treatment
On admission to the CTC programme, all patients undergo a medical screening and receive medication according to a standard protocol based on that recommended by WHO. After their medical examination and registration, each child receives on average 4kg of Ready to Use Therapeutic Food (RUTF) providing 1500 kcal of energy and 36.5 g of protein /day, as well as 4kg of UNIMIX. Each child returns to the same distribution site every week to be assessed by the medical assistant and to receive a ration of RUTF and UNIMIX. If a child's medical or nutritional status deteriorates, he is referred back to a SC for treatment.

Education and follow-up
On admission, patients are introduced to the community nutrition worker (CNW) who lives in their village. He/she discusses an education message sheet with the mother that focuses on important practices regarding the feeding and caring of the sick child at home. The CNW reinforces this initial education during home visits as well as making a general assessment of the patient's progress. A key tool in this process is the mother-CNW, pictorial card (see figure 2). This is given to the mother at admission during discussion of important care practices for children suffering from malnutrition. She is asked to fill in the form each day by colouring the appropriate box if the child demonstrates the sign or symptom during that day. This form then forms the focus for discussion during home-visits when CNWs give advice and support in relevant areas. Although the impact of this card on recovery has not yet been examined systematically, the CTC programme team and CNWs feel that it is a useful tool to encourage involvement of the mother in the recovery progress of her child. Evaluation of the value of this card is planned during future programme assessments.

Discharge
Patients are discharged from the OTP once the field staff have confirmed their Weight-for-Height is > 85% of the reference weight-for-height for two consecutive weeks, and that they are free from infective disease. After discharge, every child is admitted into the supplementary feeding

The challenging landscape of Darfur North.

Sudan, SCUK, 2002.

uncomplicated severe malnutrition. The programme team identify all patients who are severely malnourished. After identification, they will either register them into the OTP or refer them to one of the four SCs. Whether the child is referred to the OTP or SC depends on the physical condition of the child, appetite, existing capacity at referral centres and the agreement of the mother for the child to go to inpatient care. Key elements of the treatment of those admitted to the OTP are outlined in Box 1. Treatment in SCs is based on the standard WHO inpatient treatment protocols for initial re-feeding (phase 1) and transition phase. This includes the use of formula milks (F75 and F100) adapted for the treatment of severe malnutrition and systematic medical treatment.

However, instead of transferring children in to a phase two protocol within the SC (as recommended by WHO), children are discharged from the SC into the OTP when their appetite has returned and infection is under control. This speeds up patient turn around in the SC, making them less crowded and allowing a good staff to patient ratio. Depending on the preference of the carer, this also allows the carer and their child to return to the rest of the family as soon as possible

Impact indicators

At March 2003, outcome indicators from the CTC programme in Darfur compared well with the Sphere Project's international standards for therapeutic care (see table 10).

Using the nutritional surveys conducted during the implementation of this programme, it was difficult to measure coverage with any precision. However it can be confidently stated that overall, coverage (measured in March 2003) at least met the new international Sphere standard of >50% for rural communities. In the context of the scale of North Darfur and the widely dispersed and pastoral population, this is quite an achievement for a selective feeding programme, especially given the number of children screened by the programme team in the first 3 months of implementation (table 11).

The mid-term coverage survey showed that in all Districts, apart from El Malha, a high percentage of under 5s had been screened at least once during the past 3 months. Figures taken from the CNW weekly reporting at the end of November also show high results.

Future challenges for CTC in North Darfur

Cost versus coverage

The North Darfur programme highlighted the issue of diminishing returns in the balance between coverage and cost. To improve accessibility for both beneficiaries to the OTP sites and for CNWs to their target population, the number of districts and the number of CNWs could be increased. However, in a context such as Darfur, where large distances exist between very small centres of population, the present programme systems could not expand to reach all those in need without huge logistic overheads. The experiences of the distribution centre in El Malha demonstrate this. Here, 45% of children registered from this small community came from the village in which the distribution site was operating. The seven other villages covered by this OTP site were between 2 and 6 hours away by donkey. House to house visits in two of these outlying villages found that only 10% of children under five in households had been visited by a CNW. Under present programme systems, it is likely that some trade-offs for coverage against cost have to be made here. This highlights a limitation in the present 'centre working outwards' model of CTC implementation. Work is currently ongoing to develop models of 'CTC in situ', wherein local communities are responsible for case selection and the delivery of OTP protocols (see section 2).

Integration of CTC into community based health and referral systems

Integration is an important principle in CTC (see section 2). If capacity can be adequately transferred to the affected population and the service providers, then there will be less need for externally driven responses in future. Save the Children in Darfur already relies entirely on Darfur based national staff to run the emergency feeding programmes. After a CTC programme in the same area in 2001, CNWs employed in 2001 were rehired in 2002. An attempt was made to second the same MoH staff again in 2002, but MoH insisted that other staff be given this opportunity. However, implementing the North Darfur CTC programme required very strong logistics in order to deliver the feeding programme inputs (i.e. drugs, Plumpynut, F75 etc) and the trained staff to the distribution points.

Health care systems in Darfur have a weak infrastructure and are very poorly resourced. It seems unlikely therefore, that these systems would be able to sustain emergency CTC services without considerable external facilitation. However, CTC has significantly increased capacity within MoH staff and community based workers for the identification, treatment and follow up of severe malnutrition. In addition, the positive attitude towards CTC created during the 2001 and 2002 experience has generated an enthusiasm and demand for CTC from local staff, health workers and the general population. This makes it a lot easier for external support agencies such as SC UK to re-activate emergency CTC interventions in the future.

In the longer term, case finding, referral and follow up might be integrated into community-based systems that require a less intensive, but longer term, support. This could include community-based surveillance and early warning systems that would use many of the local people with experience of CTC.

One of the OTP decentralised distribution sites in Darfur, North Sudan.

SCUK, 2002.

Transportation of UNIMIX for the OTP and SFP programmes in Darfur, North Sudan.

SCUK, 2002.

3.4 CTC in South Sudan – A Comparison of Agency Approaches and the Dilemmas Involved

Tanya Khara (Valid International), Jennifer Martin (Concern Worldwide), Ed Walker (Tearfund)

Introduction

In 2003 both Concern Worldwide and Tearfund asked Valid International to support them in the setting-up of CTC programmes to address high rates of acute malnutrition in South Sudan[1]. Initially questions came both from within Valid and the NGOs themselves. How would teams receive the new approach? Would the decentralised nature of CTC work in such a logistically challenging setting? How would severely malnourished children recover at home given the famously egalitarian sharing culture of the Dinka? What were the implications of the lack of health services in South Sudan on the CTC principle of sectoral integration?

Both Tearfund and Concern programme areas are in the Bahr-el-Ghazal, region of South Sudan, a lowland area of rivers and swamps where access during the rainy season is extremely problematic[2]. The region is chronically food insecure and the population vulnerable to rapid deterioration in nutritional status. Previous nutrition programmes run by both NGOs in the area had concentrated on decentralised supplementary feeding distributions with Tearfund also implementing central TFCs.

The comparison below, aims to describe some of the differences in approach as the two agencies came to grips with the CTC model and thus highlight some of the key dilemmas encountered and subsequent lessons learned

Programme Outcomes

There are many difficulties facing programmes trying to treat severely malnourished children in Bahr El Gazal and consequently these programmes often have extremely low coverage rates and relatively poor clinical outcomes. For example in Ajiep in 1998, coverage of the TFC was estimated by Epicentre as 12.5%. In Wau an evaluation of the MSF-H TFC programme estimated 10% coverage and in 1999, nutrition survey estimates of 33% coverage were reported in Panthou (9). In 2001 when Tearfund implemented TFCs in Aweil South and East they treated a total of 252 severely malnourished children. This is less than half that treated last year with CTC.
Given this context the outcome data achieved by the Concern and Tearfund programmes is encouraging (see table 12.).

Staffing considerations

The primary issue for both agencies at programme start-up was staffing. The lack of a health structure in South Sudan meant that adequately trained local personnel were not available. While Concern opted to train and work with Community Health Agents (previously trained by an NGO supporting the health system), Tearfund brought in nurses from Kenya with prior experience in Therapeutic feeding. In the Concern programme, reliance on local staff adhered to principles of strengthening local capacity by training local people to carry out the Outpatient Therapeutic Programme (OTP). Though Concern managed to produce extremely good results using this strategy the poor clinical skill base of the community health workers placed considerable pressure on the supervisory team of more experienced Concern staff to attend all distributions. This created gaps in other areas of the programme, in particular the outreach strategy (see discussion below).

By contrast, the experience of the expatriate nurses employed in the Tearfund programme meant that there was greater confidence in the clinical decisions they made, particularly on the referral of complicated cases to the Stabilisation Centre (SC). However as the nurses were not local to the area, they had to work through translators and this may have limited their understanding of the complex social reasons for non-response. This helped recognition that the background and skills of the translators themselves were key to the acceptability and effectiveness of the CTC interaction.

Maintaining access to the population

1. Organisation of distributions and teams

In the Tearfund areas maintaining access to sites during the rains proved difficult with teams missing some scheduled distributions and 3 sites having to close due to cars not being able to reach them across swamp. One site however was maintained through flying teams into the area by plane. In comparison, in the Concern area, due to the network of rivers, the team was able to keep sites open using boats to transport teams and supplies. Additionally, as teams were comprised of local workers, they were able to stay out in the field for extended periods moving from one site to another by foot and thus keeping open sites that would otherwise have been logistically inaccessible.

Missed distributions, confusion due to changed distribution schedules and increased travel times/perilous journeys for the beneficiaries caused by site changes is likely to have had considerable negative effects on the programmes. Beneficiaries may judge the costs of attending in terms of time for other household/livelihood activities to outweigh the benefits and either default, or they may fail to attend in the first place. It is likely also, that where beneficiaries continue to attend more distant sites they themselves bear the increased burden in terms of opportunity costs and risks (of accident or injury). This is a cost that does not enter into programme statistics. Default rates were high in both programmes but in the absence of a coverage survey it is not possible to assess the effect on non attendance. During a Valid anthropology study however the main reasons given for non-attendance were access due to rains and harvesting activities. These concerns will be more pressing where travel times are longer.

The example brings out one of the key dilemmas experienced by teams in the field implementing CTC, that of striving for rapid programme quality versus prioritising effectiveness past the initial stage. The lesson learnt from South Sudan is that the ability to be flexible, to accept less than perfection in order to reach more children and to reach them in a dependable and

Concern, 2004.

OTP child with mother, South Sudan.

[1] Concern nutrition survey March 03 Aweil North and West - GAM 24.3%, SAM 4.7%. Tearfund nutrition surveys February 03 Aweil South - GAM 22.6%, SAM 3.1%. Aweil East - GAM 25.0%, SAM 5.6% (all in z-scores).
[2] Concern work in Aweil North and West from a central base at Mariel Bai and Tearfund in Aweil South and East from two separate bases in Malualkon and Tieraliet.

Tearfund, 2004.

Transport challenges for Tearfund OTP teams in South Sudan.

Concern, 2004.

OTP sites are accessed by boat and motorbike in South Sudan.

Concern, 2004.

General ration supplies are air dropped by WFP in South Sudan.

potentially sustainable way results in a more effective programme.

The Concern strategy of working with local teams, may have meant that teams took longer to get to grips with the OTP protocols and required heightened supervision at the outset, but ultimately they were able to maintain access to the programme for the population at minimised cost through maintaining decentralised sites dependably. In terms of lives saved therefore, some compromise whilst maintaining good quality of the programme through supervision, seems warranted.

2. Involvement of the community

Both programmes learnt that it was vital to involve the community both during the initial setup and on an ongoing basis during implementation if good access to the population was to be established and maintained. Before starting, the programmes consulted local leaders/key figures in their areas to inform them about the programme and illicit help with the initial location of sites. Despite this there were problems encountered as mentioned above which led to high default rates during the rains. It was therefore clear that a more detailed process involving the community in the profiling of sites under various different rain scenarios would be useful and that even after the programmes had started there was a pressing need for continual consultation and adjusting programmes accordingly. The anthropological study gave some insights into potential barriers to access but a system of routine consultation through meetings with benficiaries and elders would have alerted staff to the issues much sooner.

Importance of the Outreach Strategy

The CTC model has always seen outreach and community mobilisation as vital elements in successful programmes. However experiences in South Sudan are that despite this emphasis on outreach many factors can get in the way of implementing successful outreach programmes. Some of the most important lessons that we have learnt, are how to avoid these pitfalls.

1. Selection of Outreach Workers

Outreach workers were recruited in both programmes to mobilise the community and to conduct case-finding and follow-up of children through home-visits. In the Tearfund area literacy was a condition of this recruitment with the result that mainly young men were hired. This meant that reports could be filled in correctly. However the young male outreach workers were poor at understanding the issues surrounding poor response to treatment and were therefore inappropriate as support and advice givers to mothers in the home.

Conversely Concern chose outreach workers from mixed backgrounds and literacies, including some women. A system of teaming groups of 3 outreach workers, one of whom was literate was put in place to facilitate reporting. However supervision of the system was poor and was not prioritised. Therefore although impressions were that women from the local communities would make far more appropriate outreach workers, Concern did not capitalise on this potential for more appropriate home visits.

Simplification of reporting as well as teaming up illiterate and literate outreach workers could reduce the requirement for literacy. Currently Valid is investigating this and the use of pictoral reporting forms for the future.

2. Prioritisation

Both programmes suffered from a lack of outreach development in terms of incoherent case finding strategies and inadequate systems to follow-up poor responders and tracking of children transferred between programme components (SC, OTP). The root of these problems was the lack of prioritisation given to these activities due to staffing and time constraints. In both areas teams suffered from high staff turnover and their need to focus on mastering the new protocols. For the Concern programme, the stabilisation centre made huge demands on the expat project managers and diverted their attention away from the less tangible and less obvious issues surrounding outreach and mobilisation. The implications of this were erratic case finding, poor follow-up of defaulters, and uncertainty over the outcomes of transfers between programme components.

The prioritisation of the outreach system and of developing a comprehensive strategy with strong supervision and management, is vital. However for over-worked supervisory staff on the ground, making a choice between children and mothers in front of them or those still outside the programme is almost impossible.

"If I had to do it over a gain, I'd take a day away from supervision to add to mobilisation - but it wouldn't be easy to do with children and mothers in front of you needing help." - *Expat Nutritionist Concern Worldwide*

This has been a vital lesson learned in the South Sudan context and has led both NGOs to place greater emphasis on outreach in terms of staffing and strategy development in proposals for next year.

Implications of the Wider Food Security Context

Discussion with beneficiaries and staff revealed sharing of plumpynut to be widespread throughout the programmes. However despite this, the proportion of recoveries (>85% WFH) was reasonably good (table 12). Length of stay was calculated midway through the two Tearfund programmes in Malualakon and Tieraliet to be 40 days and 68 days respectively. However both teams reported a reduction in recovery rates coinciding with a 3 month gap in WFP food distributions as a result of logistical difficulties. Whilst 50% of the population was targeted to receive a 50-75% ration based on WFP needs assessments, from July to September (traditionally the hunger period) WFP were only able to provide less than 10% of this planning figure. This raises important and long debated issues of the appropriateness of this or indeed any feeding programme in the absence of a general ration.

The CTC model very clearly places CTC within a hierarchy of interventions, the first and foremost of which is the general ration. In the absence of a general ration the food supplied within the CTC programme is at times the sole source of nutrition for the whole family. This example highlights the interdependence of selective feeding and general ration.

Future programmes

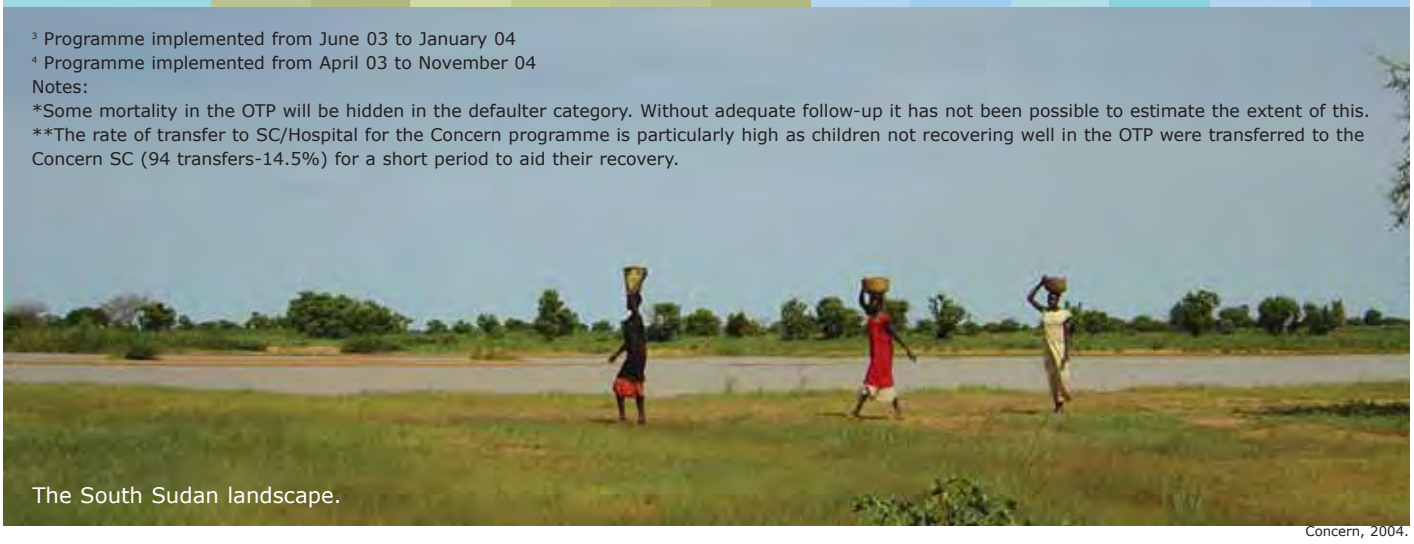
One of the core features of the CTC approach is integration with the existing health system and with other programmes. Given the lack of any national health structure in Bahr El Ghazal, integration at this stage can realistically focus only on other NGOs, longer term projects and on community structures. Some achievement in this area came through Concern's training and involvement of CHAs in the programme thus creating a potential future resource. Future programmes may try and integrate some OTP sites with the sparse NGO supported health units. In addition, Tearfund developed a close working relationship with the MSF nutrition programme in their area, linking with the TFCs for referrals.

One of the key tasks for future programmes will be to maintain decentralised sites, thus minimising costs to beneficiaries and maximising coverage whilst ensuring that site numbers are kept at a minimum to allow for increasing participation of other NGO supported health structures. This can only take place if interventions occur in a timely manner that allows sufficient time for community engagement from the planning stage as well as for logistical pre-planning, site profiling and pre-positioning of food. For any selective feeding interventions to be successful timeliness is vital.

Table 12: Outcomes of Concern Worldwide and Tearfund CTC programmes, South Sudan

	Concern Worldwide[3]						Tearfund[4]					
	SC		OTP		Combined		SC		OTP		Combined	
Exits	n	%	N	%	n	%	n	%	n	%	n	%
Discharged	190	92.2	419	64.6	419	73.4	216	93.5	522	78.1	522	81.8`
Death	5	2.4	3	0.5	8	1.4	6	2.6	3	0.4	9	1.4
Default*			99	15.3	99	17.3			98	14.7	98	15.4
Transferred to Hospital/SC	11	5.3	107	16.5**	24	4.2	9	3.9	45	6.7	9	1.4
Other (non-recovered)			21	3.2	21	3.7						
Total	206		649		571		231		668		638	
Registered on closure	0		39		39		0		58		58	

[3] Programme implemented from June 03 to January 04
[4] Programme implemented from April 03 to November 04
Notes:
*Some mortality in the OTP will be hidden in the defaulter category. Without adequate follow-up it has not been possible to estimate the extent of this.
**The rate of transfer to SC/Hospital for the Concern programme is particularly high as children not recovering well in the OTP were transferred to the Concern SC (94 transfers-14.5%) for a short period to aid their recovery.



The South Sudan landscape.

Concern, 2004.

4 Technical and Management issues within CTC

4.1 CTC from Scratch – Tear Fund in South Sudan

By Ed Walker (Tearfund)

Tearfund has been working in Northern Bahr el Ghazal, southern Sudan, in the nutrition sector since 1998. In 2002, drought, in combination with the effects of the 20 year war, led to a serious situation, with the population of Northern Bahr el Ghazal most affected. By the end of 2002, the WFP Annual Needs Assessments, Tearfund's feeding programme experiences, and nutritional surveys all suggested that the hunger gap in 2003 would be severe and prolonged. Furthermore, base-line nutritional surveys, conducted in February 2003, found rates of 25% Global Acute Malnutrition and 5% Severe Acute Malnutrition, reinforcing the expectation of high numbers of malnourished children. An outbreak of measles at this time also heightened fears of an increase in numbers.

For some time Tearfund had been questioning the effectiveness of the traditional, centralised Therapeutic Feeding Centre (TFC) approach to treating severe malnutrition. Issues of concern were the low levels of coverage TFCs generally achieved, the large distance mothers and children needed to travel to reach services, the length of time mothers spent in centres, and the long term dependency impact on the community. However, exploring the potential of community based therapeutic care (CTC) as an alternative, raised as many questions as it provided answers. Was this approach appropriate in the southern Sudan setting? Would it work? And would the level of care ensure that children gained weight and recovered? After lengthy deliberations, we decided to incorporate CTC into our plans for the nutritional programme in 2003.

Preparation and Planning

In preparation, the Tearfund nutrition co-ordinator visited the Concern/Valid implemented CTC project in Malawi (see section 3.2) to learn how CTC was adopted there. As a result, a very decentralised approach was developed, based on the Malawi model. The field teams established many more distribution points than in previous years, often in more remote areas, with a greater emphasis on the 'community' to supply the labour and materials for the construction of the centres. There was, however, concern that although this decentralised approach, which aims to maximise coverage, was working successfully in Malawi, it would be difficult or impossible to maintain access to sites during the wet season in the swamps of South Sudan. There were also potential issues regarding field staff, who had worked for many years in a traditional therapeutic feeding centre, and whether they would adopt and accept the CTC approach.

Other NGOs working in the nutrition sector raised concerns about the effectiveness of the clinical care and the lack of 24 hour professional medical supervision for all severely malnourished children.

Implementation and Results

The programme had two bases, one in Aweil East and one in Aweil South, both with experienced staff who were able to establish quickly the network of decentralised SFPs and train the

Beneficiaries collecting their general ration in South Sudan. Tearfund, 2004.

Carers and children wait for food at the SFP and OTP distribution tree, South Sudan. Tearfund, 2004.

local staff. The start of the Outpatient Therapeutic Programme (OTP), through these same decentralised sites, coincided with the arrival of Plumpynut® and the Valid Consultants who landed on the Wednesday morning, trained the staff that afternoon and on the next day began the first OTP centre in Aweil South. This very low requirement for additional training is an important strength of the approach, making it relatively easy for an agency such as Tearfund, who were new to the approach, to implement CTC.

Admission Figures

The numbers of severely malnourished treated in the programme increased far faster than they had done during our 2002 TFC programme. After two weeks of CTC, 138 severely malnourished children had been admitted and within four weeks, the number had risen to 257. In the same period, an additional 122 children had been admitted into the Stabilisation Centre. By contrast in 2002, in the same area and over a seven month period, less than 100 children had been admitted into Tearfund's TFC. By the closure of the programme in December 2003, Tearfund had admitted 726 severely malnourished children into the OTP.

Whilst this dramatic increase in numbers in part reflects the severity of the food insecurity in 2003, we believe that it also illustrates the enormous benefits in coverage of the decentralised out-patient approach. The start-up of this programme coincided with the beginning of the rains and cultivation season. During this time, the workload of mothers is very high and they cannot afford to miss four weeks away from the fields and their other children, to stay with a severely malnourished child in a TFC. During our focus group discussions, mothers all stated how much they appreciated being able to go home and 'take care of other family members' and consequently, how they greatly valued the weekly out-patient approach. Mothers also appreciated the shorter in-patient treatment for those children with medical complications, finding this much less disruptive to their lives.

Of the 726 children admitted to the OTP, three are known to have died. Combined with six children who died in the stabilisation centre (from 231 admitted), the overall mortality rate was about 1.3%. In addition, there was a 15% default rate. As few of these children were followed up, it is probable that this default statistic contains other children who also died. However, taken overall, these results compare very well with the SPHERE standards, achieved in a place where it is notoriously difficult to implement feeding programmes. The overall outcomes for the OTP and SC programmes are presented in table 13 and illustrate the low mortality and excellent recovery rates obtained by the end of the programme.

Local perceptions of the programme

The staff adapted to the approach immediately. Nurses who had spent over five years in feeding programmes and TFCs were, surprisingly, CTC's strongest advocates. Whilst it felt very strange to see a child of less than 65% weight for height (but with a good appetite and free from medical complications) being discharged from the Stabilisation Centre, the staff were prepared to trust the system, experience and expertise that Valid introduced. We found that the 'Plumpynut® test', given on admission into the OTP in order to determine whether the child will eat it, an important tool. This test ensures that the child would thrive on the OTP and also served to reassure staff.

The overriding impression gained from focus group discussions with mothers, village meetings, discussions with community leaders and chiefs, was that the CTC approach was popular with the people. In the stabilisation centres, it was the mothers who were asking for a discharge after a matter of days - arguing that "with Plumpynut® we will be able to care for the child."

Plumpynut® proved to be very popular among the children and, in the first few weeks especially, the weight gain amongst children was very encouraging. Focus group discussions with the mothers revealed that the children loved the Plumpynut® and were constantly asking for more.

Difficulties encountered

Inevitably there were difficulties with the approach and it had to be adapted to the southern Sudan context. Southern Sudan contains 'the Sudd,' the largest swamp in the world. Water from Chad and the Central African Republic flows through Northern Bhar el Ghazel en route for the Nile, causing flooding annually. In 2003, this combined with strong rains to render much of the lowlands of Northern Bhar el Ghazal inaccessible. Crucially, as predicted at the project planning stage, a number of Tearfund's 'decentralised' feeding centres became cut-off. Tearfund managed to fly to one location on a fortnightly basis, but for the other four centres, mothers were encouraged to bring their children to another site. However this entailed walking four hours through swamp carrying a child and food, which is a difficult journey and inevitably, the defaulter rate increased as a result.

As with all nutrition programmes, strong logistics is a major component in achieving the project objectives. In southern Sudan, this is especially true, with all feeding materials having to be flown into Bahr el Ghazal (the Plumpynut® needed to be bought and transported from France and caused a number of delays in the start up of one programme site).

The months of July and August, before the first harvest in September, are the most severe months of the hunger gap. With a severe drought in 2002 producing a poor harvest, large numbers of displaced people sharing the food resource, and an intermittent WFP food-supply (no food was dropped for a 3 month period pre-harvest), the food available to the Bahr el Ghazal population in 2003 was very low. This, combined with a malaria epidemic, further undermined the nutritional status of the population.

Inevitably in such a situation, despite an extra 'supplementary ration' (an extra 2 Kgs of CSB given to the mothers of OTP children), the pressure on a mother to share food within the family was immense and during this period, the weight gain of the children in the OTP programme was slow. This, perhaps, is the greatest difficulty with CTC - unlike an in-patient feeding approach where meals are observed and controlled, with CTC the responsibility is given to the carer, with support through outreach. Outreach was provided by extension workers, following up on children with poor weight gain and on defaulters. Ultimately, decisions on distribution of food within the household lie with the carer and household head and, in the absence of other food in the household, the SFP or OTP ration may be shared. The significance of slow weight gain is a matter for debate, but in this Bahr El Ghazal context, it is inevitable that, compared to an in-patient approach, the rate of weight increase in an OTP will, on average, be slower. For this reason, Tearfund concluded that when running a CTC programme in Bahr El Ghazal, it is vital for WFP to provide the general ration to the community Without this, overall CTC effectiveness will be undermined.

With the arrival of the first harvest, there were notable gains in the health and weight of the children. By the end of the Tearfund programme, 522 severely malnourished children had been cured. Fifty-eight children remained in a malnourished condition and were discharged with a ration for six weeks intensive feeding using Plumpynut®[1].

Integration

Throughout the programme, Tearfund aimed to integrate the nutritional activities with its agriculture and health education

[1] The programme was funded by DFID for a fixed time period, from 1 March to 31st of December 2003. The intervention was originally timed to finish at the end of October, but an extension was granted by DFID because of the high numbers of children still in the programme at the end of October.

programmes. For an INGO in a war affected area, culture, language and layers of beaurocracy make access to the poor difficult. However, the contact afforded by the CTC activities opened access for other elements of the programme. Thus, mothers in the SFP and OTP benefited from a seed-fair, fishing equipment, vegetable seeds and health education. In Aweil East and North, many mothers of the OTP agreed to return to the feeding centres on one extra day per week to receive health education. They have subsequently formed into a number of 'women's groups' that meet every week to receive further health education. These groups will be targeted in the 2004 agriculture programme and their families will be some of the beneficiaries in the rice and ox-plough projects.

The Future

To reflect on 2003 is to remember the many challenges and the hard work and commitment of all the Tearfund staff, to acknowledge the huge amount of learning that occurred through this approach, and to take pride in the success of the programme in such a difficult and complicated operating environment. For 2004, Tearfund Sudan intends to expand the CTC approach in existing locations, as well as engage its mobile nutrition team, who are able to deploy to nutritional problem areas anywhere in southern Sudan. This expansion will incorporate the lessons learnt from 2003. One of the major objectives for 2004 is to increase the emphasis on outreach services to improve follow-up, explore ways of minimising default, and to better understand the social implications and benefits of the programme.

Based upon the positive results from the programme, Tearfund has since put a lot of energy into information sharing and advocacy work at the coordination level. A number of other agencies are now adopting aspects of this approach in Southern Sudan, including MSF F, MSF B and Concern.

Table 13: Outcomes of Tearfund South Sudan CTC Programme

Exit	SC		OTP		Combined	
	n	%	n	%	n	%
Discharge	216	93.5%	522	78.1%	522	81.8%
Default	-	-	98	14.7%	98	15.4%
Death	6	2.6%	3	0.4%	9	1.4%
Transfer	9	3.9%	45	6.7%	9	1.4%
Total	231	-	668		638	
Registered on closure*		-	58		58	

Getting to distribution sites during the rains proves impossible in South Sudan.

Tearfund, 2004.

4.2 Adopting CTC from Scratch in Ethiopia

By Hedwig Deconinck (SC-US Ethiopia)

Save the Children USA (SC-US) implemented an emergency health and nutrition programme in Sidama zone of SNNP region of Ethiopia, in response to the 2003 food crisis. Historically Sidama was one of the most food secure zones of Ethiopia, classically a rich coffee growing area, situated in the enset[1]-belt of Ethiopia. Over the last few years, however, erratic rainfall associated with an exhausted economy has led to failing agriculture, decline of coffee and livestock markets, reduction in land holdings and subsequently, threatened lives and livelihoods. Other contextual factors in the region include inadequate health access, inappropriate child feeding and caring practices, poor water and sanitation and high population pressure. During 2003, these factors combined to produce a rapid deterioration in the nutritional status of the population. A nutrition survey carried out in Awassa Zuria district in April 2003, gave alarming results[2] and triggered our emergency response.

SC-US started health and nutrition response activities on April 20, 2003 and over the next seven months, opened 12 centre-based Therapeutic Feeding Centres (TFCs). These were followed by three outpatient therapeutic programme (OTP) sites, and eight supplementary feeding programme (SFP) sites in 11 woredas.

CTC Implementation

On the first of August 2003, SC-US opened the first therapeutic feeding centre (TFC) at the Malgano health post compound in Hulla Woreda. This centre admitted 357 severely malnourished children during the first six weeks of opening, pushing its capacity limits to a critical level. In response, in mid-September, with the assistance of Valid International, SC-US transformed the existing nutrition programme to a Community-based Therapeutic Care (CTC) programme. The team chose Hulla Woreda as the pilot site because the TFC was overcrowded and there was a shortage of water (2.6 litres per beneficiary, well below Sphere standards of 20 litres water/per day/per person) and collapsed latrines. The SFP was also about to be opened in Hulla and it was felt that the conversion of the therapeutic feeding centre (TFC) to a stabilisation centre (SC), and integrating an outpatient therapeutic feeding (OTP) and outreach programmes with the SFP, was a logical step.

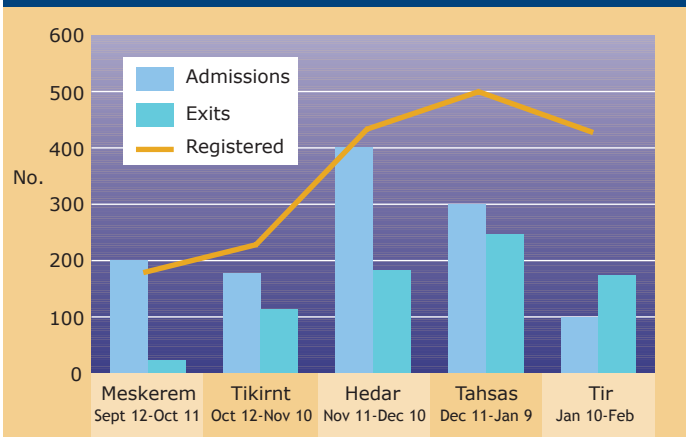
The neighbouring districts of Arbegona and Bensa started CTC later, in October and November 2003, respectively. Figure 3 shows the map of the three districts with OTP/SFP distribution sites. All of the CTC programmes used the single, Hulla-based stabilization centre for referral of medically complicated cases. In each site, the CTC programmes included an extensive health education element, addressing child nutrition, hygiene, malaria

[1] "Enset ventricosum", is a separate genus of the banana family, thus named 'false banana'. The pseudostem and leaf midribs are scraped to pulp and fermented to prepare a low protein steam-baked flat-bread consumed as a staple or co-staple food.

[2] Awassa Zuria, April 2003, DPPC 18.7% global acute malnutrition, 2.2% severe acute malnutrition, under-five mortality rate 3.0 deaths per 10,000 per day, while the next harvest was not expected for another 2 to 4 months.

Figure 3: Hulla, Arbegona and Bensa districts of Sidama Zone, with respective distribution sites

Figure 4: Monthly admissions and exits for Hulla, Arbegona and Bensa OTP programmes



Note: Figures refer to Hulla Arbegona and Bensa OTP sites and are aggregated for five periods between Sep 12th and February 8th.

Figure 5: Monthly admissions and exits for Hulla TFC (till Sept 11) and OTP (starting Sept 12)

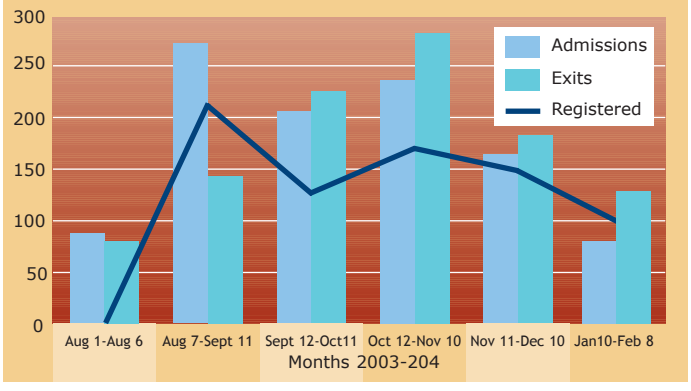


Table 14: Performance indicators for Hulla, Arbegona and Bensa CTC programmes (October 03 to February 04)

Exit	SC	%	OTP	%	SFP	%
Discharge	201	87.7%	728	86.6%	331	77%
Default	1	0.4%	37	4.4%	60	14%
Death	6	2.6%	5	0.6%	0	-
Transfer*	17	7.4%	71	8.4%	39	9%
Non-recovered	4	1.7%	0	-	0	-
Total	229	100%	841	100%	430	100%
Still in project	4		391		3141	

* This includes children transferred to the TFC or to the Hospital due to deterioration

prevention and control, intergrated management of HIV/AIDS and childhood diseases for beneficiaries and communities. The education element included traditional leaders, health workers, traditional healers and birth attendants. In addition, food security strategies were discussed and promoted involving Ministry of Agriculture extension workers.

Programme Results

By February 2004 1,470 severely malnourished beneficiaries had been treated in the OTP, of which only 264 (18%) had to be admitted to the SC because of complications. In addition, 5,558 moderately malnourished beneficiaries had been treated in the three SFPs. Important increases in beneficiary numbers came as a result of intensive community sensitisation, extension of active case-finding and outreach activities, and the opening of new decentralised distribution sites. Figures 4 and 5 show the monthly OTP and TFC/SC admissions and discharges, while table 14 summarises some of the performance indicators for all components of the CTC programme.

In December 2003, Valid International conducted an anthropological survey in Hulla district, to determine the acceptability of the CTC programme to the beneficiaries and strategies for improving coverage. The survey revealed that no systematic barriers to the programme existed. In addition, the community showed a remarkable consistency in understanding the types of malnutrition and the need for referral.

In January 2004, Valid International conducted a coverage survey, using the centric systematic area sampling (CSAS) approach to assess CTC programme coverage in Hulla and Arbegona districts. The coverage results were excellent, OTP coverage was 78.3% and SFP coverage 86.8%. The success of the CTC programme in accessing the population can be attributed mainly to the intensive outreach programme, where outreach workers closely monitored children of affected communities and provided health education at grass root level.

Lessons Learned

Transition to community-based intervention

During the peak of the food crisis, the response activities were concentrated on saving lives. Prior to CTC, severe malnutrition was treated as a deadly individual clinical condition, disregarding the needs of the wider family or community. The opening of many centres initiated a growing concern within the SC-US team about creating parallel structures, without involving and empowering communities or building upon existing community structures, such as health posts, EPI teams, community health workers. The momentum was created within the team to look for a more community-based response and therefore, a more sustainable approach.

Perception at the community level

No community resistance was encountered when transitioning from TFC to OTP, apart from among the TFC staff, who feared losing their jobs. Carers and community leaders could see the valuable reduction in opportunity costs and therefore, the potential positive impact of the home-based approach on the families and the community in general, particularly as the planting season was starting. During the first days of CTC start-up, caregivers were given the choice of joining the outpatient care programme or staying in the centre. All caregivers opted for going home. An informal poll was taken a few weeks later, among outpatient caregivers who previously had been in centre-based care. This revealed that the great majority of caregivers were satisfied with the new type of home treatment. A major recognised advantage was the ability for caregivers to participate in resolving the malnutrition themselves, "I start to live without worry", "My heart rested".

Donor and government interest

At an early stage of the 2003 emergency response, UNICEF implemented a nation-wide training programme on the inpatient management of the severely malnourished. In June

2003, a consensus building meeting, including government officials, UN/NGOs, academics and donors, agreed the adoption of the centre-based therapeutic feeding centre model as the national protocol. Given the adoption of an exclusive inpatient strategy for the treatment of severe malnutrition in Ethiopia, and despite some interest, there was a generally circumspect attitude towards the community-based approach. Clinicians within the TFC programmes were initially reluctant to move towards the new CTC approach. However, once CTC was started, all the clinicians soon saw for themselves the positive outcome of the outpatient care and the vast community advantages possible, with little compromise on clinical treatment protocols. Government officials in SNNPR were flexible and showed increasing interest in the CTC implementation, expressing the wish to learn more and have access to research information or publications. Donors, who were consulted and informed prior to the change in strategy, were open-minded and encouraging and followed the CTC implementation with interest.

Sensitisation and empowerment of national services and the community

The CTC approach promotes intensive collaboration and sensitisation of local government, communities and families from the beginning. Our experience in the three districts has shown that increased involvement of local officials resulted in increased commitment and interest. Moreover, the innovative approach excited and empowered officials and broadened their interest to be involved in the nutrition response. At the community level, the programme involved local leaders, elders, traditional healers and birth attendants as active partners, hence increasing the flow of eligible beneficiaries into the programme. Conflict and distrust sometimes emerge during emergency nutrition programmes when the community is not aware of, or does not understand, the programme protocols. The Valid anthropological study in Hulla has shown that informing people about targeting, admission and discharge criteria, and malnutrition management provides a firm understanding and creates a momentum for achieving integration.

Sustainability in the longer term

The CTC programme strategy is based on the idea that emergency programmes should 'leave something behind', i.e. lead into development programming and sustainability.

The emergency programme of SC-US in Sidama may not develop into a longer-term development programme. Nevertheless, district officials of Arbegona and Bensa have expressed their commitment for health facilities to take over the outpatient programme and the transfer process has started. Unfortunately, Hulla district has very few staffed health posts so that integration into the local structures will be more difficult. However, at least the stabilisation centre is now fully integrated in the health centre of the district capital. An important factor adding considerably to CTC sustainability is that from the start, zonal and district health staff were seconded to the CTC programmes. We believe they are potential trained collaborators for the continuation of CTC, both in response to future emergencies (where NGO support may again be available) or for a longer term ministry operated programme in the future .

Conclusions

In the coming months, SC-US will prepare for phasing-out the emergency nutrition programme, working closely with the district health officials to leave local capacity and knowledge for CTC. The critical issues for sustainability will be commitment from district health officials, involvement of health facilities and communities, motivation of staff, and continued supplies of Ready-to Use Therapeutic Food (RUTF).

Our major concern during phasing-out is to learn lessons from the 2003 emergency nutrition response strategies over the country. The Sidama-based CTC experience has shown promising results, strongly suggesting that CTC is working well and is an improved strategy to empower communities to respond to nutritional emergencies. The experience in Hulla indicates that in addition, CTC may be a plausible long term answer to dealing with the high baseline malnutrition rates encountered in much of the country. Priorities for the future, therefore, are to understand the dynamics and the impact of CTC within communities in the long-term and to evaluate sustainability at the community level.

SCUK, 2004.

Ellen van der Velden, SCUK, 2004.

Above: A father brings his child to the OTP site in Ethiopia.
Top right: A volunteer demonstrates how to cook FAMIX for SFP and OTP carers in Ethiopia.
Bottom right: Children registered in the OTP programme receive a test dose of plumpynut® on each distribution day in Ethiopia.

4.3 RUFT

4.3.1 Local Production of RUTF

By Dr Peter Fellows

Introduction

The development of RUTF has been an important factor facilitating the development of CTC. However at the moment, most RUTF is made in France, is marketed at a high cost and incurs considerable transport overheads to move it to the point of use. This is a major factor in increasing the cost and decreasing the applicability of CTC. To address this, the CTC programme has included substantial research into the development of locally produced RUTF.

Technologically, RUTF possesses a number of advantages over other foods, making it an excellent product for local production and central to the implementation of CTC. It has a low water activity (Aw), which not only makes it microbiologically safe but also means that simple packaging can be used because it does not require protection against microbial contamination. Unlike some other products, such as high-energy biscuits, the paste does not require protection against crushing or other damage during transport to distribution sites or at the homes of beneficiaries. Even if it is contaminated (e.g. by children's dirty fingers), pathogens cannot grow in it. These are major benefits in the context of local production, where modern processing facilities and the availability of more sophisticated packaging materials may be limited. The product can be stored at ambient temperatures without the need for refrigeration, and the 3-4 month shelf life at tropical temperatures is sufficient to distribute RUTF, hold stocks at distribution points and allow for a few weeks' supply to be given to mothers for home consumption.

RUTF is eaten directly without cooking or the need to be diluted with potentially contaminated water, and each pot has a standard food value, therefore making administration of doses easier for programme staff. Also most children can feed themselves and do not require their mother's help. Provided peanut butter is available, the process is a simple mixing operation that can be easily learned by unskilled operators, and requires a relatively low investment in equipment and facilities. The inherent microbiological safety also means that the level of control needed during processing and distribution is less rigorous than for many other protein-rich foods. Local RUTF production also offers the opportunity to stimulate agricultural production and widen the benefits to farmers in surrounding communities.

Over the last 2 years I have been working with the CTC research programme on the development of local production of RUTF. This article describes our first attempts at developing relatively large-scale local production in Malawi.

Local production in Malawi

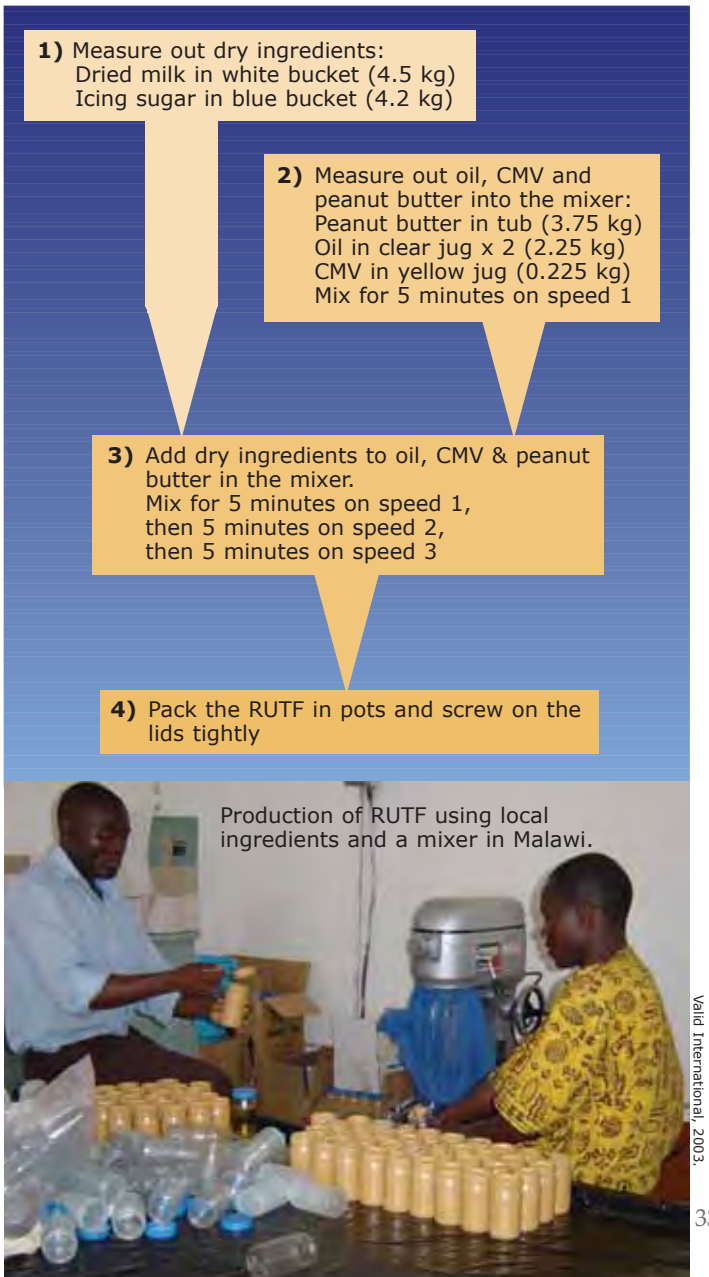
The use and production of RUTF is not new in Malawi. The Moyo House unit at the Queen Elizabeth Hospital in Blantyre, working with the St Louis University of the USA has been using RUTF for the home treatment of severely malnourished children in the recovery phase of treatment since 2001. In 2002, the unit developed some small scale local production and conducted a trial demonstrating that the locally produced RUTF was equally effective in treating severe acute malnutrition as the imported Plumpy nut product (27).

First steps – sourcing ingredients and equipment

The ingredients used to make RUTF are peanut butter, sugar, oil, dried milk and a mineral-vitamin complex (CMV) (Figure 6). In all but a few countries, it is necessary to import dried milk and CMV, but local manufacturers of sugar and oil are likely to be found. To make RUTF without a major investment in equipment, it is necessary to identify a local supply of peanut butter. Ideally, this would be an established food manufacturer that has experience of its production, quality assurance and also knowledge of the peanut market to ensure that high quality nuts are used. After investigating various options in Malawi it was concluded that Tambala Food Products Ltd. in Blantyre met these requirements. In Ethiopia, Valid and Concern staff have identified a potential producer that has experience of making medicines and has diversified into food manufacture with experience of the peanut market sector.

In Malawi we put systems in place to import dried milk and CMV, to purchase icing sugar and cooking oil from local suppliers, and to contract Tambala Foods to both produce peanut butter without added salt and produce the RUTF.

Using Tambala as the local supply of peanut butter removed the requirement for a peanut toaster and stone mill, meaning that to start local production the only significant equipment that we had to purchase were four 40-litre capacity planetary mixers. Once they had cleared the Customs and Excise procedures, the mixers were installed at Tambala's factory.



Production of RUTF using local ingredients and a mixer in Malawi.

Valid International, 2003.

Factory audit, analyses and staff training

Because this was the first time that local production had been attempted, we needed to ensure that all potential problems were anticipated in relation to RUTF safety and composition. Three aspects were considered: an audit of the production facilities, processing methods and skills at Tambala; identification of independent analytical facilities; and training of production staff.

The audit of Tambala's operation included:

- Physical facilities (including the quality of the building used for production).
- Supplies of raw materials.
- Equipment and production facilities.
- Hygiene and sanitation procedures, cleaning routines, washing and toilet facilities etc.
- Production records and product labelling.
- Stock control procedures.
- Management of quality assurance.

I found that the company facilities, procedures and management were mostly suitable for RUTF production and suggested minor improvements to improve the factory buildings. However, a potentially serious problem was discovered in the peanut supply. Although the company's peanut storage facilities were satisfactory, there was no system of traceability to the peanut farmers or distributors. This meant that managers could not ensure correct post-harvest handling and storage of nuts before they were purchased. The risk was that incorrect procedures could result in aflatoxin contamination if moulds had been allowed to grow on incorrectly stored nuts. We therefore decided to implement three actions:

- As the nuts for a year's production had already been harvested and were stored in Tambala's warehouse, we took a representative sample for aflatoxin analysis.
- An additional inspection stage was introduced to the production process to remove discoloured or mouldy nuts
- We requested Tambala to introduce traceability procedures for future nut purchases. The company will introduce improvements in the next buying season and train their buyers to offer guidance to farmers on post-harvest storage.

The company had only basic analytical facilities and it was therefore necessary to identify an independent laboratory that could verify the quality of ingredients and RUTF, and confirm that routine quality assurance procedures were followed. Analytical facilities were identified in universities, research institutes and the Malawi Bureau of Standards. In order to assess the accuracy and reliability of results produced by these institutions, we conducted a study in which the same materials were given to four laboratories; three in Malawi and one in UK, and the results were compared. We also assessed the comparative costs of analysis, and the efficiency of the laboratories in producing timely results. Samples of oil were analysed for free fatty acids, Iodine and Peroxide values, proximate analyses were made on groundnuts, peanut butter and RUTF, and a microbiological analysis of RUTF was made. Groundnuts and RUTF were also tested for aflatoxins and Oxford Brookes University checked the Aw of the RUTF. Chancellor College in Zomba and Malawi Bureau of Standards in Blantyre each produced results in a timely way that were in agreement with the UK laboratory at Oxford Brookes University, and each had similar costs. The results indicated that the ingredients and RUTF had a satisfactory chemical composition and microbiological quality when compared to standards developed for PlumpyNutË by Nutriset .

The production process for RUTF is a straightforward mixing operation, but operators must ensure that exactly the same amounts of ingredients are added to each batch to ensure a standard nutritional value. Production supervisors also need to understand proper process control, cleaning schedules for the production unit, stock rotation and record keeping. To assist in training production staff and managers who were not familiar with the product a manual was produced. None of this is particularly arduous for a food technologist or for managers at Tambala who were familiar with these aspects of food production, but we also wanted to produce RUTF in a village unit where food technology skills and knowledge would be far more basic. If rural staff are unaccustomed to these procedures the lack of knowledge could cause quality problems, and I therefore included basic management aspects in the production manual. Before starting production, four Tambala staff were trained with assistance from staff at the Community Health Dept., College of Medicine, Queen Elizabeth Central Hospital, Blantyre and the St Louis Project, where RUTF had been produced on a small scale for a number of months. As part of the training, staff constructed calibrated containers to measure ingredients. This is not only faster than weighing, but enables production without the need for accurate and expensive scales.

When the equipment, ingredients, analytical checks and staff training were in place, a contract was drawn up between Concern Worldwide and Tambala for 6 months' production. The contract covered amounts to be produced, delivery times, payments, raw material supplies and quality assurance. Tambala started production in February 2003. Our intention was to increase production each month from 6 tonnes to 20 tonnes, but a reduction in demand meant that the contract was revised downwards. There were some initial teething problems, but Tambala largely met the terms of the contract and supplied Concern Worldwide with RUTF of the correct quality and volumes. In April a routine analysis picked up high levels of aflatoxin in a sample. This is likely to have arisen from a small number of heavily contaminated peanuts that escaped the routine inspection stage. In response Tambala reinforced their inspection procedures to visually examine all nuts, which has cured the problem to date. Other contracts were made with the St. Louis Project and later with other agencies including MSF.

Village scale production

Producing RUTF at the village level has many potential advantages. It is likely to reduce costs and improve cost efficiency as the funds from donors can be used directly in the target district without incurring European or capital city production and transportation overheads. Local production should also help to link CTC more effectively to agriculture and food security interventions. This is particularly true for new recipe RUTFs which aim to make RUTF from local crops without the need for imported milk powder. Local production is likely to be more responsive to local needs and will hopefully engender a greater feeling of local ownership over CTC programmes. Given the wide range of applications for RUTF, local production also has the potential to generate income for small local manufacturers such as district hospitals.

Given all these potential advantages we decided to see whether the process followed at Tambala could be replicated in a village production unit, and selected the Nambuma Mission Hospital as the first site. Mission staff prepared a small production room and three staff were trained by Tambala production staff in Blantyre. In January 2003 an audit was conducted of the production site that identified some minor improvements required to upgrade the facility. In February 2003 we moved one of the mixers to the mission from Tambala and production started within one hour of its arrival. As part of this exercise, three studies were undertaken:

- To determine whether absence of pre-mixing dry ingredients by hand had any effect on the uniformity of RUTF. We wanted to check this as the pre-mixing could be a problem in village production, because the operator leans over a mixing bin and hair or other contaminants could be introduced. It would also simplify the process if this stage were omitted.
- To determine whether the mixing time and speeds were adequate to produce a uniform product using the mixers chosen for local production.
- To determine whether contamination of RUTF by children's dirty fingers affected the microbial composition.

We found that pre-mixing is required to achieve uniform mixture, and that the chosen mixers adequately mixed the ingredients using the selected speeds and mixing times. Microbiological analyses revealed no pathogens in the samples exposed to contamination.

The unit is producing 100-160 kg per day, which meets the mission needs and supplies all the nearby CTC distribution centres in Dowa. All ingredients and packaging are transported to the mission because the quality of oil available in the village is inadequate and other ingredients are not locally available.

Future directions

The developments to date have shown that a village-scale production unit can produce high quality RUTF in the required amounts for one or more NRUs and a moderately sized OTP programme. Already some of the benefits of local production have been realised including lower costs compared to the imported product, greater control over supplies, the creation of local employment and a new income stream for the Nambuma mission. Concern is now working to develop the extent and quality of local peanut farming to support this production and this should provide substantial benefits to local farmers.

We now plan to study the economics, logistics and relative cost/benefits of supplying all materials to village-based production units compared to supplying packaged RUTF from Tambala. If village-scale production is selected as a preferred option, there are a number of ways in which future developments could take place, including:

- Units that are operated by an NGO, which provides staff and supplies ingredients and other process inputs.
- Units that are semi-commercial, supplying RUTF on contract to NGOs, the Ministry of Health or other agencies, but with support from an NGO.
- Units that are fully commercial, with all inputs paid for by sales of RUTF on the open market.

At present the second approach appears to be the most feasible as it retains NGO control over RUTF supplies and quality. However, future developments that may result in RUTF becoming available nationally in Malawi via the Ministry of Health may have a significant bearing on the development of village-scale production.

4.3.2 Alternative RUTF formulations

By Steve Collins & Jeya Henry

Developing CTC programmes that use Ready to Use Therapeutic Food (RUTF) made locally, from locally available produce, and used to treat malnutrition and HIV amongst the local population, is an important vision for the future of CTC. This article describes research work into developing new RUTFs.

Basis of RUTF

To date, the commercial forms of RUTF are either BP100, a compressed biscuit made by Compact, or Plumpy nut, an oil based paste developed by IRD and Nutriset in France (22). Technology to make compressed biscuits is complicated and expensive and not transferable to small scale manufacturers in developing countries. By contrast, oil based pastes such as Plumpy'Nut can be made using simple technology that is easily transferable to small scale local producers in developing countries. Plumpy'Nut is made from peanuts, sugar, milk powder, vegetable oil and a vitamin mineral mixture. Although this combination of ingredients produces a product that is very well suited to the treatment of acute malnutrition, the recipe has several features that decrease its suitability as a candidate for widespread local production. Milk powder is expensive and often must be imported - in Malawi the cost of milk powder represents over half the cost of the final RUTF. Peanuts are also notorious for being contaminated with aflatoxin and this greatly complicates the quality control of small scale production. There is also growing concern about allergic reaction to peanut and their high phytate:zinc ratio (which increases the risks of binding all micronutrients) thereby reducing their suitability.

The idea of developing local, low cost RUTF, rich in protein, energy dense and suitable for feeding to young children and other vulnerable groups, arose in the early 1950s largely due to the work of Jelliffe (1955) and Brock (1961). The simplest recipe for RUTF is one which has only two ingredients, for example a cereal or root mixed with a legume. However, other foods must be added to this basic mix in order to make a multimix that is nutritionally suitable for the treatment of acute malnutrition.
A nutritionally suitable multimix for RUTF has four basic ingredients:

1. A staple as the main ingredient - preferably a cereal.
2. A protein supplement from a plant or animal food - beans, groundnuts, milks, meats, chicken, fish, eggs, etc. To be practical such foods must be low-cost, and this requirement has pushed development towards legumes and oilseed as these are cheaper than products containing milk or other animal products.
3. A vitamin and mineral supplement - a vegetable and/or fruit.
4. An energy supplement - fat, oil or sugar to increase the energy concentration of the mix.

In addition, an ideal RUTF formulation must have the following attributes:

- Good nutritional quality (i.e. protein, energy and micronutrient content)
- Long shelf life
- Highly palatable with a good taste
- A consistency and texture suitable for feeding to children
- Require no additional processing prior to feeding
- Amino acid complementation for maximum protein quality
- Product stability
- Ingredients should be easily available in developing countries

Product development

Numerous cereal, legume and oilseed mixtures were evaluated on the basis of the above criteria. In particular, efforts were made to combine the various cereal, legume and oilseed mixtures to maximise the protein quality, attempting to offset any essential amino acid deficiencies in one ingredient by combining it with another ingredient that was high in that particular amino acid. This process led to a list of 13 products that had reasonable theoretical properties. Following numerous products development trials, the list was reduced to three potential alternatives. The foods were prepared from roasted or processed ingredients with total exclusion of water. They had low dietary bulk, low potential for bacterial contamination and were ready to eat without cooking. Similarly, the commodities chosen had the most appropriate energy density and high biological value of protein. Moreover, the proposed foods had an optimal physical characteristic of being soft in consistency, easy to swallow and suitable for infant feeding[1].
The three most suitable recipes were:

[1] Infants over six months.

Rice – Sesame' RUTF 1

Ingredients: Roasted rice flour, roasted sesame seeds paste, Soyamin 90, sunflower oil, icing sugar, vitamin and mineral premix (CMV therapeutique, Nutriset).
Quantities (%):

Roasted rice flour	20.0	%
Soyamin 90	8.0	%
Roasted sesame seeds paste	29.0	%
Sunflower oil	19.4	%
Icing sugar	22.0	%
Premix	1.6	%
Total	**100.0**	**%**

'Barley – Sesame' RUTF 2

Ingredients: Roasted pearl barley flour, roasted sesame seeds paste, Soyamin 90, sunflower oil, icing sugar, vitamin and mineral premix (CMV therapeutique, Nutriset).
Quantities (%):

Roasted pearl barley flour	15.0	%
Soyamin 90	9.0	%
Roasted sesame seeds paste	27.0	%
Sunflower oil	24.0	%
Icing sugar	23.4	%
Premix	1.6	%
Total	**100.0**	**%**

'Maize – Sesame' RUTF 3

Ingredients: Roasted sesame seeds paste, roasted maize flour, roasted chickpeas flour, sunflower oil, icing sugar, vitamin and mineral premix (CMV therapeutique, Nutriset).
Quantities (%):

Roasted maize flour	33.4	%
Roasted sesame seeds paste	13.0	%
Roasted chick peas flour	25.0	%
Sunflower oil	12.0	%
Icing sugar	15.0	%
Premix	1.6	%
Total	**100.0**	**%**

It is important to emphasise that the cereals, legumes and oilseeds were all roasted prior to the milling into flour, as the use of raw non-roasted commodities could lead to the presence of potentially high levels of anti-nutritional factors and phytates. In keeping with the recommendation of the UN nutritional standards (Codex) sunflower oil was used in all products in order to meet (n-3) and (n-6) fatty acids requirement. It is usually specified that at least 3 to 10% of total energy should be provided by (n-6) fatty acids and 0.3 to 2.5% by (n-3) fatty acids.

Analytical Studies

To ensure that the products were safe and appropriate for field testing, macro nutrient and micronutrient composition, water activity, levels of microbial contamination and indices of rancidity (free fatty acids and peroxide values) were tested. The results (presented in tables 15, 16, 17 and 18) demonstrated that the nutritional composition, with the exception of iron, of each of the new RUTFs is close to Nutriset's Plumpy'Nut®. The products are palatable, stable and microbiologically safe.

Using the basic formulation outlined above, it would be easy to alter the amount of macronutrient and/or micronutrient of the products by varying the oilseed-cereal-legume combinations and/or the mineral and vitamin mixture. The low level of iron could be easily rectified by increasing the level of iron added to the premix. Table 18 demonstrates that the three new products have low water activity, similar to that of dried coffee, and below the level required to support any form of bacterial or even fungal growth. This finding was supported by bacterial analysis that demonstrated that for all the pathogens tested, the results were within microbial specification for this type of food.

These studies demonstrate the potential of new RUTF, produced from locally available grains and legumes, without the addition of milk powder or peanuts. Eliminating milk powder and peanuts and using local grains should allow these products to be made very much more cheaply than the $3,500 USD / MT that Nutriset charge for Plumpy´nut®, and more cheaply than the $2,000 USD / MT cost of the locally made peanut-based

Table15: RUTF-1, RUTF-2, RUTF-3 and Nutriset Plumpy'nut® nutritional composition per 100g and percentage contribution to energy

Nutrients		RUTF-1	Energy	RUTF-2	Energy	RUTF-3	Energy	Plumpy'nut®*	Energy
		100g	%	100g	%	100g	%	100g	%
Energy**	kcal	551		567		512		530	
Energy	kjoules	2307		2373		2142		2218	
Protein	g	13.8	10	14.1	10	13.4	11	14.5	11
Carbohydrate***	g	43	31	39.9	28	50.2	39	43	32
Fat	g	36	59	39	62	28.6	50	33.5	57
Ash	g	4.3		3.9		4.9		4	
Moisture	g	2.9		3.1		2.9		<5	

*Protein and fat are reported to contribute 11% and 57% in energy input. Total energy is reported to be 530 kcal/100g and moisture < 5%.
**The energy has been calculated using Atwater factors.
***Carbohydrate is by difference assuming protein to be nitrogen (N) times 6.25.

Table 16: Mineral analysis for RUTF products

	RUTF-1	RUTF-1	RUTF-3	Plumpy'nut®
	mg/kg	mg/kg	mg/kg	mg/kg
Cu	2.1	2.1	1.8	1.7
Zn	10.9	10.9	10.2	13
Ca	338.1	338.1	209.8	310
Na	256.5	256.5	189.9	<290
Mg	118.4	118.4	119.1	86
Fe	5.6	5.6	4.4	12.45

Table 17: Water activity (aw) in 3 RUTF samples

RUTF samples	Water activity
Rice-Sesame (RUTF-1)	0.290
Barley-Sesame (RUTF-2)	0.279
Maize-Sesame (RUTF-3)	0.260
Plumpy'nut®	0.241

Table 18: Interaction between aw and microbial proliferation in some foods		
Water activity	**Foods**	**Microorganisms**
0.98	Fresh meats, Fish, vegetables, Milk	Most food spoilage and food-borne pathogenic organisms grow
0.85 - 0.60	Flour, cereals, Nuts	No pathogenic bacteria grow
0.60	Confectionery, noodles, dried Milk	Microorganisms do not multiply but can remain viable for long period
0.30 - 0.20	Biscuits, Instant coffee	No viable microbial growth

Source: Peter Fellows (2000)

equivalent in Malawi (see section 5.21). Clinical field trials are now being conducted in Malawi, to compare the effectiveness of these new RUTFs with locally made RUTFs that include peanuts and milk powder, in treating severely malnourished children.

Future developments

These new RUTFs are eaten uncooked and have a low water content. This makes them suitable vehicles to deliver not only vitamins/antioxidants, but also probiotics and prebiotics (see box).

Synbiotic enhanced RUTF, designed with high levels of certain micronutrients, have recently been shown to slow the progression of HIV/AIDS. These may have huge potential in the treatment of HIV/AIDS, as well as acute malnutrition and a whole range of other illnesses and post operative conditions associated with diarrhoea and wasting, in particular. The current trial in Malawi is therefore also examining the effect of adding a mixture of probiotic and prebiotics called Synbiotic 2000 forte (Medipharm AB, Kågeröd, Sweden) into the new RUTF. In this study it is planned to test the effectiveness of synbiotics in combination with RUTF, in the treatment of patients recovering from severe malnutrition. As severe acutely malnourished children have features of immuno-suppression similar to some of those found in HIV/AIDS, it is hoped that this study will also provide initial evidence into the feasibility of using RUTF-synbiotic combinations, to slow the progression of HIV.

What are probiotics and prebiotics?

Probiotics are usually bacteria from the lactobacillus family that have at least five beneficial therapeutic functions:
They reduce or eliminate a range of potentially pathogenic micro-organisms
They reduce or eliminate various toxins, mutagens, carcinogens, etc.
They modulate the innate and adaptive immune defence mechanisms.
They promote apoptosis (the process of programmed cell death or cell suicide).
They release numerous nutrient, antioxidant, growth, coagulation and other factors necessary for recovery (28).
Prebiotics are generally polysaccharides, plant fibres that are resistant to digestion by human digestive enzymes. They exhibit strong bio-activity, exerting their effect through increasing the adherence of non-pathogenic bacteria to intestinal mucosal cells and via the generation of beneficial short chain fatty acids in the large intestine. Recent studies have demonstrated that when taken orally prebiotics can assist in recovery from infectious diarrhoea (29).
Recent results from prospective controlled trials in post operative surgical patients and after transplantation and immuno suppression, suggest that combinations of pre and probiotics, referred to as 'synbiotics', can reduce greatly the incidence of post operative infection, shorten recovery times and reduce the need for antibiotics (24;25). Other researchers have demonstrated benefits of probiotics in the treatment of lactose intolerance, viral diarrhoea and antibiotics-associated diarrhoea (26).

4.4 New Method for Estimating Programme Coverage

By Mark Myatt

This article gives an overview of the coverage estimation method developed for the Community Therapeutic Care (CTC) Research Programme in Malawi[1] .

Coverage is becoming an important indicator for monitoring and evaluating humanitarian interventions. Coverage indicators for selective feeding programmes were included in the SPHERE project's humanitarian guidelines for the first time in 2003[2] . Current approaches to estimating therapeutic feeding programme coverage rely on the use of nutritional anthropometry surveys that commonly employ a two-stage cluster sampling strategy. Such surveys will be familiar to many humanitarian practitioners as 'thirty-by-thirty' surveys. Coverage is calculated either directly using survey data or indirectly using survey data, programme enrolment data, and population estimates. Both methods assume that coverage is similar throughout the entire survey area and both can provide only a single wide-area coverage estimate (see below).

Direct methods

Recent period coverage estimate[2]

$$\frac{\text{Number of children found attending the programme}}{\text{Number of eligible children found } \textbf{NOT} \text{ attending the programme + number of children found attending the programme}} * 100$$

Point coverage estimate[3]

$$\frac{\text{Number of eligible children found attending the programme}}{\text{Number of eligible children found}} * 100$$

Indirect method

Coverage (%) =

$$\frac{\text{Number of children attending the feeding programme}}{\text{Estimated prevalence of severe acute undernutrition * estimated population}} * 100$$

The two-stage cluster-sampling approach uses population proportional sampling (PPS) in the first stage to select cluster locations and proximity sampling in the second stage to select households and children.

The PPS approach is unsatisfactory because:

- The bulk of data are collected from the most populous communities. This may leave areas of low population-density (i.e. those areas consisting of communities likely to be distant from health facilities, feeding centres, and distribution points) unrepresented in the sample. This may cause surveys to evaluate coverage as being adequate even when coverage is poor or non-existent in areas out side of urban centres.
- There is no guarantee of an even spatial sampling. This is true even when the population of the survey area is evenly distributed. Again, PPS will usually leave some areas unrepresented in the sample.
- It relies on population estimates which may be inaccurate in emergency contexts, particularly if population displacement, migration, or high mortality has occurred in the target population.

The proximity sampling approach is unsatisfactory because:

- The proximity method is unlikely to return a representative sample at the cluster level. It is not possible to estimate coverage reliably for a cluster without taking a representative sample from the cluster location.
- Even if a representative sample were taken at the cluster level, the within-cluster sample size is too small to estimate coverage at the cluster level with reasonable precision. For example:

Assumptions:		Survey results:	
sample size	= 900	number of cases found	= 900 * 0.05 = 45
number of clusters	= 30	number of cases found per cluster	= 45/30 = 1.5
prevalence (severe acute)	= 5%		

The sample size available to estimate coverage at each cluster location is likely to be only one or two cases.

These problems are not important if the assumption that coverage is similar throughout the entire survey area is true. Such as assumption is, however, unlikely to be true of many centre-based programmes or during the start-up phase of a programme, where coverage is likely to be better in the areas closest to feeding centres. If coverage is uneven, the ability to identify areas with poor coverage is an essential first step towards improving program coverage and, hence, program impact. Current methods do not provide this.

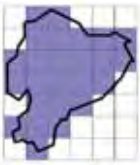
The method outlined here allows an estimation of coverage in the usual way, but also allows identification of areas with poor coverage within a programme area.

Step 1 : Find a Map

The first step in the new coverage estimation method is to find a map of the program area. Try to find a map showing the location of town and villages. A map of 1:50,000 scale is ideal.

Step 2 : Draw a grid

The next step is to draw a grid over the map. The size of each square should be small enough for it to be reasonable to assume that coverage will be similar throughout the square. A square of 10km by 10km will probably be small enough in most circumstances.



Step 3 : Select the squares to sample

Select the squares with about 50% or more of their area inside the program area.

Step 4 : Select the communities to sample

Select the community closest to the centre of each square. If prevalence is low then you might need to select more than one community from each square. Select the communities closest to the centre of each square. Select the communities to be sampled and the order in which they should be sampled in advance of visiting the square.

Step 5 : Case-finding

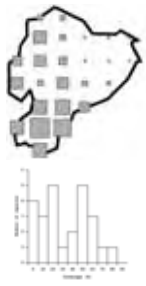
When you visit a community find cases using an active case-finding method. It is usually sufficient to ask community health workers, traditional birth attendants, traditional healers or other key informants to take you to see "children who are sick, thin, or have swollen legs or feet" and then ask mothers of confirmed cases to help you find more cases. You could also use door-to-door screening. It is important that the case-finding method that you use finds all, or nearly all, cases in the sampled communities. Each case is confirmed by applying the program's entry criteria (e.g. < 70% of the median weight-for-height from the NCHS reference population and /or bilateral pitting oedema). When you find a confirmed case you should then find out whether that child is in the programme. Remember to follow-up on children reported to be in a therapeutic feeding centre or at a distribution point on the day of the survey.

Step 6 : Record the data

You need only record the number of cases found and the number of those that are in the program for each sampled square.

Step 7 : Calculate coverage

Coverage is calculated using either of the direct methods illustrated in first box. You should calculate this separately for each square as well as for all of the squares together. You could use a weighted method to calculate the coverage for all of the squares combined but this is not essential.



Step 8 : Plot the data

Coverage data is plotted as a mesh map and as a histogram. The length of the sides of the filled squares on the mesh map reflects the level of coverage found in each square (calculated in step 7). The small open squares indicate quadrats (squares of approximately equal area) with zero coverage.You might find it helpful to mark the location of feeding centres, distribution points, health posts, and roads on the map. This will help you interpret the results of the coverage survey.

[1] Coverage method presented at CTC meeting in Dublin, 8-10th October, 2003.

[2] The recent period estimate includes children who may not be eligible for entry into the program on the day of the survey (i.e.children in the recovery phase whose weight-for-height is above the programmes entry criteria or who no longer exhibit nutritional oedema).These children, who are in recovery were recently severely undernourished thus the formula is an estimator of recent period coverage.

[3] The point estimate is the ratio of cases receiving treatment found in the sample to the total number of cases requiring treatment found in the sample. It therefore only includes children who were severely malnourished on the day of the survey.

[4] http://www.sphereproject.org/handbook/index.htm

[5] A number of formulae are used for direct coverage estimation. The simplest and most intuitive variants are shown here.

4.5 The Cost of Selective Feeding

by Rose Caldwell & Alistair Hallam (Valid International)

The aim of this paper is to present the cost per beneficiary of CTC and discuss aspects of these costs, underlying assumptions and other factors and issues affecting cost.

The costs discussed are all based on CTC programmes operated by Concern Worldwide and supported by Valid International. All cost information has been supplied by the Concern field accountants for each country, and is based on the total cost of operating the programme in country. The costs have been recorded and categorised using Concern Worldwide field accounting policies and procedures, an overview of which is outlined below.

Field accounting

Direct Costs

These costs relate to the day-to-day recurring running costs of the programme such as:

- Salaries and staff related costs (e.g. per diems, training) of national staff and international staff working directly on the programme such as nutritionists, food advisors, storekeepers and nurses.
- Food and medicine costs - used in both therapeutic and supplementary components of the CTC programme, including that provided by other agencies such as UNICEF/UNWFP in the way of material aid. This has been adjusted for any unused stock at the end of the period under consideration. This cost also included the cost of transportation of the items to their final destination, which, as reflected in cases such as South Sudan described later, is significant.
- Consumable and miscellaneous items such as scoops, protective clothing, stationery etc.

Capital Costs

These costs relate to the once-off capital purchases required for the programme and include the purchase of motor vehicles, communications and computer equipment, clinical equipment and any construction /renovation costs. The programmes under consideration in this cost analysis had only just begun operating. Since Concern Worldwide operate a policy of expensing costs on purchase, the full costs of capital items are fully allocated to the CTC costs. This effectively inflates costs, since the majority of the capital equipment would expect to have a useful economic life of 3-5 years. Arguably, using a method of capital depreciation (thus spreading these costs over a longer period) would provide a sounder analysis.

Local Office Overheads & Country Office Overheads

Concern Worldwide allocates overheads to programmes on two levels, local office overheads and country office overheads. For example, Concern Worldwide in Ethiopia will have a Country Office in Addis Adaba and a local office in Wollo. The local office in Wollo is likely to run several different programmes such as agriculture, health and community development programmes as well as the CTC programme. Similarly, the country office is likely to support more than one local office.
The costs of local and country offices are categorised as transport, expatriate and administrative costs. The costs of both these offices will be allocated to the CTC programme and reflect, as closely as possible, the use of the resources. For example, local office transport allocation may be based on the number of vehicles used in each programme, whilst country office transport allocation will be based on the mileage of country office vehicles to each local office.

Cost Exclusions

The costs presented here do not include significant costs relating to the Head Office of Concern Worldwide, which provides support to Country Offices.

Rate of Exchange

The rate of exchange used by the field office, to translate the costs from local currency into USD, sterling or euro, is the average rate obtained in the period under consideration. The rate of exchange used to convert USD/ sterling costs into euro was provided by Concern Worldwide and is the average for the period Jan 2003 to Aug 2003 (1 euro = 1.1 USD/0.693 sterling)

Number of Beneficiaries

At the time of the cost analysis, all these programmes were still operational. As a result, it was decided to use number of beneficiaries admitted to the programme as opposed to number recovered, as many were still in the programme

Programme costs

International standards for selective feeding, recommend that therapeutic feeding programmes should not be run in isolation of supplementary feeding programmes. In CTC, this interdependence is even more marked as the OTP element of the CTC is implemented by the same teams and through the same structures as the supplementary feeding element. However, to aid comparison with the costs of running TFC programmes, the total costs have been split into therapeutic (OTP) and supplementary (SFP) (see table 19). This is a very tentative split and a number of assumptions were made in order to do this, namely:

- Costs for all items used directly for both OTP and SFP programme beneficiaries, e.g. weighing equipment, distribution centre setup, supplementary food etc, were split according to the ratio of SFP:OTP beneficiaries.
- Costs for outreach and distribution staffing used for both OTP and SFP programme beneficiaries were split 50:50. Although the proportion of OTP beneficiaries is smaller, a relatively higher proportion of these staff's time was focused on the severely malnourished.
- Overheads used for both OTP and SFP programme support were split according to the ratio of SFP:OTP beneficiaries.

Based on the analysis, the cost per beneficiary for the CTC programme as a whole (including SFP, OTP and SC elements) varied from 114 euro in South Sudan to 62 euro in Ethiopia, as detailed in Table 20.

Table 19: Tentative division of costs by CTC programme elements

History of field programme	established	new	established
Programme duration	3 months	10 months	5 months
Prevalence of severe malnutrition	4%	1%	0.4%
OTP numbers	339	1571	519
SFP numbers	3144	8164	7855
OTP cost/beneficiary (€)	255	257	301
SFP cost/beneficiary (€)	96	115	43
Combined cost/ beneficiary (€)	114	148	60

Table 20: Overall costs of CTC programmes in Ethiopia, South Sudan and Malawi				
Country	CTC programme	Period of programme/costs	Number of beneficiaries admitted	Cost per beneficiary (euros)
South Sudan	Aweil West	4 months (1/05/03- 31/8/03)	3144	114
Malawi	Dowa	12 months (1/8/02 - 31/7/03)	8164	148

The variations in costs between country programmes, reflected in table 20, relate to the following factors:

South Sudan

South Sudan is recognised as a difficult and expensive country in which to operate. High costs are inccurred for the transportation of food, medicines and staff, much of which has to be flown in from Kenya. In addition, this programme was only operational for four months at the time of the analysis and therefore the full cost of set up/capital expenditure has been borne by relatively few beneficiaries. One would expect the cost per beneficiary at the end of the programme to be substantially less.

Malawi

Two major factors affected Malawi's cost. First, the high overhead costs allocated to the CTC programme and second, the high cost of vehicles. High overhead costs were incurred by the programme as Concern Worldwide had begun working in Malawi only six months prior to the period under review. During this period, Concern had few programmes operational in Malawi and hence the CTC programme was carrying a far higher than normal burden of overheads, including the costs of setting up the standard Concern infrastructure - vehicles, communication and IT equipment, etc. The vehicle costs were high because for most of the time of this review, Concern was not a registered NGO in Malawi and there were no duty free arrangements in place for importation of vehicles (duty over 100%). Consequently, the CTC programme rented several 4x4 vehicles at high cost for most of the first year of the programme, before buying new vehicles.

Ethiopia

Ethiopia is a well-established Concern Worldwide field operation, with many programmes which are relatively inexpensive to run. Hence the cost per beneficiary in this case is lower than in the two other examples.

Influences on cost-effectiveness of CTC programmes

One of the most important factors affecting the cost per beneficiary is the number and the density of beneficiaries. Unlike traditional TFC programmes, CTC does not have a capacity limitation in relation to its fixed costs. In other words, once the initial capital and set-up costs have been expended, the number of beneficiaries that can be treated within a particular geographical area is not limited. Hence, the cost per beneficiary continues to decrease as the number of beneficiaries increases. Table 21 presents a sensitivity analysis that considers the impact on the cost per beneficiary of changing beneficiary numbers by 1000 and 2000.

Experience to date has helped identify a number of other factors that influence the cost-effectiveness of the CTC approach:

Table 21: Sensitivity analysis estimating the variation in cost/beneficiary as beneficiary numbers change					
	Cost per Beneficiary (euro)				
Country	Actual no. of beneficiaries	+1000 beneficiaries	+2000 beneficiaries	-1000 beneficiaries	-2000 beneficiaries
S Sudan	114	87	60	141	168
Malawi	148	132	116	164	180
Ethiopia	60	53	45	67	75

- The focus on achieving high coverage requires a good logistics system. Clearly, the higher the density of severely malnourished children in a given geographical area, the cheaper the logistics of bringing food to them.
- Costs will be greatly reduced where the basic infrastructure of the NGO operating the programme is already in place.
- The use of existing (health) physical and logistic infrastructure and staff reduces costs. This is especially true in the case of outreach capacity. Outreach is an expensive activity for an NGO to set-up and run independently. Where existing systems of outreach can be utilised, costs are decreased considerably. In countries where formal health structures are weak, it would be useful to try and build CTC outreach around non-formal community networks, in an attempt to increase cost-effectiveness.
- The rate of recovery of children influences cost. Experience from CTC programmes to-date indicates that about 20% of children recover very slowly in the community. This increases costs - of extra distributions of RUTF, of extra surveillance (weighing and measuring), and of follow-up. Ways of supporting these children and improving recovery rates need to be investigated.
- The quality of the roads - self evidently, the better the roads, the cheaper it is to transport staff, equipment and supplies to where they are needed.
- Availability of storage at CTC distribution sites - if this is available, fewer trips are required.
- Local production possibilities - this cuts down import and tax costs of RUTF supplies.

Difficulties comparing TFC and CTC Costs

Comparing costs of TFCs and CTC programmes is difficult for several reasons:

- CTC programmes are multi-sectoral and it is very hard to differentiate between supplementary feeding, outpatient therapeutic care, stabilisation centre care, education, hygiene promotion, outreach, mobilisation costs etc.
- The TFC model is a fixed capacity model compared with the almost limitless capacity of a CTC programme, making it vital to compare the contexts in which the two programmes operate.
- A comparison on a purely cost per beneficiary basis is not necessarily appropriate given the different nature and impacts of the two programmes. The initial set up costs invested in CTC can be seen as an investment in the future, as a CTC programme puts in place much of the infrastructure for the emergency response to become a longer-term nutrition programme. This is not usually the case with TFC programmes.
- Humanitarian aid managers are often guilty of only including the direct costs of their programmes in their analysis of cost effectiveness, and ignoring other costs borne by the communities being helped. Traditional TFC programmes incur significant costs for the families and communities of programme beneficiaries that need to be included in any comparative analysis of CTC and the TFC approach. In the latter, mothers are removed from their families for up to a month, in order to stay with the child in the TFC. Siblings of the malnourished child are deprived of maternal care for this period. Furthermore, the mother is unavailable to work in the fields or participate in other income-generating activities during this time. All of this imposes a significant opportunity cost on the family and community - a cost that is largely avoided in the CTC model.

In order to satisfactorily provide a cost comparison, a comprehensive piece of work needs to be undertaken, taking into consideration both quantitative and non quantitative factors that influence direct and indirect costs to programmes and their beneficiaries.

5 'Integration' in CTC

by Jamie Lee

Many of the articles in this supplement explore the concepts and practice of 'integration' within CTC programmes. A variety of meanings and values are attached to the word 'integration' in this context. Among these are:

- The sense that integration is what moves emergency programmes towards a more sustainable development stance.
- The connotation of a comprehensive (as opposed to vertical) approach, which may be ultimately more effective.
- Working with existing delivery structures, including western bio-medical health care systems and 'traditional' systems such as TBAs, traditional healers etc.

We could therefore say that integration takes place along several planes:

1. culturally, into 'traditional' institutions
2. sectorally, across programmes (e.g. HIV/AIDS into Nutrition)
3. institutionally, into host country delivery systems
4. temporally, between relief and development.

The virtues of integration do not necessarily stand up to scrutiny in every case and there may be good reasons in some settings for agencies to resist the call to integrate on any one of these planes. The question is: what type of integration - if any - is appropriate in a given situation? The articles in this section seek to offer some insight into this question by illustrating the extent to which integration has been possible within CTC programmes and the consequent effects of this.

5.1 'Cultural Integration'

5.1.1 'Cultural integration' in CTC: Practical suggestions for project implementers

By Jamie Lee

The SPHERE guidelines touch only superficially on culture and the cultural acceptability of humanitarian assistance. However, in recent decades, the wider field of international health has produced a variety of initiatives intended to account for culture in the design and delivery of programmes. These include international research efforts in control of diarrhoeal disease, vitamin A deficiency and acute respiratory infections, and the promotion of family planning. The challenge posed by HIV/AIDS prevention, much of it focused around behavioural change, has further heightened the attention to culture. Thus, at least in the context of well-funded multi-country international health interventions, some form of integration into local cultural settings is becoming standard practice. However, the language of 'cultural integration' can be controversial. "Who", it might be asked, "is to be integrated into what, and on whose terms?" There is also concern about the focus on culture as a problem or obstacle to be overcome en route to compliance. Caution is required, if culture is not to become a stick with which we beat the 'victim'.

Since late 2002, CTC projects in Malawi, Ethiopia, and South Sudan have each tried to improve nutrition outcomes by undertaking an element of social or cultural research, in parallel with service delivery. Investigators have included specialized anthropologists as well as community development generalists, and African academics and practitioners as well as expatriates. The level of effort has ranged from rapid reconnaissance of two weeks, to more thorough ongoing investigations of several months duration. In each case, the underlying assumption has been that an appreciation of the beneficiary perspective on the project (its procedures, institutional alliances, demands and trade-offs of participation, and the acceptability of treatments) can improve access and impact. This approach is hardly new, but it remains underexploited in emergency programmes, where the ability to devote staff time and energy to non-core functions is still considered something of a luxury by many implementing agencies. This article tries to summarise some of the lessons and suggestions arising from this work.[1]

Take time to understand the context of the project – how do interventions relate to the wider range of options and pressures facing local people?

This requires little in the way of specialized skills, being primarily a matter of creating opportunities to consult with beneficiaries and other service providers. The general objective is to achieve a 360 degree picture of the interactions that

[1] Observations relating specifically to the theme of community mobilization are dealt with separately in section 5.1.2

individuals have with other services, with an eye toward minimizing mixed messages or contradictions. Doing this in Malawi quickly revealed that many children being screened for CTC were already subject to monthly growth monitoring from village health workers during vaccination days. Conflicting indicators used in the two programmes was causing frustration, as mothers whose children had, for some time, been judged malnourished on a weight-for-age basis, thought they were finally to be assisted when CTC arrived. But, on attending CTC screenings, they found that the same child was being judged healthy on a MUAC or weight-for-height basis and refused admission. Coming on top of long waits and sometimes lengthy treks to attend the screenings, this generated some bitterness and undermined interest in the CTC programme: "had they not been told to do something for the health of their child?" "Why, having acted on this advice and come all this way, were they being told to go home empty-handed?" Relatively little input quickly allowed project staff to make sense of the depth of community frustration at the rejection of children from the CTC screenings and take steps to reduce it. Similar findings from Ethiopia and South Sudan have pushed CTC towards a better harmonization of admission indicators with GM programmes, and in some cases, towards using MUAC alone as a screening and admission indicator.

Develop an understanding of the words and phrases used locally to describe wasting and swelling in children.

In emphasizing community-wide coverage, CTC faces a dilemma: how to encourage wide participation of malnourished children at OTP and SFP screenings, without also attracting large numbers of the non-malnourished? Efforts at the outset to establish a clear and consistent message concerning eligibility help limit confusion, prevent project staff from being overwhelmed, and minimize the community disappointment and frustration resulting from non-admissions. But the particulars of such a message are not as obvious as they might seem. It has been found that it helps to devote specific attention to the local language concerning malnutrition. The term 'malnutrition' may undergo subtle shifts in meaning, as it is translated by the project into the language of beneficiaries (for instance, available local terms might stress the idea of food shortage over dietary quality). Even when terminology seems roughly equivalent, local beliefs sometimes ascribe causes other than poor nutrition to swelling or wasting in children. For example, in Chichewa-speaking areas of Malawi, swelling is believed to relate to the moral conduct of the parents. Consequently, when describing the target population it is best to refer directly to physical symptoms, rather than to issue a general call for "malnourished children". Even then, wasting and swelling may also be translated in a variety of ways, and where this is the case, discussions which centre around pictures of malnourished children can help to elicit the full range of local terms. Staff can then employ these terms in information meetings designed to explain the project to the community. This lesson, learned in Malawi, has enabled more recent CTC projects in Ethiopia to improve the rate of programme uptake and raise the ultimate coverage rates (see section 3.1).

List common beliefs concerning the causes and appropriate treatment of wasting and swelling.

An iterative process of discussion with local families can be used to list the names of conditions, perceived causes and common treatments, resulting in a composite picture of malnutrition from the perspective of local parents. This is usually sketchy and cannot hope to reproduce the cultural meaning of illness or healing that might result from true ethnographic study. However, experience has shown that it is often sufficient to reveal the points of divergence from bio-medical practice.

The nature of the revealed differences can have implications for conducting CTC. Where there is association made between malnourished children and the moral conduct of their parents, for instance, case-finding and outreach need to be conducted with due regard for family and community sensitivities. Where there appears to be a long interval between local treatment of kwashiorkor or marasmus cases and their presentation, there may be opportunities to engage local folk practitioners in early case referral to the project. Where several types of healer appear to be involved in treating malnutrition, approaches to the 'traditional' health sector may need to be broadened beyond the minimal contacts (often with TBAs) established by clinical health services. This type of collaboration with folk practitioners is for the moment, more of a potential than an actual feature of CTC but, in both Malawi and Ethiopia, healers have proved to be surprisingly approachable. And as CTC looks beyond emergency interventions towards integration with longer-term programmes, there may be opportunities to explore with host communities the possibility of more effective linkages between folk and modern practitioners in the treatment of malnutrition.

Use information on local beliefs and practices to map out critical linkages with other services, where these exist.

An investigation of the treatment of kwashiorkor in Sidama, Ethiopia, revealed that food proscriptions may exacerbate malnutrition. This suggested an important focus for eventual nutrition education work. In other examples, from both Malawi and Ethiopia, discussions with mothers about marasmus pointed to early complementary feeding as a possible health concern. Further investigation revealed that complementary feeding, in turn, was conditioned by a variety of concerns - including the possible 'spoiling' of breast-milk through conception of a second child. Consequences for the child who consumed the spoiled milk were thought to include severe diarrhoea. This finding highlighted the need to complement

An outreach worker meets with village elders in Ethiopia.
Concern, 2003.

A member of the district health office meets with village elders to discuss the involvement of volunteers in the programme in Malawi.
Concern, 2004.

Child eating plumpynut® in South Sudan.
Tearfund, 2003.

standard CTC interventions with instruction for care-givers in the control of diarrhoeal disease and the production and timely introduction of complementary foods.

Once project messages have been clarified, consider whether there may be local formal and non-formal channels of communication that can be utilized to explain CTC objectives and procedures.

As a matter of first principle, the CTC approach attempts to align projects with existing clinical services (see section 5.3). These often have their own means of outreach to the community (Village Health Committees, Community Health Workers, and other extension agents). In addition, experience to date has shown that there are less obvious cultural channels of information, authority, and decision-making. In African settings, these are usually systems of authority, built around clan or lineage. The relationship of these systems to the official government apparatus has ranged from active collaboration in some countries, to uneasy accommodation in others. In Malawi, 'Traditional Authorities' (TAs) are on the payroll of the state, and in the early stages of CTC, found themselves in an awkward position, mediating between government workers and project staff on one hand, and frustrated communities on the other. Based upon the rapid investigation described above, effort were made to understand the causes of frustration, which resulted in the design of a handbill to guide project staff in a series of meetings with the TAs. By respecting the TAs, and by responding systematically to the concerns of their constituents it was possible to secure their cooperation in initiating a series of cascading meetings with allied village headmen. A rapid increase in coverage followed these meetings.

However, the mere existence of 'traditional' systems of communication and authority may not be sufficient reason to invoke them in every case. Agencies implementing CTC must weigh potential benefits against other considerations, including consequences to the existing order. Whereas relief agencies may think of their actions as neutral humanitarianism, deepening community involvement may be read by host governments as a political act beyond the purview of the agencies. In Ethiopia, where government exercises strong oversight of emergency nutrition activities, CTC implementers in one region opted not to approach tribal authorities due to the political climate, which was characterized by a pervasive fear of local ethnic nationalism on the part of local government. In this case, a network of project outreach workers was already doing an effective job of expanding coverage, so forgoing contact with traditional leaders was not a significant handicap.

Understand the limitations of qualitative research.

Qualitative methods offer insights into beliefs and practices but cannot by themselves assign priority to project responses. Research has helped to illuminate a variety of ways in which local people may respond to symptoms, or to CTC interventions. However, these insights are not usually sufficient to suggest the most efficient use of project resources. For example, it is relatively easy, with minimal qualitative research outlays, to catalogue local names for symptoms of severe malnutrition and use these to foster communication and understanding. However, acting on other observations might not prove to be cost efficient. Developing a culturally appropriate nutrition education campaign which addresses complementary infant feeding issues would, for instance, be a multi-stage process requiring considerable resources. Before doing this, qualitative insights would need to be paired with rudimentary quantitative methods, in order to assess the true magnitude of the problem. The resource implications of such alternative programming choices are likely to loom larger, as CTC moves beyond an initial emphasis on coverage towards the integration of nutrition into longer-term care.

5.1.2 Community Participation and Mobilisation in CTC

By Saul Guerrero & Tanya Khara (Valid International)

Over the last few years of CTC development, the process of community participation and mobilisation has become central to the search for more efficient and more sustainable strategies to manage malnutrition. There have been major positive benefits associated with prioritising community participation including improved coverage, increased speed of uptake and therefore, impact, and increased community ownership over CTC programmes, making them easier to hand over. Importantly, enabling the implementation of more culturally-appropriate interventions through CTC, maximises the positive impacts for local people and minimises the opportunity costs to them.

In the short term, community participation can lead to the joint identification of logistical constraints, sites and target areas, as well as the mutual identification of programme opportunities and threats. In the longer term, community participation in programme activities promotes more sustainable programme design and provides a platform from which the communities can demand similar services from the existing national structures. Experiences to date have demonstrated that pressure from communities and their representatives is a necessary factor in promoting institutional integration and longer term, more sustainable programmes.

Experience acquired over the last few years of CTC implementation has led to a gradual improvement in understanding the role of community participation in:

i. Programme design and planning
ii. Programme implementation
iii. Hand over to more sustainable, local structures

This improved understanding has helped develop the CTC's public health approach. In particular, it has become clear that a high prioritisation of community integration and exploration of the relationship between implementers and beneficiary communities, is vital to programme success. Improvements in programme design, based on these findings, has allowed CTC to reach potential beneficiaries in a more effective, timely and appropriate manner. While the lessons learned are often context-specific, they highlight the shift in focus from the passive recognition of community mobilisation as important, to actively seeking community integration into programme activities.

i. Programme design and planning

The involvement of existing social, religious, political and economic structures and key figures in the planning stages of the CTC programme can serve as the springboard for community integration into programme activities. By building upon the implementer's knowledge and experience in the area of operation, traditional channels of communication can be utilised to clearly lay out programme objectives and criteria at an early stage and, thus, prevent confusion among potential beneficiaries. Engagement with communities during programme planning can also facilitate the early identification of existing social networks (to be utilised in the mobilisation efforts) as well as the joint identification of sites, target areas, and possible constraints (e.g. logistical, attitudinal, etc.) to the subsequent delivery of services. On the other hand, overlooking community participation during the planning stages is likely to lead to confusion - among implementers and beneficiaries alike - during the subsequent implementation of the programmes. As

the examples below describe, the exclusion of communities from the planning stages can significantly hamper the success of programmes, and increase the effort necessary to bring communities on board at later stages of programme implementation.

The Malawi experience

Malawi, where the CTC was originally established as a response to the 2002 nutritional emergency, provides a revealing example of how limited engagement can have important negative ramifications during the implementation of CTC programmes. During the planning stages of the CTC in Malawi, insufficient communication with existing formal structures and the initial omission of more informal or 'traditional' structures and community figures had a substantial impact on initial programme coverage and uptake. The project's limited understanding of local perceptions of the programme delayed recognition of the communities' distrust of unfamiliar Weight for Height (W/H) measurements. This, coupled with an initial failure to inform and involve 'traditional' structures, such as Traditional Authorities (TAs) and Village Headmen, appears to have greatly reduced initial attendance and programme coverage during the first three months of the programme.

If Malawi provided the first lesson on the impact of inadequate participation and delayed engagement with the community, it also offered the opportunity for socio-cultural input to contribute positively to CTC programme activities. In response to the slow uptake of CTC services, the work carried out by sociologists and anthropologists in Malawi offered valuable insight into the perceptions of the beneficiary communities regarding CTC, while simultaneously highlighting some of the shortcomings mentioned above. Changes in programme design and prioritisation based on these findings, in particular the more active and positive involvement of 'traditional' community structures, resulted in a rapid increase in the number of new cases of severe malnutrition admitted into the programme (see figure 7).

ii. Programme implementation

The involvement of communities at an early stage - through key figures or otherwise - can often serve as the foundation for continuous active dialogue between the implementers and the beneficiary community. The joint identification of opportunities and threats, as well as the allocation of tasks and responsibilities among all stakeholders, are among some of the areas in which community involvement and consultation have proved invaluable during programme implementation. In South Sudan, for example, joint identification of sites helped to focus on existing logistical barriers to programme uptake. Having noted the difficulties for carers to cross the rivers and swamps during the rainy season, implementers and the local community developed a partnership with local boat-owners, who were recruited and provided with material incentives in return for free ferrying of programme beneficiaries.

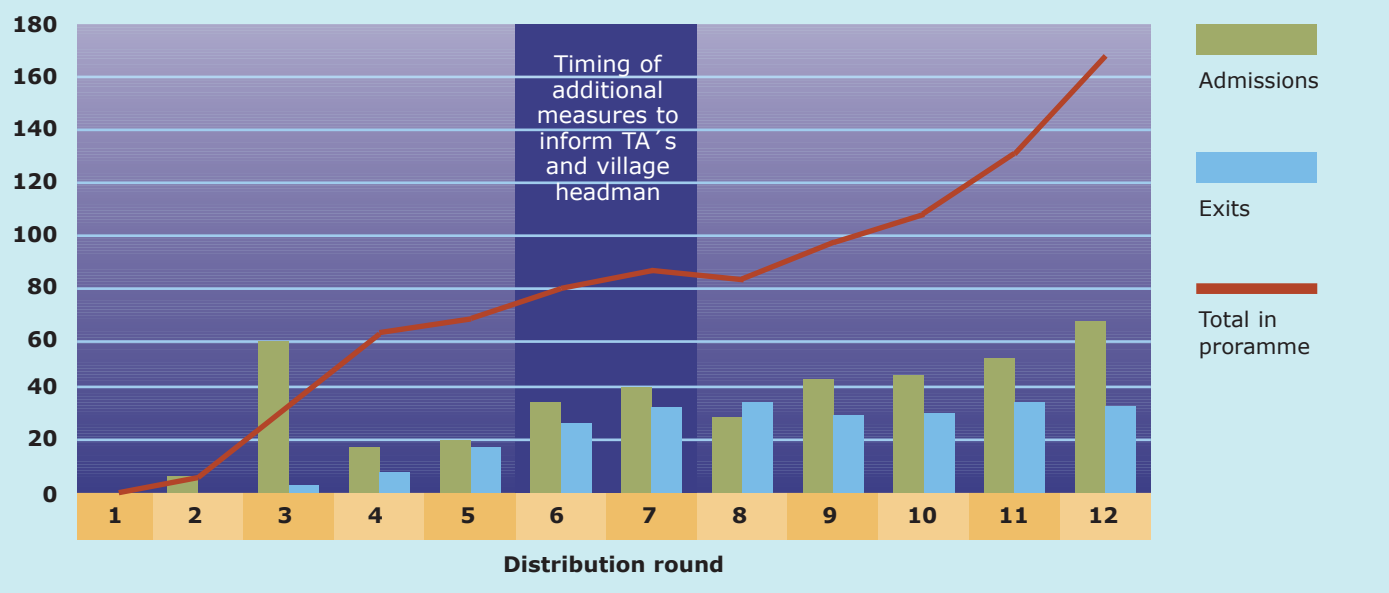
This approach to community involvement succeeded insofar as it provided an initial solution to a permanent obstacle. Over time, however, ferry services were disrupted by disheartened boat-owners. The fact that project implementers remained unaware of this highlighted an important lesson: opportunities and constraints at community level are not constant and such arrangements demand systematic follow-up and a forum for discussion and feedback, to remain effective over time. In south Sudan, failure to appreciate this lesson and not institute appropriate mechanisms for discussion and feed-back, led to the weakening and eventual collapse of communication channels post set-up, a discontinuation of the ferry service and as a consequence, decreased attendance, greater opportunity costs to those in the programme and decreased impact.

One of the single most important by-products of developing community participation is the creation of systems for constant dialogue and joint problem solving. There are many challenges to putting such systems in place, but effective systems for communication between implementer and beneficiary provide many benefits. These are essential. On the one hand, regular engagement with the community can lead to the identification of post-implementation obstacles and joint problem solving. On the other, community feedback can shed light on developments at the community level which affect the performance of CTC interventions.

Maintaining such links has required commitment on the part of CTC implementers to understand, but also to bring onboard, beneficiaries' views and needs. In South Sudan, socio-cultural enquiry highlighted the need for an effective solution to the issue of boat-owners and their payment. As a way of facilitating the formulation of a joint strategy, the boat-owners were approached and their input regarding acceptable incentives put forward to the implementing agency. The eventual provision of such material incentives served to re-establish the complementary services for the duration of the programme.

In Ethiopia, consultation with beneficiaries also helped re-adapt existing programme strategies to better meet the communities' needs. For example, feedback from communities highlighted the difficulties faced by carers crossing rivers during the rainy season. Through further socio-cultural enquiry it was determined that a number of beneficiaries preferred travelling longer distances to crossing rivers, as crossing rivers often required both carers to travel to the sites, thereby greatly increasing the opportunity costs to families. As a result, the

Figure 7: Admissions to OTP in Malawi, between August 2001 and January 2002



programme design was changed, and started to provide assistance in the process of transfer of beneficiaries to the preferred sites, to facilitate programme attendance and uptake. In Ethiopia, beneficiary concerns about contracting diseases at the distribution site, or confusion over the preparation of FAMIX, led to inclusion of these topics in health education and cooking demonstrations at the sites.

iii. Hand-over to more sustainable, local structures

Socio-cultural enquiry and the community participation involved has brought together many of the different spectrums of society (i.e. religious, political, social, and spiritual) to discuss and develop more sustainable and appropriate courses of action. This cooperative process has produced recommendations on the preparation of a long-term, volunteer-based strategy for the outreach element of the CTC programme, that are now central to some local CTC strategies. The process has yielded many insights on the acceptability, potential risks and opportunities associated with selecting a community-based volunteer workforce and the need to involve more key figures, in addition to volunteers, to assist in case-finding and referral activities at a community level. The resultant combination of community-elected volunteers with key social figures forms a far more comprehensive and representative outreach network.

For example, in South Wollo, Ethiopia, the initial volunteer strategy struggled. Some village leaders felt they had not been sufficiently involved and therefore didn't support the outreach activities and local level elections resulted in the selection of male volunteers only. Concern addressed these problems by further discussions with village leaders and by going back to talk with communities, advocating for the inclusion of women, stressing their value for the programme in terms of more appropriate/sensitive home visits, and increased understanding of issues of child care. The result was a network of paired volunteers (male and female) working in connection with local leaders who have now been included in all trainings. This has helped to improve the acceptability of the strategy and already, (after volunteers have been working for 3 months), the Concern team and MoH workers are pleased with the referrals being made. As volunteers work within their villages only, their activities, so far, have remained manageable on a voluntary basis.

Lessons Learned

The experience of implementing CTC programmes over the last three years has led to notable improvements in the formulation of a comprehensive but flexible approach to community participation and mobilisation. In particular:

There is no prescribed formula

The level and stages of community participation in CTC programmes must take into account the risks, opportunities and characteristics of each environment. Community engagement must also acknowledge the social potential or 'social capital' of the beneficiary communities, so as to assess the most appropriate areas of community participation in programme activities.

Early engagement with the community is central to the success of CTC

It is important to engage with beneficiary communities during the planning (or even pre-planning) stages of the programme. Early involvement of the community can minimise confusion and increase programme awareness at a community level and facilitate the selection of adequate and sustainable strategies. It can also provide a platform for further, post implementation engagement between implementers and beneficiaries.

There is a vital need for ongoing engagement and feedback

Community mobilisation should be an ongoing process, spanning from the planning stages to (wherever possible) the hand-over to national structures. Communities and their representatives must be provided with a forum for discussion and feedback on issues relating to programme implementation and acceptability. Joint decisions must be followed up to guarantee their effectiveness over time, along with information feedback to communities and their representatives.

Socio-cultural enquiry plays a valuable role in community mobilisation

Socio-cultural input provided during the implementation of CTC programmes has served a dual role. First, it has allowed implementers to gain a more insightful understanding of the beneficiary communities. Secondly it has allowed beneficiaries themselves not only to voice their views on issues relating to programme acceptability, but also to bring about tangible changes in programme strategy.

Large scale community mobilisation is feasible and essential even during nutritional crises

Community mobilisation during nutritional emergencies is feasible. While challenges do exist, experience has shown that

Community volunteers are trained to take over mobilisation and casefinding activities from Concern outreach workers, Ethiopia.

Concern, 2004.

Volunteers being trained to use MUAC in Ethiopia.

Valid Internaational, 2004

the success of community mobilisation depends largely on the level of commitment by the implementer to prioritise community mobilisation prior to, during and after the cessation of programme activities.

New developments and future directions

The process of engaging with different aspects of community integration remains ongoing. For example, the role of volunteers within the CTC approach is being simultaneously explored in Ethiopia and Malawi. In Ethiopia, the volunteer system is being introduced as a more sustainable follow-up for outreach activities (e.g. case-finding, referrals and follow-up). Through socio-cultural enquiry, the views and opinions expressed by the beneficiary community have to a large extent guided the selection of volunteers.

Like all aspects of community mobilisation, this level of community integration requires further assessment to guarantee its effectiveness and acceptability over time. In Malawi, this process has been taken a step further. Teams are developing mechanisms to integrate the MoH extension services (Health Surveillance Assistants (HSAs)) with pre-existing, but previously moribund, networks of community growth monitors, with new community volunteers recruited from those familiar with the CTC programme, and with village health committees. Following this approach, outreach activities are supervised by MoH staff but supported by a network of clearly identified community-based volunteers. Future developments in this area include the identification of appropriate incentives for the volunteer workforce, the formulation of sustainable lines of communication between programme implementers and volunteers, and ongoing investigation of the overall acceptability of the approach among the beneficiary population. There is also currently an enquiry into the perceived needs of PLWHA and the current Home-based Care service provision in Malawi, with a view to better identifying the role of CTC in the area.

There are plans to conduct further research in areas where community structures have been disrupted. Based on past experiences, it is felt that the variety and flexibility of the social and cultural links that exist at all social levels mean that even in highly disrupted communities, engagement, mobilisation and participation should be possible. Ultimately, such scenarios are likely to present unique challenges. To engage with whatever aspects of community are present will require context specific responses, albeit drawing upon accumulated knowledge. The task is now to investigate how this can be best done.

5.2 'Sectoral Integration'

5.2.1 Challenges and Opportunities in Integrating CTC and Food Security Programmes in Malawi

By Jim Goodman (Concern Malawi)

As with the majority of famines and food crises, the 2002-3 Malawi crisis was caused by the interaction of many pre-existing factors of vulnerability that combined to over-stretch fragile coping capacities. The resulting situation demanded both an emergency nutrition intervention and a means of re-establishing food security to, at least, a pre-crisis level.

This article describes experiences from the CTC and food security programmes that Concern Worldwide has been implementing in Dowa district since June 2002. It describes the opportunities that were capitalised upon during the CTC programme, for delivering food security activities through the health service, improved targeting of households to receive direct assistance with agricultural inputs and providing an entry point for longer-term interventions. The main challenges were aligning development and relief approaches, matching the scale of interventions with available resources, and working effectively with Government structures.

Integration in practice – health centres and communities

Achieving sustainable improvements in household nutrition, from a food security angle, demands interventions to improve skills, knowledge and community organisation in the areas of food production, post-harvest food management and food utilisation. The specific challenge for the food security team was to identify interventions that could be implemented effectively in tandem with the OTP programme, taking into account the scale of CTC coverage, its timetable and the resources available.

Food security programme extension staff took advantage of the regular presence of mothers at health centres to distribute agricultural inputs and deliver simple messages on planting and fertilising. Concern also attempted to use the time people spent waiting for distributions constructively, by entertaining mothers through motivational songs about food security issues - these encouraged identification of a group problem as opposed to an individual problem, and helped to create a positive atmosphere. Demonstration gardens, supported by posters, were staged at each OTP distribution point, displaying technologies mothers could adopt at home to diversify diets. Health Surveillance Assistants (HSAs) were trained with simple agricultural skills at the same points on non-distribution days.

The results of these efforts were mixed. The availability of agricultural inputs and training provided an additional incentive for attendance at distributions and probably helped increase admissions. However, the potential for learning at distribution days was constrained by the time available, the frame of mind of attending mothers and the general atmosphere. Mothers were usually tired and focused on their main reason for attendance - access to supplementary food and RUTF. Because of this, messages had to be kept short, and focused on the agricultural inputs provided, simple food processing and hygiene techniques. This left important areas of subject matter uncovered, which had to be addressed with extension work back in communities.

An important question was how practically to deliver extension to OTP mothers who, because of the relatively low prevalence of severe acute malnutrition (1.5%), were thinly dispersed among villages across the District. The chosen solution was to promote OTP households as an important sub-group within existing community groups, in particular Village Health Committees, as opposed to creating separate OTP agricultural support groups. Using existing structures allowed extension staff to reach OTP mothers through their normal extension schedules, increasing the possibility that these groups could continue receiving extra support after the end of the

Concern supported emergency intervention. All that was required was for them to adapt the subject matter, where necessary, to include community nutrition issues of particular relevance to OTP households. The Concern team are now in the process of piloting small programmes aimed at identifying and promoting positive deviant behaviours as an extension methodology which if successful, might improve the focus of this approach and its longer term effectiveness and sustainability.

Issues in targeting the most vulnerable

Food security and nutrition interventions target in very different ways. Food security programmes seek to improve food security at community level, whereas the OTP programme focuses on the individual child and their carer. There are several tensions inherent in this. One is the assumption that households with a malnourished child (OTP/SFP households), are likely to be among the most food insecure. However, in Malawi, non-food factors, particularly disease and the social care environment, are extremely important determinants of malnutrition. This raises questions about the utility of a food security strategy targeted at only OTP/SFP households. For this reason in Dowa, Concern adopted a community-wide approach that included, but was not restricted to, OTP households. The team also tried to consider food security and nutrition problems holistically and with participatory problem analysis, to address a wider range of causative factors. OTP households were provided with agricultural inputs in an attempt to strengthen their resource base and enable meaningful participation in longer-term food security interventions (e.g. cassava cuttings to enable them to process and store cassava as an alternative to maize).

The Dowa food security intervention also had to address issues surrounding local perceptions of vulnerability. Identification of the OTP/SFP household is relatively fast and easy and ensures that extension staff recognise them, but it does not necessarily ensure acceptance by the community, or action by the extension worker. The notion of 'deservedness' influences both community group dynamics and the attitudes of extension staff. In practice in Dowa, community self-targeting is often biased towards the ability to participate as opposed to objective nutritional status. Mothers with malnourished children may be the least able to participate in community activities, while for both social and economic reasons men tend to capture project benefits. Project staff skilled in these issues needed to devote much time and effort to facilitation between the community and extension staff to increase inclusion of OTP/SFP households. Such facilitation skills are not always well developed and their absence would be an important barrier to success. Participatory discussions and problem analysis did overcome some negative attitudes towards households with malnourished individuals, however more experience and research was needed to determine ways of aligning community priorities and the objective of improving nutrition. This is likely to reinforce the importance of skills in facilitating participatory discussions and problem analysis. This raises another question about whether a District-wide emergency intervention can devote sufficient resources to exploring and resolving such issues.

Seeds distributions can contribute to improved food security.

Valid Inernational, 2004.

Entry and exit points

In Dowa, the team found that an important strength of CTC was that it offered not only immediate action on malnutrition, but also gave the opportunity for better continuity between relief and recovery assistance. CTC's potential to achieve this lay in its focus on working with mothers in their communities. This focus of resources and attention at the community level helped provide an entry point into communities for recovery work, by establishing groups to work with and beginning the process of discussing problems and objectives directly related to improved nutrition with them. CTC also offered an alternative starting point for targeting and promoting other sectoral interventions such as gender awareness, economic empowerment and HIV/AIDS, as components in longer-term food security programming for vulnerable households. This horizontal multisectoral programming is essential in Malawi, where the many problems associated with these issues combine to keep the rate of under five chronic malnutrition above 50%.

Scale and Resources

Defining the scope of the food security intervention in the context of the District-wide CTC programme in Dowa was, in part, a question of resources. A balance between achieving coverage of the needy population and addressing the various aspects of food security for that population in a comprehensive manner, needed to be struck. This balance had to be reached based on the capacity of District Government to take on extra work outside their normal scope of duties.

Concern's response to this was to concentrate selected programme activities in a number of focus villages associated with health centres and specific extension workers. These acted as centres for promoting nutrition as a special topic within the long-term work of government extension staff. Within each focus village, a community volunteer acted as the main contact point for staff and follows up activities between extension staff visits. Government staff were encouraged to replicate successes in other villages. The effectiveness of this pathway depends on staff capacity and attitude; these are factors which themselves are open to development through training, exchange visits to successful sites and participatory meetings. In Malawi, individual extension workers from both Ministries of Health and Agriculture, have been able to address day to day problems outside their normal scope of work. This has enhanced their profile within communities and been a source of motivation. Some individuals, however, are still heavily influenced by the expectation of additional financial gain for participation in new work. Training, meetings and exchange visits, although not necessarily expensive, require funding which, for the foreseeable future, must be provided from non-governmental resources.

Aligning relief and development approaches

An overarching challenge was that different actors involved in programme planning viewed the problem through different 'professional lenses'. Integrating the two required a development perspective to merge with an emergency perspective. This requires resolving differences in the time-scale over which funding is made available, differences in perception of the types of behaviour change which can be tackled over different time scales, and aligning long-term and short-term programme capacity requirements.

Short term impact and long term change

The OTP programme has delivered a set of replicable systems for treatment of malnutrition that will ultimately be managed by

the Ministry of Health, and emphasised staff training and logistics management to achieve impact. During the first year of intervention, the participation of mothers in the nutritional rehabilitation of the child was predominantly passive. The short term impact on the patients did not require the carer to understand the reasons for the child's condition or how the treatment works. Selected topics were covered with less intensive staff:mother contact at distribution points (e.g. short demonstrations on a precise topic such as preparation of soya flour), but it is questionable whether these were sufficient to produce lasting behaviour change.

In the same way, a relief programme can successfully use OTP distribution points to distribute familiar agricultural inputs that the recipients know how to use and in so doing, achieve large-scale rapid short term impact with minimum follow up. However, this minimalist approach cannot work using inputs that the people are unfamiliar with and cannot hope to influence behaviours and cultivation techniques.

The achievement of longer-term benefits in the Malawian context of chronic food insecurity requires both crop diversity and changes in agricultural, storage and processing practice. These can only be achieved if substantial staff time is spent discussing constraints to production and various preferences with communities, improving crop husbandry skills, exploring new crops and following up on crop development. In Malawi, this is being achieved by a small team of extension staff working in tandem with the larger scale intervention in 30 focus villages across the District, researching and developing activities in these areas. The use of positive deviance as an extension methodology is a key component of this and is one mechanism for improving skills in participatory techniques among programme and government staff. While staff are only able to do comprehensive community nutrition extension in a sample of villages, this provides experience and a model for rolling out the rehabilitation phase of CTC to government staff

Scale

In the direct treatment of clinical malnutrition, staff time is dedicated to ensuring geographically wide coverage; resources are unlikely to be available to provide staff for more developmental work on the same scale. An objective of the post-treatment phase is to increase whole community capacity for involvement in nutrition management. This requires a more developmental perspective, delivering technical training in the context of a broad understanding of the household food security problem and linking of problems.

This approach requires the adaptation of long- term development considerations (inter-alia, sustainability, participation, the adult learning process, group dynamics, community ownership, long-term behaviour change), to an immediate problem. Inevitably availability of resources determines the scale on which this is possible and it is most likely to be on a much smaller scale than treatment. This pathway for programming in overlapping phases (i.e. relief, recovery, development) overcomes some of the differences mentioned above. It requires positive discussion and collaboration between 'relief' and 'development' stakeholders from an early stage.

Working with government

Inter-sectoral programmes are typically slowed down due to confusion over responsibilities. This occurred in Malawi where the pressure for a speedy emergency programme detracted from the process of consultation and discussion with other implementing bodies. In the long run this pressure to achieve results has led to delays (for example in deciding which sector should be responsible for food hygiene or food preparation extension work) that could have been avoided. To minimize these problems future CTC programs should conduct a thorough institutional and capability analysis at the planning stage, even if this slows initial implementation down a little. They should also make more time for on-going discussion and consensus building among managers at District and programme management level during the programme.

In practice, in Malawi despite some initial confusion, the efforts made to develop horizontal links and understanding have borne fruits and an 'inter-sectoral understanding' is evolving as implementation proceeds. At field level, from the outset, staff from the Ministries of Health and Agriculture were encouraged to consider new subject matter, enabling them to recognise and address simple problems not traditionally addressed within their Ministries. This sets up a denser network of extension staff to implement the post-emergency phase. In Dowa, agricultural staff regularly refer mothers to health centres and NRU's and health staff are now able to trouble-shoot agricultural problems. This has been straightforward technically, with staff being eager to acquire new skills to face the problems they meet in everyday community work. At the time of writing, the food security team was training OTP mothers on diarrhoea prevention, while HSAs were distributing indigenous vegetable seeds. This cross sectional cooperation has provided a denser network of extension staff to implement the post-emergency phase improving the impact of both OTP and food security extension activities.

The biggest challenge has been finding space for quality training in the over-stretched and under-resourced schedules of government field staff and avoiding conflict between the programme and District Ministry Offices. Where possible the team tried to design training that was succinct and sometimes conducted outside normal working hours, and generally provided 'take-away' training notes. Some topics were dealt with as part of short planning sessions at health centre level with small groups of staff from both Ministries. Such sessions have also encouraged agriculture and health staff to work together with the same households.

Future Opportunities and Challenges

The work in Malawi has laid the foundations for further work in integrating nutrition, food security and health within the CTC framework. At this phase of the programme Concern are focusing on the development of positive deviance techniques as a community extension tool, organising farmer groups for the local production of RUTF ingredients and developing home-based care for HIV affected households identified through CTC.

Conclusion

Attempts to integrate nutrition and food security in Malawi fell into two broad categories: short term interventions providing food security inputs to individual families and longer term activities aimed at integrating the day to day activities of longer-term nutrition, food security and health interventions implemented by government services.

The programme revealed the potential for inter-ministerial cooperation in addressing malnutrition, but showed the need to define and agree early the extent to which food security can be addressed in tandem with CTC. A balance had to be reached between coverage and comprehensiveness in food security programming which was attempted by prioritising simpler topics for delivery on a wide scale, while channelling more comprehensive work into focus villages associated with health centres. Experiences indicate that CTC can improve targeting of longer-term work and provide an important entry point for identifying and working with vulnerable mothers and HIV affected households. Rigorous on-going evaluation will be needed to identify areas for further research and refinement of programming, staff training needs, ways of improving Government ownership and to measure impact on chronic malnutrition statistics.

Valid International, 2004.

The district health officer of Dowa, Malawi, briefs clinic and community workers about the progress of the CTC programme so far.

Valid International, 2004.

Households surrounded by their crops in Ethiopia.

5.2.2 Integration of CTC with strategies to address HIV/AIDS

By Paluku Bahwere, Saul Guerrero, Kate Sadler & Steve Collins (Valid International)

Home-Based Care (HBC) is now seen as the way forward for caring and supporting People Living With HIV/AIDS (PLWHA) and HIV affected households (30;31). Given the ever-increasing numbers of people infected and affected by HIV/AIDS, and the capacity limitations of the health structures in the countries where most of the cases are, home-based care is the only realistic response that can prevent the formal healthcare services from being swamped (30;32-37).

CTC offers several important opportunities to integrate the treatment of malnutrition with HBC and to support wider home-based strategies to address HIV/AIDS (37). The CTC approach to community-based support, mobilisation, case-finding and assistance provision, provides an appropriate entry point to support, strengthen and adapt existing social structures to better deliver HBC. New RUTFs specifically designed with appropriate levels of micro-nutrients, anti-oxidants, protein and energy can help improve the nutritional status of PLWHA (21;27;28;38-40). The addition of pro and pre-biotics to these RUTFs, to address HIV related diarrhoea and wasting, offers the potential for low cost effective therapeutic support either in combination with ARVs or alone (28).

Already in many countries, CTC programmes are working with and treating many PLWHA. For example, recent research in Malawi indicates that up to 30% of malnourished children are HIV positive. This research also indicates that when these severely malnourished children with HIV/AIDS are treated with RUTF in an outpatient programme, the majority can recover to normal nutritional status (38-40). For the past 8 months, research has been ongoing into how best CTC can be modified to maximise this potential for integration and synergy with existing HBC support mechanisms.

The move towards home based models

Health facilities in many affected countries do not have the capacity to deal with the high number of PLWHA (32-35). This is the case for Malawi which has 800,000 PLWHAs, including 65,000 children (41). In Malawi and many other African countries, community/family networks represent the primary sources of support for these people. The appropriate implementation of community and home based care models could help strengthen existing family and community capacities to assist affected people and households, while simultaneously building local capacities.

All HBC models have in common a holistic view of the problems of PLWHA and their families and attempt to provide physical, psychological, social, palliative and spiritual care and support for infected/affected individuals and families (31;42;43). The CTC approach as implemented in Malawi, Sudan and Ethiopia has many features in common with such models:

- CTC cares for people in their homes and can evolve to include a wide range of sectoral interventions. The opportunity costs associated with home care are less and this could help households and communities affected by HIV/AIDS maintain economic productivity.
- CTC provides new, specially designed, therapeutic diets and medical protocols. There is emerging evidence that the provision of high quality therapeutic food may prolong productive life and increases the time to AIDS defining illness and death
- CTC provides a legitimate role for health care workers to establish a presence at community level. The stigma attached to HIV/AIDS in Malawi society makes identifying affected families very difficult. However, experience has shown that programmes that spend long periods researching and planning interventions, without providing visible assistance, rapidly become unpopular in Malawian villages.
- CTC treats common complications of HIV/AIDS, such as acute malnutrition, in the home rather than in hospitals or therapeutic feeding centres. Home care has the potential to decrease the frequency and shorten the duration of

inpatient admissions, helping to relieve pressure on hospitals. In addition, maintaining people in their home environment reduces exposure to foreign pathogens and should reduce the frequency of nosocomial infections.

- CTC develops caring networks using a variety of mobilisation techniques, where possible integrating together existing support systems. Care and psycho-social support is easier to provide in familiar surroundings than in the hospital environment.
- CTC identifies and develops existing social support networks. Caring for people in their community instead of removing them to hospital is more compatible with fundamental Bantu views of the interdependence of individuals, families and communities.

The risks of home based care

Caution must be exercised, as the inappropriate implementation of home based models also has the potential to compete with and undermine existing social support structures. An important finding of research in Malawi is that external support provided by NGOs can have extremely negative effects on more traditional/community-based sources of assistance to HIV affected households. There is often uncertainty around the long-term continuity of NGO's programmes. As external organisations target HIV affected households, family and community networks may gradually feel less responsible for the welfare of the sick. There is no guarantee that community support structures will re-emerge in the event of a withdrawal of external NGO-led programmes.

The philosophy behind CTC is (wherever possible) to work through and strengthen existing formal and non-formal systems and structures. Currently, research in Dowa, Malawi, is looking at how to maximise this potential and minimise the risks of damaging existing support mechanisms. The research also involves examining proxy indicators, used to target programmes in the absence of biological HIV testing, and to estimate the effectiveness of the existing CTC programme in identifying people and households affected by HIV and delivering appropriate and acceptable care. A central element in the research is to examine how best to use the legitimacy provided by the successful treatment of acute malnutrition to avoid the stigma associated with HIV.

Efficacy of RUTF in treating HIV infected malnourished children

In Malawi, many nutritional support programmes for PLWHAs use mixed flour blends which, when made into porridge, have a low nutrient density. These supplements are not ideal to meet the increased nutritional requirements appropriate for HIV infected people, especially HIV infected children (44;45). Blended flours require considerable cooking and therefore labour to collect firewood; cooking destroys many of the vitamins making it difficult to use these foods to deliver the high doses of vitamins and antioxidants required to slow the progression of HIV/AIDS and the energy density is low making it particularly difficult for children, with their small stomach capacity, to eat a sufficient quantity to meet their increased nutritional requirements. The use of RUTF has overcome many of these limitations. RUTF is energy dense, can be made with the appropriate balance of micronutrients. and does not require cooking. Thus vitamins are preserved and no additional labour demands are placed on families.

Home Treatment with RUTF has been shown to be effective in Malawi, where in the 2001-2002 hungry season, the Queen Elizabeth Central Hospital in Blantyre, used home care with RUTF to replace the phase 2 inpatient treatment after the initial phase 1 stabilisation (39). Eighty percent of the children receiving a full diet of RUTF reached their 100% weight for height goal, including 59% of HIV positive children and 95% of all HIV negative children (39). Similar encouraging results were observed for the 2002-2003 hungry season in seven different sites in Malawi with 80% of children recovered within an average of 6 weeks including 56% of HIV positive children (38-39).

In Malawi, a 'Nutriset' produced recipe of RUTF is also used for the nutritional rehabilitation of malnourished TB and HIV infected adults by MSF-Luxembourg (46). The impact of this protocol has not yet been evaluated but empirical observations have indicated that most of these adults are gaining weight (46).

At present in Malawi, the production of RUTFs from locally available grains and pulses, at a small district hospital, is being investigated. Such locally produced RUTFs will be cheaper (probably less than one-third of the price of the commercial product) and by stimulating local agricultural markets and manufacturing industry, may be better able to integrate the support for PLWHA into local economies.

Research is also taking place into the addition of synbiotics (a combination of high dose acid resistant probiotics and prebiotics) to RUTF (28). It is hoped that current trials will demonstrate that these new synbiotic enhanced RUTFs are effective tools, allowing further reduction in mortality and morbidity and speeding the recovery of those malnourished HIV infected children (see section 4.3) (47)

The introduction of ARV treatments for the HIV infected in Africa will also demand special attention to nutritional status. Research has shown that this treatment in itself can aggravate nutritional problems such as wasting and cause other problems related to fat deposition (48). Ready to use supplementary and therapeutic foods could help ensure stable nutritional status throughout treatment.

Integrating responses to HIV related nutritional problems

The HIV pandemic is changing the face of malnutrition and reinforcing the need to combine both relief and development responses. As well as contributing to massive mortality and morbidity, HIV/AIDS increases and changes the spectrum of underlying vulnerabilities. Combined with underdevelopment, it increases the risk of acute events to promote malnutrition,(49) both directly through infection and indirectly, through increasing poverty and vulnerability and decreasing economic reserves. In countries such as Malawi, for example, up to 35% of severely malnourished children are now HIV positive. Children aged between 6 and 36 months form a high proportion of the caseload as a consequence of mother to child transmission of HIV (36). The proportion of orphans is also increasing and in the Dowa CTC programme, 9.3% of admissions were orphans (unpublished data).

CTC's combination of emergency and developmental principles is well adapted to a mixed emergency and development response. For example, in Dowa, CTC treated thousands of acutely malnourished people in a few months, whilst reinforcing the capacity of local health systems, families and community, to take care of malnourished patients, including those infected by HIV. Importantly it also demonstrated that the formal health services have the capacity to treat wasted individuals with relatively small opportunity costs to their families. This has all encouraged local people, traditional leaders and even traditional practitioners, to refer cases of malnutrition to the CTC access points early, and in far greater numbers. This community-based case finding and referral system requires no input from either Concern or the MoH and is sustainable. Ensuring the MoHP clinic system has the capacity to continue the delivery of RUTF and the OTP protocols though their clinic system is the next step, and so far, the signs are good. Local MoHP staff are now running most aspects of the programme, including all OTP distributions, and are comfortable and enthusiastic with the prospect of taking it over entirely. The strong links developing between the CTC nutrition, food security and HIV strategies for Dowa district, and the establishment of local RUTF production in the district, will hopefully further increase the chances that the local communities can sustain the project.

Conclusion

In many affected countries, HIV/AIDS will increasingly add to the burden of acute and chronic food insecurity and malnutrition. Early and appropriate nutritional support can mitigate its impact by prolonging the period of active life for affected people. CTC includes most activities recognized as optimal components of a home-based care model and provides a useful entry point for stigma-free home based care for PLWHA. The development of locally produced, probiotic enhanced RUTFs offers further potential for an exciting and safe new therapeutic agent to address nutritional and diarrhoeal problems in HIV infected people.

Valid International, 2004.

Grandparents often take over the care of AIDS orphans in South Sudan.

5.3 'Institutional Integration' of CTC with existing clinical health systems

By Emily Mates (Concern Ethiopia)

Therapeutic Feeding Centres (TFCs) are often highly effective in treating individual cases of severe malnutrition. Their exacting requirements for hygiene, and delivery of the medical and nutritional protocols means that they are often set up as 'parallel structures,' with little room for local Ministry of Health (MoH) involvement. Where some form of government health structure exists, experience shows that CTC offers good potential for integration. The amount and type of integration depends on various factors, for example:

- Existing capacity
  - Structures - presence, availability, condition
  - Staff - availability, level (and recentness) of training
  - Available resources
  - Communication systems
- Perception/motivation - usually governed by the history of NGO involvement in the area, e.g. high per-diem expectations
- Relationship with, where existing, government structures, such as Ministries of Health, Agriculture, or Education.

For successful integration with local systems, plans must be made right from the start, even in an emergency situation where the pressure is on to get the programme open quickly. It is relatively easy, and very tempting, to take the faster and more straightforward route of setting up your own system, with only a token nod towards integration. An alternative is to take the slower, and initially often more frustrating option, of really working with existing services. However, experience shows that this ultimately turns out to be far more rewarding and also engenders considerable capacity that did not exist before. The more capacity that exists, the more opportunities there will be for integration. Even where facilities are poor, in South Sudan for example, limited integration is still possible so that capacity can be developed for future emergencies (see section 3.3) This article presents experiences of trying to implement an integrated CTC approach in South Wollo, Ethiopia. South Wollo was fortunate in that there was some existing capacity (although limited), with excellent possibilities for collaboration (see section 3.1). Integration with clinical services took place at the district health facilities (Centre, Clinics and Posts), the local referral hospital and at the woreda health officer level.

Health Services Integration in South Wollo

Health Facilities

South Wollo is a densely populated area, with rugged mountains that render many areas inaccessible. Health services for the population are provided by a total of 23 health facilities, most of which are in relatively good condition and have moderate resources (although many have no water access). Each serves an average of 19,500 people and is staffed, on average, by two health workers. The local MoH has a strong bureaucratic system and while staff have differing levels of expertise, most are reasonably competent and, crucially, motivated to participate in NGO activities. Concern has a long history in the area and a good rapport exists with the local authorities. The strength of this relationship and understanding was an important factor behind the MoH's willingness to try a new approach. From the start, Concern and the MoH made decisions, where possible, together, and this engendered a vital sense of MoH 'ownership' of the programme.

Training

After gaining permission to work in partnership with the MoH staff, including seconding workers to act as medical supervisors (working during their annual leave for a 'top-up' salary), Concern conducted an initial one-day workshop introducing CTC. To allow for a fast set-up, Outpatient Therapeutic Programme (OTP) sites were opened alongside the 18 existing SFP sites in a staggered fashion (those with the most identified severely malnourished children opened first). In this way, the whole of the district was covered with OTP within six weeks, admitting a total of 169 severely malnourished children. A Concern health worker, or seconded MoH supervisor, travelled out to the site on each day of an OTP distribution to give on-the-spot training and support. For sites that were based near to the clinics, one MoH clinic worker would attend the OTP children (for a minimal per-diem payment) while the other clinic worker would attend to the regular patient load. It was designed

this way to ensure that CTC never caused the clinics to be closed due to staff shortages.

Training and supervision of the MoH workers and supervisors has been ongoing and has required considerable commitment from Concern. The results appear extremely promising, with most of the clinic workers now able to implement the OTP protocols with minimal (or no) support from Concern. In addition, the clinic workers have collectively and consistently made appropriate decisions about whether to refer a child to hospital or not. The process of working with the MoH as partners has not only greatly reduced the need for Concern to employ health workers from the capital Addis Ababa, but also substantially raised the capacity of the MoH to recognise and treat severe malnutrition in this area. The seconded workers have been a particular success. Working with Concern full-time has allowed them to become channels for the development of real communication and transparency between partners, and has made collaboration on issues such as synchronising vaccination schedules much easier. As two of the seconded workers were from the district health office, it is hoped that with the experience gained, they will emerge as focal personnel to co-ordinate the programme after handover.

Hospital care

At initial programme set-up, plans were made to site the stabilisation centre (SC) for children requiring in-patient care for severe complications, poor appetite or advanced oedema) in the local health centre. On visiting Dessie Hospital (the local referral hospital, serving a 2.4 million catchment population), it was found that there was a 50-bed paediatric ward with one room already allocated as a nutrition unit. Practices were, however, very out of date, for example they were using the old fashioned 'kwash' milk recipe complete with eggs. Milk was made once per day in the morning and left in a container beside the bed for 24 hours. Perhaps not surprisingly, the reported average mortality rate was 50% of severely malnourished admissions.

A concern supervisor helps a ministry of health clinic worker to fill in monitoring reports in Ethiopia

Valid International, 2004.

With some existing capacity and, again, very motivated staff (particularly the paediatrician/medical director), Concern supported Dessie Hospital's nutrition unit through training and bettering of practices, as a sustainable option to treating severe malnutrition in South Wollo. The support provided included:

- Procurement and donation of therapeutic milk from UNICEF, accompanied by training in preparation and protocols
- The paediatrician was enrolled in UNICEF training on the Ethiopian National Protocol for in-patient treatment of severe malnutrition. Due to this training, he was able to update his skills and crucially, on his return, train all the hospital paediatric staff.
- Appointment of a 'hospital liaison assistant' (deliberately non-medical) to facilitate the admission and discharge of patients, purchase of medicines, etc.
- Construction of a small structure adjacent to the paediatric ward to increase the nutrition unit capacity by 8 beds.
- Provision of certain supplies not available in the hospital, e.g. salter scales, naso-gastric tubes, regulator for the oxygen cylinder.
- Concern facilitated the transfer of children to and from hospital and paid for all medical expenses incurred while in hospital.

Results from one year of support (Feb 2003-Feb 04) have been very encouraging. The hospital mortality rate for severely malnourished children dropped from 50% to 9.5%, 168 children have been treated with no per-diem payments paid to hospital staff (they consider the children as part of their regular case-load), and long-term capacity has markedly increased. Children from the 16 other districts in the catchment area have benefited from this increased capacity and an excellent relationship has developed between Concern and the hospital, which will benefit future programmes.

Compromises

Genuine integration with pre-existing clinical systems will inevitably be slow. To have real collaboration, one cannot simply walk into the local hospital and demand that certain protocols are adhered to, even if a one-off training in protocols is provided. Building up the relationship and changing practice takes a long time, during which compromise is required all round - in this case it was difficult to accept that the level of care was not always what was hoped for or expected. Working with local infrastructure requires an understanding of the constraints under which these institutions operate, the workloads of the staff and the factors affecting motivation. Merely imposing external protocols and systems, no matter how theoretically beneficial they may be, is not of itself a solution. Furthermore, integration is not a one-off event, but is an on-going process.

A Platform for Transition

The programme in South Wollo is currently entering a 'transition stage,' wherein the MoH gradually takes on more responsibility for programme implementation. This process will be greatly facilitated by the experience of working together over the last year. The capacity gained by MoH staff and the fact that many issues have already been worked through jointly with MoH partners throughout the programme, instils optimism that handover will be a success. Undoubtedly, there are many challenges inherent in this process and some of the particular issues currently being worked on in Wollo are described in detail elsewhere (see section 4.2). A similar transition process is also underway in Malawi where many of the same issues are being faced (see section 3.2).

Many of these issues relate back to the same factors that determined the possible extent of integration at the start of the programme, namely:

- Capacity - to what extent has local capacity been built (structures, staff, available resources, communication systems) and where are the potential gaps in relation to the

organisation's withdrawal strategy?

- Perception/motivation - is there a true sense of ownership of the programme within the MoH and what can be done to enhance this? How confident are the community that real handover is possible?
- Relationships - how will the relationship between the MoH and the organisation need to evolve in order to gradually shift the balance of programmatic responsibilities?

Conclusions

The involvement of the MoH from the start, maximised the extent to which they accepted the Wollo CTC programme to be partly 'their' programme. A year down the line and they have a considerable sense of ownership. They have invested much of their time and energy in it for little personal gain, and as such will hopefully care that it continues to work well under their guardianship.

The experience in South Wollo has demonstrated that where programme implementers can accept some compromises in the early stages, employ masses of patience and respect and, most importantly, relinquish some of the desire to 'control', integration can be both a successful and rewarding experience.

A health centre used for OTP distributions in Darfur, North Sudan.

Valid International, 2002.

5.4 'Temporal Integration' – Demand driven CTC

By Steve Collins

Early CTC programmes prioritised the timely provision of an appropriate level of care to a large proportion of the target population and monitored this using the standard SPHERE indicators plus assessments of coverage. The CTC principles of sectoral integration and capacity building through engagement, dialogue, exposure and training (see introduction), received a lower prioritisation.

More recently CTC programmes have demonstrated that it is essential to work with 'community resources' and local health care providers right from the earliest planning phases of intervention if impact and the potential for sustainability are to be realised. Such engagement requires planning, specialised human resources and prioritisation. Currently formal indicators are being developed with which to monitor and assess the extent that any CTC programme is actively promoting participation and understanding.

An important strength of CTC programmes is that they offer a high potential (far greater than centre based interventions) to motivate mothers and health care workers. Investigations are underway on how better to harness this motivation to promote longer term improvements in health and nutrition, through developing local demand for CTC. These CTC programmes are prioritising exposure, dialogue engagement and training over coverage and timeliness.

The dangers of a supply side drive

Achieving rapid coverage and impact requires high levels of external human and material resources and a detailed formal implementation plan. During the first few CTC projects, pressure to achieve fast results diverted attention away from engagement and dialogue towards logistics and screening. In several projects, external pressure to admit all severe cases into inpatient care exacerbated these problems, diverting additional resources towards inpatient care. This may be typical of all emergency interventions.

A small scale market in South Sudan

Valid International, 2004.

This 'supply side' pressure to disperse large quantities of external resources in a short space of time successfully facilitated rapid programme expansion and OTP coverage. However it caused many unwanted and damaging side effects, tending to alienate local people; undermine local ownership and community participation; shift the focus towards individuals and away from affected communities and remove responsibility for caring for the sick away from the community towards 'professional' paid extension workers. These undermined traditional support mechanisms and created a damaging link between the motivation to care for or follow-up sick children and financial gain.

Experiences to date demonstrate that it is essential to involve local health care providers (usually the MoH) right from the planning phase of programmes in a manner that ensures they feel some ownership over the programme and to ensure that where possible, CTC activities are integrated with existing services. At the beginning of a programme, time spent working with the local MoH may not produce immediate tangible results and can appear frustrating, giving the impression of slowing down the initial implementation. For example, bureaucratic requirements might delay start-up of OTP sites; local officials might be difficult to track down and meet etc. However in all CTC programmes to date, the benefits of these early interactions have greatly outweighed the initial frustrations both in the shorter term and later, as programmes attempt a transition towards a more sustainable footing.

Motivation and credibility

CTC programmes have demonstrated clearly that if caught early before complications develop, severe acute malnutrition is usually very easy to treat. Treatment requires little more than the regular provision of high quality food, something that is universally understandable. This realisation has allowed the de-medicalisation of treatment for most cases of acute malnutrition, reducing the need for medical expertise, reducing the cost of treatment per patient and allowing access to treatment to be more decentralised. This makes CTC potentially more attractive to the local health service providers, communities and those suffering from malnutrition. The realisation that if caught early enough, most cases of severe acute malnutrition are easy to treat, has allowed CTC programmes to return the responsibility for care to mothers, families and communities. In the vast majority of cases, simple understandable care delivered by parents, creates marked changes in mood, appearance and activity within a very short space of time. These positive changes are obvious to parents, health care workers and the wider communities and are an extremely powerful motivating force. The power of this motivation is profound and stimulates demand for and uptake of CTC. If nurtured and used appropriately, this motivation encourages mothers and traditional practitioners to refer children to CTC and improves compliance to treatment regimes (see section 5.1.2). It is also apparent that linking the successful treatment of individuals by their families with local health care workers motivates these workers and enhances their credibility amongst the local people. This credibility is often lacking, but is vital if CTC interventions are to move from the present supply side approach to an approach where people are demanding CTC and supporting its service delivery. The challenge facing CTC now, is how to harness effectively this motivation and credibility to deliver CTC at district and national level through existing health structures over the long-term.

Positive deviance (Success breeds success)

The key to stimulating demand is exposure of people to the positive effects of CTC at both the individual and institutional levels. The original CTC concept contained a strong element of positive deviance, similar but not identical to the hearth principles, wherein carers who had treated their children successfully were supposed to support and mentor other carers entering the programme. In practice, the low density of severe acute malnutrition in villages has generally precluded the formation of CTC mothers and carer groups. Instead, programmes have successfully worked with mothers who have already been through CTC and consequently understand the CTC regime of how to recognise severe acute malnutrition. In several programmes such women have successfully supported carers as their children pass through the CTC programme, and performed case finding and follow-up activities.

The positive deviance principle can also work at a structural level and can be harnessed to facilitate the roll out of CTC programmes to a wider population. Successful OTP sites, implemented by local health care providers are a pre-requisite for linking the motivation and credibility associated with well functioning CTC to longer term programming at district and national levels. Current CTC programmes attempting to create long-term programmes are looking at the effect of focusing on well run, well motivated OTP sites rather than waste efforts on sites with little chance of success. These successful 'starter sites' become demonstration and training facilities to expose a wider audience of key actors to the realities and benefits of successful CTC interventions. Successful starter sites can only be chosen with full participation of the local actors, or in the case of transition, after lengthy observation of the actual function. The next priority is to expose key people to these sites creating interest and stimulating demand. Initial experience indicates that once local, district and national health staff and community leaders have seen CTC they are motivated by the success they see and they

Conclusion

Alienation and undermining community support mechanisms or local health service providers are serious barriers to a CTC programme moving towards a more sustainable approach for long term interventions and impact. Steps to avoid this should be taken right from the start and continued right through CTC interventions. Harnessing the motivational power created by the successful treatment of severe acute malnutrition by mothers, with the support and guidance of local health care workers, can stimulate demand for CTC at all levels and is essential if CTC programmes are to make a successful transition to longer term intervention.

Valid International, 2003.

One of the mothers helping to identify other severely malnourished children in her community in Ethiopia.

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On the cover

Front: The OTP allows mothers to retain the main responsibility for the care of their children in Darfur, Ann Taylor, 2002.

Back: Herds of goats are key to the livelihood of communities in South Sudan, Valid International, 2004.

Inset: Weeding the household plot in South Sudan, Valid International, 2004.

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