

Network Paper

In brief

- This paper describes a new approach to therapeutic feeding in emergencies: Community-based Therapeutic Care (CTC).
- Traditional approaches to therapeutic feeding in emergencies depend on therapeutic feeding centres (TFCs) as their primary mode of intervention. Such centres provide intensive, high-quality care for severely malnourished individuals. However, despite clear progress at the individual level, TFCs have achieved little improvement in the population-level impacts of nutrition interventions.
- CTC has been developed in response to these weaknesses in TFCs. CTC programmes aim to treat the entire severely malnourished population, with the majority being treated at home. CTC is rooted in public health principles of coverage, population-level impact and cost-effectiveness, and focuses on the sociological, epidemiological and food technology aspects of nutritional interventions. The aim is to utilise and build on existing capacities, thereby helping to equip communities to deal with future periods of vulnerability.

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Community-based therapeutic care

A new paradigm for selective feeding in nutritional crises

Commissioned and published by the Humanitarian Practice Network at ODI

Steve Collins



Britain's leading independent
think-tank on international development
and humanitarian issues

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Glossary

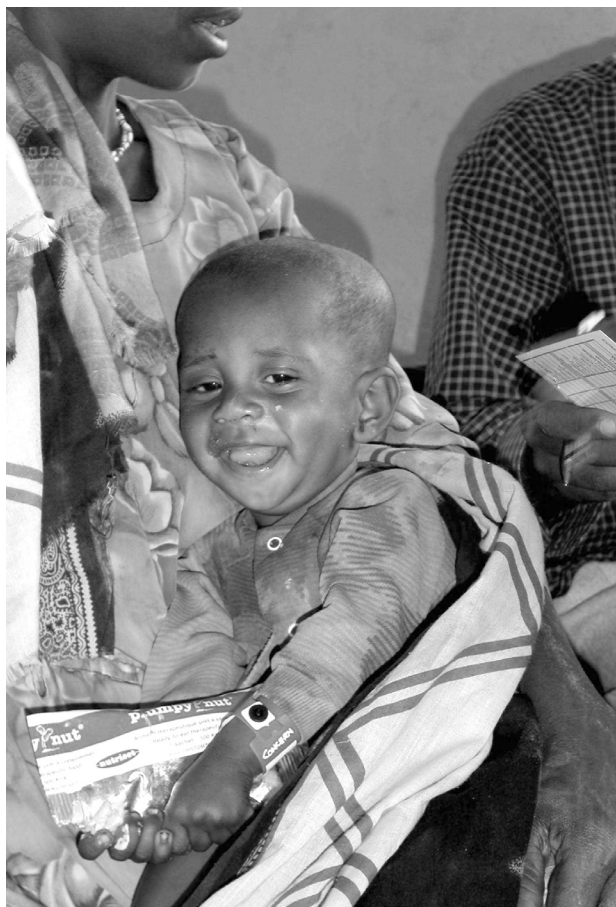
Acute malnutrition	WFH $\lt -2$ Z scores or WHM $\lt 80\%$ and/or bilateral oedema
CSAS	Centric Systematic Area Sampling
CTC	Community Therapeutic Care (encompassing SC, OTP, SFP, RUTF local production and community mobilisation embedded in food security programme)
HBC	Home Based Care for HIV
HT	Home Treatment for severe acute malnutrition in the recovery phase of treatment
MAM	Moderate Acute Malnutrition (WFH $\gt -2Z$ and $\lt -2Z$ or WHM $\gt 70$ and $\lt 80\%$ median
MUAC	Mid Upper Arm Circumference
NRU	Nutritional Rehabilitation Unit
OTP	Outpatient Therapeutic Programme (treatment at home with weekly follow-up)
Phase 1	the initial phase in the treatment of severe acute malnutrition, sometimes called ‘stabilisation phase’
Phase 2	the rehabilitation phase in the treatment of severe acute malnutrition
PLWHA	People Living With HIV and AIDS
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition (WFH $\lt -3$ Z or WHM $\lt 70\%$ and/or bilateral oedema)
SC	Stabilisation Centre
SFP	Supplementary Feeding Programme
TFC	Therapeutic Feeding Centre
WFH	Weight for Height
WHM	Weight for Height % of the median

Chapter 1

Introduction

Traditional approaches to therapeutic feeding in emergencies depend on therapeutic feeding centres (TFCs) as their primary mode of intervention. Such centres provide intensive, high-quality care for severely malnourished individuals. Over the past 15 years, new treatment regimes have had major impacts in reducing case fatality rates and improving recovery for severely malnourished individuals.¹ However, there are major drawbacks with the TFC approach, which have limited its population-level impacts on the mortality and morbidity associated with severe acute malnutrition. These include:

- TFCs are expensive, difficult to set up, heavily dependent on external support and apt to disrupt and damage local health infrastructures.
- They require substantial infrastructure and skilled and experienced staff. This means that they do not adapt well to the particular demands of the context in which they operate.
- TFCs are centralised and, in rural environments, people must often travel long distances to reach them, imposing high opportunity costs on patients and their carers and limiting coverage of the needy population.
- The internal environment of TFCs must be tightly controlled; treatment is carried out via strict protocols over which patients have little influence.
- After admission to a TFC, large numbers of highly susceptible patients are put in close proximity to one another, increasing the risks of cross-infection.
- The long, highly medicalised nature of the TFC model fails to take account of the economic, psychological and social aspects of malnutrition.
- Mothers or caregivers must stay with their malnourished children for three weeks or longer without family support, undermining family life, in particular the care of other children, economic productivity and food security.
- Given the risks and opportunity costs associated with



A child on admission into OTP care, Wollo, Ethiopia, 2003

them, TFCs are often unpopular with the target population. This encourages people to present for treatment late, often once complications have occurred.

Despite clear progress at the individual level, TFCs have achieved little improvement in the population-level impacts of nutrition interventions, and every year acute food insecurity and famine still kills thousands of children and adults. This suggests the need for a radical reorganisation of the way acute nutritional emergencies are managed.

This paper describes a new approach: Community-based Therapeutic Care (CTC).

The CTC approach

The CTC model was born of frustration with TFC programmes during humanitarian emergencies in the 1990s. During the South Sudan famine in 1998, for example,

the TFC model clearly could not deliver substantial population-level impact. Moreover, by congregating severely malnourished people together, with insufficient care and poor infrastructure, it was actually placing many people at additional risk. In such an extreme situation, the only way to achieve substantial impact was to focus on ensuring that those who were treatable with the limited resources at hand were admitted to, and remained in, feeding programmes. In practice, this meant prioritising coverage of the mass of acutely malnourished people over intensive inpatient care for extreme cases.

CTC programmes aim to treat the entire severely malnourished population, with the majority being treated at home, rather than in TFCs or in Nutritional Rehabilitation Units (NRUs). CTC is rooted in public health principles of coverage, population-level impact and cost-effectiveness, and focuses on the sociological, epidemiological and food technology aspects of nutritional interventions. The aim is to utilise and build on existing capacities, thereby helping to equip communities to deal with future periods of vulnerability.

The CTC approach is based on two fundamental observations. The first is that in-patient therapeutic care is not necessary for the vast majority of severely malnourished people, who can be saved through simple outpatient care. The second is that the traditional TFC approach, with its focus on inpatient care in therapeutic centres, is prioritising quality of care (for those lucky few who gain entry) at the expense of quantity of care (for the many who require assistance).

The potential advantages of CTC over the current TFC model of care are summarised in Table 1.

Controversial therapeutic care

Despite these potential advantages over traditional TFC approaches, the CTC model has been hotly contested. Criticism of CTC has centred around the belief that emergency strategies should be developed from the existing

Table 1: Aspects of CTC and TFC

Issue	CTC	TFC
Coverage	Decentralised design with easy access promotes high coverage of target populations	Centralised design makes access more difficult for the majority of people and promotes low coverage
Risk of cross-infection	Patients are treated primarily in their homes and exposure to foreign pathogens and risk of cross-infection is low	Patients are treated in crowded inpatient units with high exposure to foreign pathogens and high risk of cross-infection
Opportunity costs for families	Carers need to visit distribution site once a week so opportunity costs are relatively low. 10–15% of carers required to stay in SCs for up to one week with higher opportunity costs	Carers required to stay in centre for approximately one month, with high opportunity costs
Impact on siblings and family life	Carer not removed from the family, therefore limited negative impact on siblings, family life and economic viability	Carer removed for one month, therefore unavailable to care for other children or to work in fields etc. Negative impact on family life and on the economic productivity of households
Potential to empower communities and develop exit strategies	Local health infrastructure and community actively involved in finding and treating malnutrition from the start. This empowers communities and paves the way for handover to local control of programmes, thereby creating viable exit strategies for humanitarian interventions	Care of malnourished removed from community setting and placed in external specialised unit, thereby disempowering local infrastructure and communities. Large specialised units with many skilled staff are very difficult to hand over to local health systems, and the potential for viable exit strategies is therefore low
Potential for economic benefits for local communities	Developing the local production of new-recipe RUTFs made from local crops provides income to local RUTF producers. The purchase of constituent crops from local farmers improves local agricultural markets, thereby enhancing local food security. These benefits are sustainable	TFCs produce no local economic benefits beyond the wages paid to staff
Potential to integrate with HBC for HIV	The active participation of communities from the start and the non-stigmatising entry-point of treating acute malnutrition makes CTCs a positive way in for other HBC activities. Programmes contain many of the elements of HBC for HIV, and can easily be adapted to support and coordinate these activities	The centre-based focus of TFC programmes removes all patients from their communities and treats them in isolation, running counter to the principles of HBC. Patients who fail to respond in TFCs and are discharged uncured back to their communities are at high risk of becoming stigmatised
Staff requirements	Few medical or skilled staff required. Large requirement for volunteers and a need for substantial efforts to encourage community understanding, mobilisation and participation	Large requirement for skilled medical staff. Few community volunteers required and little potential for community participation
Potential for economies of scale	CTC has high potential for economies of scale. The decentralised model has many distribution sites and there are usually relatively few severely malnourished patients attending each site. In major crises, each site can easily treat many more patients with no additional capital costs and only the additional costs of food and medicines	TFC approach is a fixed-capacity model with little scope for economies of scale. Sphere standards stipulate that centres should only hold 100 severely malnourished patients. To treat additional patients new centres must be added, incurring similar capital costs

TFC model, with all severely malnourished patients starting treatment in TFCs and not being discharged to their homes until weight gain has started.² In CTC, only a small percentage of the severely malnourished – those with additional complications – receive inpatient care.

The dispute over CTC is in part a new manifestation of the old debate between clinical healthcare and public health provision. But opposition may also owe something to the implications of CTC for agencies that have specialised in running TFCs, notably for staffing and resourcing. TFCs require large numbers of highly qualified – often expatriate – staff, and entail large-scale external resources; CTCs, by contrast, depend primarily on local resources and volunteers, and need far fewer specialists. Shifting to a CTC approach would thus mean substantial restructuring and reorganisation.

Reservations concerning CTC include:

- *TFCs are necessary for some patients.* This objection is based on the mistaken view that CTC entails abandoning TFCs entirely. As Chapters 2 and 3 show, CTC acknowledges a vital role for TFCs, but disputes the validity of the current practice of admitting *all* severely malnourished children into TFCs and the high priority given to resourcing inpatient care.
- *CTC is not new and/or is no different from other interventions.* Many aspects of CTC are indeed familiar. However, the difference with this approach is that TFCs play a much less central role. As Chapters 2 and 3 describe, they are much smaller and are given a lower priority than community and outreach-based treatments.
- *There is often no community during acute emergencies.* In emergencies associated with conflict or mass migration, communities are often broken up. This makes CTC of questionable value because it relies upon the community being intact. However, this objection is based on a narrow and rigid view of what ‘community’ actually means, and does not reflect the reality of many emergency situations; this question is taken up in Chapter 4.
- *Access to dispersed communities can be difficult.* In all cases where we have implemented CTC programmes to date, coverage estimations demonstrate that a high proportion of the target population has gained access to the programme. While there may well be places that a CTC programme cannot reach, this is not a reason for rejecting a CTC approach to nutritional crises. Experience of using CTC in situations of extreme conflict situations is, however, lacking.
- *Cost-effectiveness.* Some have argued that CTC is less cost-effective than TFC-based approaches. While cost comparisons are not easy, the evidence so far – again elaborated in Chapter 4 – is that the opposite is true: in most situations, the increased coverage of CTC can be achieved for lower cost per patient than TFC approaches.

The central point is that CTC is about coordinating and harmonising a variety of elements – many of them conventional – so that interventions achieve maximum

effect. CTC is *complementary* to traditional TFCs and supplementary feeding programmes (SFPs); it does not replace these elements, but tries to integrate them into a broader framework that takes into better account the social, economic and political realities of food insecurity and malnutrition.

Implementation and research

CTC has been under development for four years. In that time, over 8,000 children with severe acute malnutrition have been treated, and 75,000 with moderate acute malnutrition, in a variety of contexts and with a range of different partners. In addition to implementing CTC programmes, substantial research has been undertaken under the CTC Research and Development Programme. The aim has been to provide a strong evidence base with which to assess the overall public health impact of CTC, allowing governments, agencies and donors to make informed decisions over treatment strategies. This programme was conceived and managed by Valid International, and has from the outset been supported financially and in the field by Concern Worldwide. It has brought together a team of expert advisors from the Centre for International Child Health (part of the Institute of Child Health in London), the University of Malawi, Oxford Brookes University and the School of Oriental and African Studies. In addition to Concern Worldwide, funding has come from Ireland Aid (now Development Cooperation Ireland), FANTA/USAID, WHO, ECHO and Torchbox Ltd., a private company specialising in producing websites for charities and humanitarian agencies. In the field, the programme has implemented CTCs with partners such as Concern Worldwide, SC-UK, Tearfund, SC-US, CARE and IMC.

CTC programmes have involved a broad spectrum of specialists, including anthropologists, food technologists, health systems specialists, ethicists, economists, sociologists, epidemiologists, statisticians, nutritionists and medics. A strong audit element has been built in to ensure that comprehensive data is available to assess the impact of the model and to improve it. Where necessary, as in the case of coverage, new techniques have been developed to ensure that relevant data is available. The hope is that a similar systematic approach to programme development and assessment will be adopted by agencies implementing TFCs in order to provide an evidence base to assess their impact.

About this paper

This paper describes the development and implementation of CTC over the past four years. Chapter 2 outlines the principles underlying the approach, and describes the broad lines of implementation. Chapter 3 looks in more detail at the implementation of CTC in the field, describing case studies of the approach as applied in Ethiopia, Malawi and Sudan. In Chapter 4, the paper focuses more closely on issues of effectiveness, coverage and cost, and explores the nature of community in crisis situations. Chapter 5 concludes the paper by highlighting some of the key implications the adoption of CTC could have for humanitarian agencies.

Chapter 2 What is CTC?

The first pilot CTC programme was implemented out of necessity after the regional Ethiopian authorities forbade the implementation of TFCs during the famine of 2000. As a result, malnourished children could be treated only as outpatients. The data from this programme was very positive, demonstrating that, at the individual patient level, the clinical effectiveness of this outpatient therapeutic approach was equivalent to, or better than, that achieved in TFCs.³ This success led to a much larger programme in North Darfur, Sudan, run by SC-UK and supported by Valid. This treated 1,000 severely and 24,000 moderately malnourished children. Similarly positive clinical outcomes were achieved.⁴ In 2002, Valid formalised the CTC development process, and Concern Worldwide agreed to fund a three-year research and development programme. To date, 14 programmes have been implemented in a range of contexts, with seven international NGO partners and seven donors. Over 9,000 severely malnourished patients and 80,000 moderately malnourished patients have been treated (see Annex 1).

CTC rests on four basic principles:

- *Access and coverage.* CTC uses a decentralised distribution system for easier access, and large numbers of outreach workers and community volunteers to follow up with outpatients in their homes.
- *Timeliness.* CTC provides services and begins finding cases before the prevalence of malnutrition escalates. CTC aims to treat acute malnutrition before additional medical complications occur.

- *Sectoral integration.* CTC integrates with other programmes, including health, hygiene and food security interventions.
- *Capacity-building.* CTC builds on existing structures through collaboration, training and ongoing support, rather than establishing parallel structures.

Since a central premise of CTC is that programmes must be adapted to the context in which they operate, CTC programmes take many different forms. Broadly speaking, though, the CTC approach combines three modes of care and treatment, all embedded in active measures to encourage community understanding, mobilisation and participation. The three modes of care are:

1. Supplementary Feeding Programmes (SFPs)
2. Outpatient Therapeutic Programmes (OTPs)
3. Stabilisation Centres (SCs)

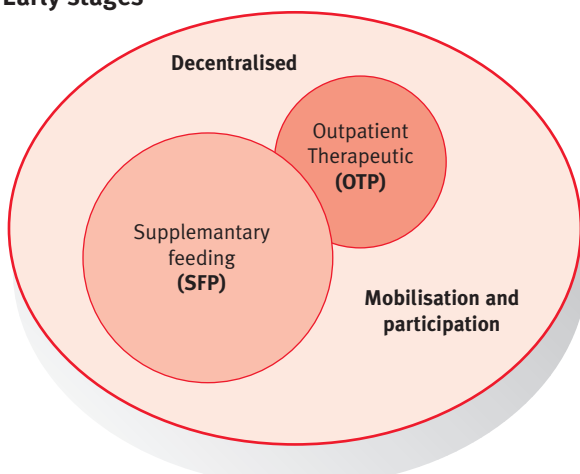
In addition to these three modes of treatment, CTC also integrates the provision of care for the malnourished with measures aimed at addressing some of the causes of malnutrition, such as public health, hygiene and food security interventions.

Figure 1 shows the evolution of an emergency CTC programme. The initial phase involves the sensitisation and mobilisation of the population, and the rapid establishment of a Supplementary Feeding Programme, to which an outpatient (OTP) element is added. At the start, key community figures, such as traditional and political

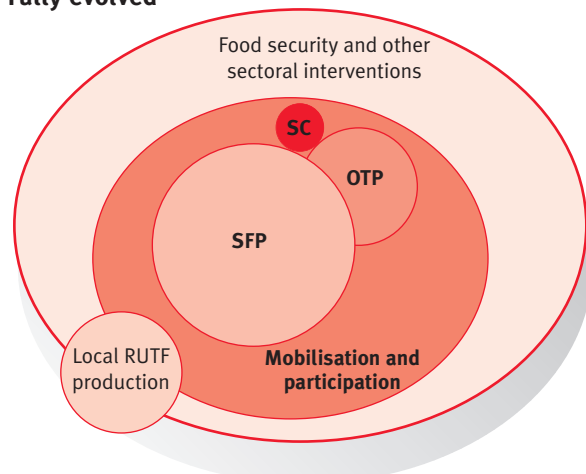
Figure 1

The evolution of a CTC programme

Early stages



Fully evolved



leaders, traditional healers, religious leaders, representatives of women’s groups and other parts of civil society, are contacted and community meetings held to provide information about the programme’s aims, methods and target group, and to solicit help in mobilising the population. Multiple distribution points, served by mobile registration and distribution teams, are then quickly established. This initial phase can occur within days.

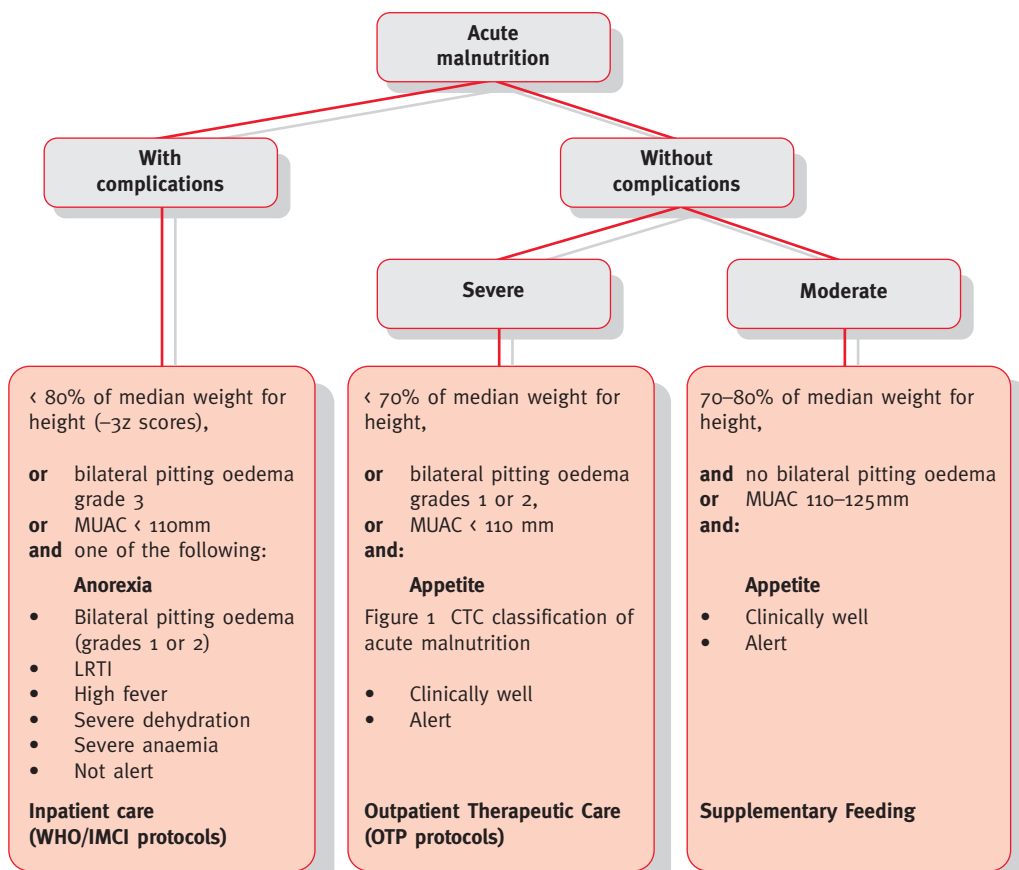
The OTP aims to admit people suffering from severe acute malnutrition without complications (see Figure 2). There are two groups of admissions: people admitted directly from the community (approximately 85% of admissions); and people admitted indirectly via a Stabilisation Centre. All severely acutely malnourished children enrolled in an OTP receive Ready to Use Therapeutic Food (RUTF), as well as routine treatment using simple medical protocols. Children return weekly, or in some cases fortnightly, for monitoring of their condition. This initial implementation phase is accompanied by a focus on community mobilisation, which aims to increase local participation and understanding of the programme.

As a CTC programme evolves, resources are put into selecting and mobilising large numbers of volunteers from

the community. The aim is to increase programme coverage, improve compliance with treatment regimes and increase the participation of the community in preparation for the eventual handover of the programme. These volunteers are supported by outreach workers employed by the programme, and are responsible for following up with malnourished children at their homes, tracing defaulters and encouraging them to return to the programme, and finding new cases.

Once the SFP and OTP have achieved good coverage of the target population, resources are then diverted towards creating Stabilisation Centres. These provide intensive inpatient care for malnourished children with complications. The category of acute malnutrition with complications represents a modification to the standard WHO classification of acute malnutrition 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. This classification is appropriate and operationally relevant to TFC and outpatient supplementary feeding. However, CTC’s three treatment modes call for an additional category of ‘malnutrition with complications’, as described in Figure 2.

Figure 2
The CTC classification of acute malnutrition⁵



Box 1**Ready to Use Therapeutic Food (RUTF)**

RUTF was invented in the late 1990s by research scientist Andre Briend and Nutriset, a private company making nutritional products for humanitarian relief. An energy dense mineral/vitamin-enriched food, it was originally designed to treat severe acute malnutrition.⁶ It is equivalent in formulation to Formula 100, which is recommended by WHO for the treatment of malnutrition.⁷ However, recent studies have shown that it promotes faster recovery from severe acute malnutrition than standard F100.⁸ RUTF has many additional properties that make it extremely useful in treating not only malnutrition, but also chronic illnesses like HIV. It is an oil-based paste with little available water (low water activity), which means that it is microbiologically safe, will keep for several months in simple packaging and can be made easily using low-tech production methods. It has a wide range of protein content and, as it is eaten uncooked, is an ideal vehicle to deliver many micronutrients that might otherwise be broken down by cooking.

Hitherto, RUTF has been made from peanuts, milk powder, sugar, oil and a mineral/vitamin mix, according to the Plumpynut[®] recipe developed by Nutriset. Until 2002, the only source of Plumpynut[®] was Nutriset's factory in France, at a cost of approximately \$3,500 a ton, plus the cost of transport from Europe. This has been an important barrier to the wide-scale uptake of CTC. To address this problem, the CTC research programme has facilitated the local manufacture of RUTF in Malawi. This has halved the price. In conjunction with Oxford Brookes University, the programme has also developed new-recipe RUTFs, which have been produced from locally-available grains and legumes without the addition of milk powder or peanuts.⁹ The elimination of milk powder should further decrease the cost, and cutting out peanuts should reduce the risk of aflatoxin contamination.



Local RUTF production

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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. The evidence from CTC programmes to date indicates clearly that children with severe acute malnutrition *but no complications* do not require inpatient care in order to recover, and so do not need to be admitted into TFCs.

Ideally, SCs are located within existing structures, and these can often be easily supported to provide intensive individual care for a few severe cases. If strong local healthcare structures exist, the small amount of resources required to strengthen them makes it appropriate to do this at the early stages of the programme. Where local infrastructure does not exist or is very weak, it is important not to divert resources towards establishing SCs before the OTP and SFP elements have obtained good coverage.

The aim of stabilisation is to identify and address life-

threatening problems, like hypothermia, hypoglycaemia and dehydration; treat infections; correct electrolytic imbalances and specific micronutrient deficiencies; and begin feeding. The approach here differs from standard TFC practice in that CTC restricts stabilisation care to a very small and select group of patients (experiences with CTC indicate that only 10–15% of severe cases require stabilisation care, allowing Stabilisation Centres to be small, requiring little in the way of infrastructure or skilled staff). By contrast, TFC phase 1 care may treat up to ten times more patients, and requires much more in the way of material and human resources. In CTC, the stabilisation phase of treatment applies only to patients with acute malnutrition with complications. In the standard approach, *all* cases of severe acute malnutrition – with or without complications – are admitted into inpatient care. 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. Standard TFC guidelines recommend that patients are kept as inpatients until they

have reached discharge criteria of 80–85% of the median weight for height for two consecutive weighings.

As the CTC programme evolves into the final stages ('Full CTC'), efforts are made to increase the integration of the programme with work in other sectors, particularly public health and hygiene and food security interventions, as well as initiating the local production of RUTF.

CTC admission criteria

At present, CTC programmes admit most patients using the standard Weight-For-Height (WFH) admission criteria recommended by WHO. This assessment requires numeracy and the ability to perform height/length and weight measurements, use look-up tables and perform arithmetic using decimal numbers. As CTC also mobilises community members who have often had little experience of formal education to screen for cases of malnutrition, these requirements have proved problematic. Many community nutrition volunteers do not possess the necessary skills to use WFH and, as levels of illiteracy and innumeracy are often higher among women, this introduces a gender bias by encouraging the selection of male workers. WFH also requires relatively expensive and cumbersome equipment, and so cannot be used by community nutrition volunteers, who travel either on bicycle or on foot.

In CTC, the community nutrition workers and outreach health workers screen for cases using MUAC (Mid Upper Arm Circumference) assessment, employing a colour-coded tape. This assessment does not require the user to be numerate or literate and, under field conditions, is far easier to teach to community nutrition workers than the more complicated WFH techniques.¹⁰ However, this combination of community-level screening with MUAC and admission into CTC using WFH is problematic as the two techniques often produce different assessment results for the same child. A child can be recorded as malnourished and referred for possible treatment by a community volunteer using MUAC, but may then not be admitted to the CTC programme under WFH criteria. For obvious reasons, parents find this discrepancy difficult to understand, and it has been a source of tension in all the CTC programmes to date, discouraging presentation to OTP/SFP and reducing programme uptake. As a result, CTC is moving towards the use of MUAC as the sole admission indicator. This change is increasingly required as CTC programmes evolve from emergency interventions towards more sustainable programmes implemented by local health workers. The use of MUAC alone facilitates this, allowing implementation to be further decentralised and the responsibility for patient selection devolved to communities themselves.

There has been a long-standing debate over whether MUAC is suitable for use as an admission criterion for selective feeding programmes. Although there is a large literature demonstrating that MUAC has a high predictive

Box 2

The use of MUAC in young stunted children

There is good evidence that WFH fails to select short children who are at high risk of mortality. At the start of the CTC programme in Wollo, Ethiopia, any child whose height was greater than 65cm using a MUAC criterion of 110mm was admitted. One month after the start of the programme, in response to a recommendation from a visiting UNICEF consultant, the programme stopped using MUAC OTP admission criteria on children whose heights were <75cm, the height cut-off used as a proxy for one year of age. Instead, only a WFH <70% criterion was used for such children, admitting those with WFH >70% and a MUAC <110mm into the Supplementary Feeding Programme.

This change in criteria resulted in two groups of admissions, enabling a retrospective cohort study to be carried out looking at the outcomes of these two groups. Although the sample was small (96), the results, presented in Table 2, provide strong evidence that short children with low MUAC survive much better if they are treated in the OTP rather than the SFP. The Wollo programme accordingly reverted to using MUAC-based admission criteria on all children whose height was over 65cm. These criteria are now being using in all CTC programmes.

Table 2: Comparison of outcome of treatment for MUAC admissions, Ethiopia, February 2003–June 2003

Treated in	Died	Survived
OTP	0	38
SFP	8	50
Relative Risk (kludged) = 11.26 (i.e. the risk of death for children <75cm in height with a MUAC of <110 treated in SFP was 11.26 times higher than for those treated in OTP)		

power for mortality in children aged 1–5 years,¹¹ even after correction for age,¹² many argue that, as much of this mortality is not specifically related to nutritional status, MUAC is unsuitable as an indicator for feeding programmes. However, CTC programmes include a wide range of health and hygiene interventions above and beyond simple supplementary and therapeutic feeding, and in this public health context the specificity with which MUAC identifies nutritional status is far less important than its ability to identify risk of mortality.

Resource allocation during emergency CTC programmes

The way that resources are allocated to the various elements of a CTC programme is one of the defining features of the approach. It is also one of the primary sources of disagreement between proponents of CTC and

those who back the traditional TFC models or models of home treatment evolving out of TFCs.¹³

There are fundamental differences between CTC and TFC in how each allocates resources around the various elements of the intervention. Essentially, CTC accords a lower priority to the stabilisation care of complicated cases than the TFC approach. In CTC, the priority is attaining good coverage with supplementary feeding, outpatient therapeutic care and community mobilisation. Once OTP and SFP coverage are good and steps to promote community participation and ownership well established, more resources are diverted towards other CTC elements. At this stage, programmes increase the provision of inpatient care, implement and strengthen links with other sectoral interventions in food security and other public health issues and give greater attention to developing the local production of RUTF.

This evolution is flexible. In situations where the local infrastructure can be easily upgraded to provide reasonable stabilisation care, this can be set up at an early stage, so long as substantial resources are not diverted away from the priority areas of SFP and OTP. For example, the CTC programme in Wollo, Ethiopia, devoted a small amount of capacity to upgrading local in-patient care for cases of acute malnutrition with complications, but it never took over the management or implementation of the Stabilisation Centre.

In this way, the programme prioritisation was maintained, local capacity enhanced and adequate stabilisation care provided from an early stage of the intervention. This Wollo programme drew heavily on lessons learned during the previous year's programme in Dowa, Malawi. Here, the national food strategy compelled the prioritisation of inpatient care, diverting resources away from participation and mobilisation; as a result, the initial programme uptake, coverage and therefore impact suffered. Figure 3 shows the rate of programme uptake in Malawi compared with the faster rate in Ethiopia. Given the high mortality rate among untreated severely malnourished children, this slow uptake in Malawi probably resulted in several hundred children dying before they could receive OTP treatment.

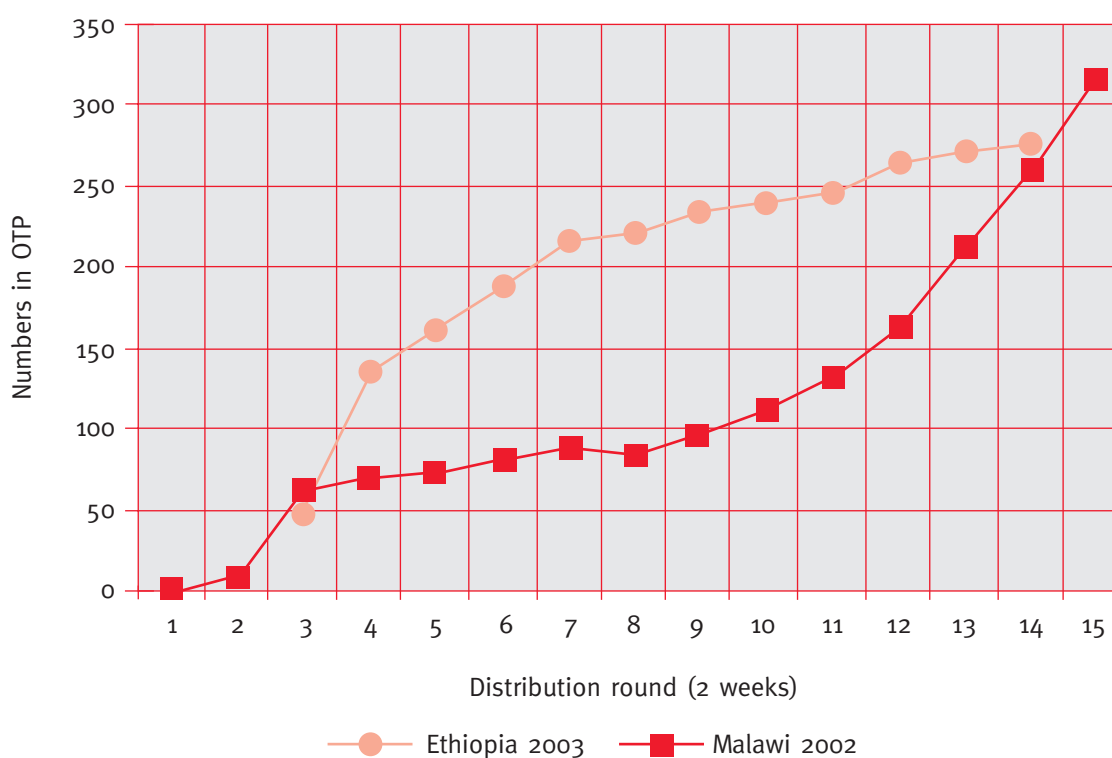
Community mobilisation¹⁴

For CTC to work, the community needs to be seen as a resource, rather than a burden or an alien and potentially difficult mob. Mobilising communities and developing some degree of participation and ownership are essential right from the start.

The CTC in Malawi provides a good example of the importance of effective engagement with the community. During the planning stages, insufficient communication with existing formal structures and the omission of more informal or 'traditional' structures and community figures

Figure 3

Uptake of OTP in Malawi (2002) and Ethiopia (2003)

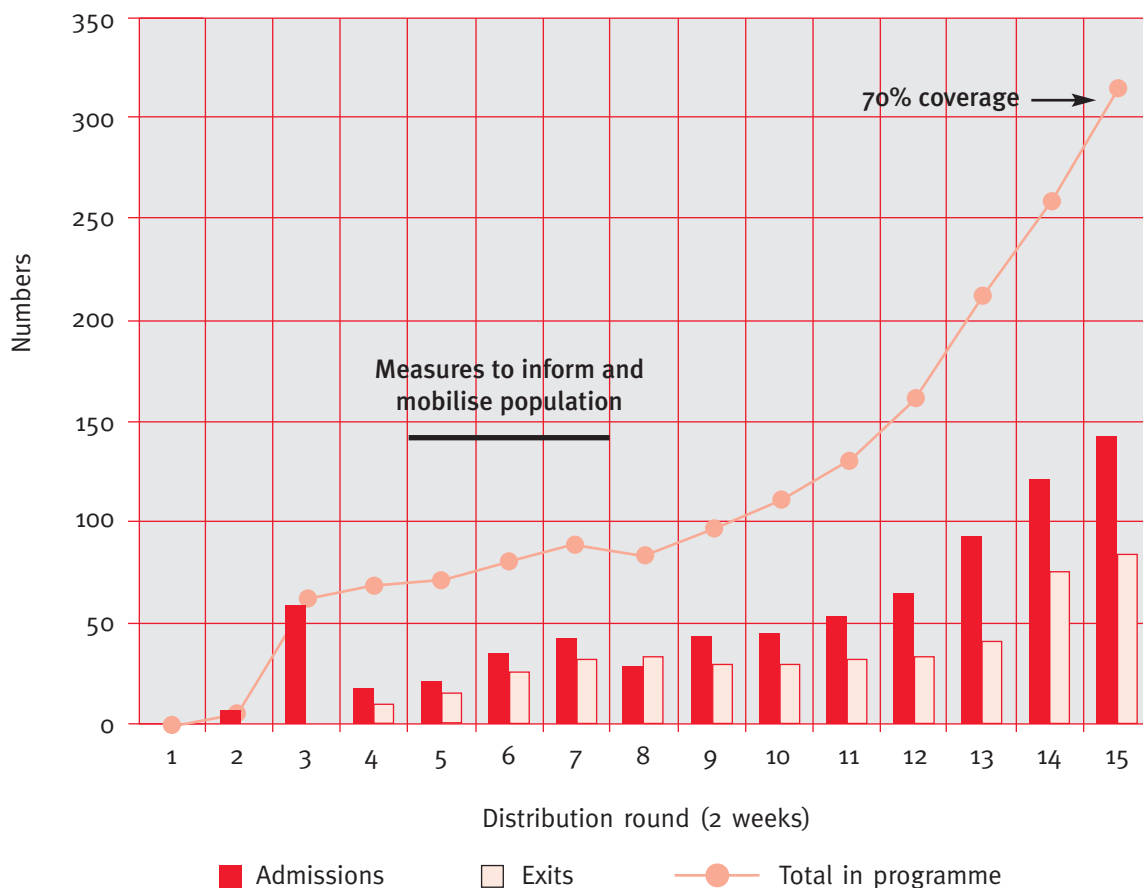


substantially reduced programme coverage and uptake. The CTC staff's limited understanding of how local people perceived the programme, coupled with a failure to inform traditional authorities and village headmen and involve them in mobilisation activities, appears to have greatly reduced attendance and programme coverage during the first three months of the programme. In response to these problems, engagement with traditional authorities was increased, giving people better information about how the programme operated and how children were selected for treatment. As a result, the number of new cases of severe malnutrition admitted into the programme rapidly increased (see Figure 4).

Experiences with CTC indicate 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; this increases engagement and programme impact. The community element of CTC aims to spread information about the programme to all major stakeholders in the community, and to foster the participation of the community in programme design, implementation and handover.

Investing in professional and experienced anthropological and sociological support is vital, and the aim is always to include such support in CTC programmes. Although the particular techniques are context-specific, over the past three years an outline methodology has been developed. This is an iterative process of engagement, feedback and re-engagement to foster participation and understanding. There are four main stages in this process. Stage one identifies key community figures (traditional authority structures, health practitioners, religious leaders and community organisations and committees). All formal structures that could be involved in the CTC programme are also pinpointed, and a working knowledge is established of how these structures and actors interact with each other. During stage two, discussions are held with these key actors in order to establish a dialogue. The strengths of the different sectors and actors within the community are assessed, and tasks allocated. In stage three, systems for constant dialogue and feedback are set up, and efforts made to maximise the participation of key community figures. Stage four seeks to foster community involvement to facilitate the handover of the programme to local control. This involves formulating the most sustainable strategy for the long-term provision of services, identifying

Figure 4
OTP admission in Dowa district (July 2002)



the most suitable strategy for community-based volunteers and establishing the most appropriate incentives for them.

CTC and HIV/AIDS¹⁵

The HIV pandemic is changing the face of malnutrition. HIV/AIDS is responsible, not just for massive mortality and morbidity, but also for changes in the spectrum of underlying vulnerabilities.¹⁶ The prevalence of acute and chronic malnutrition is increased, both directly through infection and indirectly through increasing poverty and vulnerability. Increased vulnerability and decreased economic reserves also heighten the risk of acute events such as drought precipitating famine. CTC programmes are working with and treating many people living with HIV and AIDS (PLWHA). In Malawi, for example, research in 2000 indicated that up to 35% of severely malnourished children were HIV-positive, with children aged between six and 36 months forming a far higher proportion of the caseload as a result of mother-to-child transmission of HIV.¹⁷ The proportion of orphans is also very high, commonly an indication of high HIV prevalence in the population; in Dowa, for example, 9.3% of CTC programme admissions were orphans.¹⁸

Addressing the broad spectrum of acute and long-term effects of HIV/AIDS requires responses which mix humanitarian and development approaches. CTC's combination of emergency and developmental principles is well adapted to this requirement, and the CTC model contains many features that are appropriate for the care and support of HIV-affected people. The essential elements of CTC include most of the components of a home-based care (HBC) model, including the provision of physical care, the continuum of care, health education, building local capacity, ensuring accessibility, promoting the sustainability of support and the implementation of community-based sustainable case-finding strategies. In its present form, CTC can provide effective physical care for

many HIV-affected individuals; recent research indicates that 59% of HIV-positive severely malnourished people treated with RUTF in an outpatient programme recovered to normal nutritional status (100% WFH).¹⁹ CTC's community-based approach to support and assistance provides an appropriate entry-point for home-based care for HIV-affected people. This could potentially avoid the stigma associated with the illness and legitimise the role of health workers in villages, giving them time to identify appropriate local structures and work out appropriate ways of supporting them. Research is ongoing into how best to modify CTC to maximise this potential.²⁰

This chapter has described how CTC programmes evolve over time and how CTC adapts to differing contexts. Ultimately, the aim of CTC programmes is to evolve to a stage wherein implementation is gradually taken over by local partners and support from external NGOs becomes unnecessary. The 2002/3 programmes in Malawi and Wollo, Ethiopia, are now largely implemented by communities and local health workers. This evolution towards local implementation is important if humanitarian therapeutic programmes are to develop viable exit strategies. Humanitarian crises are increasingly less likely to be rapid-onset short-term events acted out in large-scale refugee camps, to which agencies can respond in strength and then leave when the problem is solved. Instead, most reflect complex, often cyclical structural problems, and manifest themselves as slowly-evolving cycles from chronic vulnerability to crisis and back to chronic vulnerability. Often, there are no clearly defined start- or end-points, and no well-defined target populations. In such chronic recurrent emergencies, imported short-term solutions that require large-scale external support and large numbers of skilled workers are often highly problematic. These programmes, often implemented in parallel with the local infrastructure, rarely achieve positive exit strategies. By contrast, the protean nature of CTC gives programmes the flexibility to respond optimally to a wide range of contexts, and paves the way for viable exit strategies.

Chapter 3

Case studies: CTC in action

Over the past four years, CTC interventions have treated over 8,000 children with severe acute malnutrition, and 75,000 with moderate acute malnutrition, in a variety of contexts and with a range of different partners. This chapter looks at three interventions: in South Wollo, Ethiopia; in North Darfur, Sudan; and in Dowa District, Malawi.

CTC in South Wollo, Ethiopia²¹

Context

Kalu and Dessie Zuria districts, South Wollo, have a total population of around 450,000, the vast majority of whom live in chronically food insecure villages spread over a relatively densely populated and poorly accessible mountainous terrain (260,000 hectares, population density 180 people/sq km). Concern has worked in one *woreda* for the last 30 years, with nutrition, health, agriculture, water and livestock programmes. In response to the 1984 famine, the agency implemented SFP and TFC feeding programmes in the area.

In December 2002, nutrition surveys carried out by Concern Worldwide, in collaboration with the Amhara Region Disaster Preparedness and Prevention Bureau (DPPB), reported 17.2% global malnutrition and 3.1% severe malnutrition. At the same time, the federal Disasters, Prevention and Preparedness Committee (DPPC) reported the harvest to be a quarter below normal levels, and identified 50% of the population as being in need of food aid. Concern began blanket supplementary feeding in response to this emergency. In January 2003, this was replaced with a targeted supplementary feeding programme providing a two-weekly ration of a local blended food. The programme was spread over 18 decentralised sites.

The CTC programme

The CTC programme was set up in February 2003, with the support of Valid International. An OTP, a facility for inpatient care and an outreach/mobilisation programme were integrated into the existing SFP intervention. The initial target of 2,500 severely malnourished children was calculated using November 2002 nutrition survey results.

The key features of the programme were:

1. *Timely set up.* Adding an OTP component to each existing SFP site was relatively quick and the programme was fully operational within six weeks. OTP



OTP registration, Wollo, Ethiopia

treatment consisted of a weekly health check, provision of an RUTF ration according to weight, standard medical treatment and basic nutrition education for carers. Formal training of Concern and Ministry of Health staff to implement the programme required only two days.

2. *High coverage and good access to services.* Access to services for the entire population (defined as being within three hours' walk of any village) was addressed by setting up OTP sites quickly, focusing the activities of outreach workers on mobilising communities through local contacts (traditional leaders, community workers), and active case-finding using a combination of Concern outreach workers and carers who were already in the programme. In a minority of difficult-to-access areas, carers were given the option of attending sites on a two-weekly rather than weekly basis, in the hope that this would decrease the opportunity costs of programme attendance and reduce subsequent defaults. Inpatient care for the minority of complicated cases was established through rapid but low-level support for the central hospital run by the Ministry of Health, enabling the team to focus attention on the OTP. Some months into the programme, focus group discussions were held to investigate barriers to uptake of the programme. These sessions revealed problems of access in some areas, and led to the opening of extra OTP sites. Discussions also highlighted dissatisfaction amongst some carers generated by confusion over the use of MUAC for village-level referral, and WFH for admission selection. Initial rejection discouraged some carers from bringing their children back to the site if their condition deteriorated, and was deterring others in the community from attending at all. Compensation (soap) for those

referred to the programme by outreach workers but not admitted helped to resolve these problems.

3. *Integration with, and support of, existing health structures.* Concern sought advice from government health departments and involved them in the planning and implementation of the OTP. Concern trained Ministry of Health clinic workers to carry out the OTP, linking them with its SFP distribution teams. Medical supervision for the OTP was split between Concern's medical workers and Health Ministry supervisors seconded from district health offices. Although existing commitments and staff turnover necessitated periodic retraining and increased Concern supervision, both parties remain extremely positive about the partnership. To cover the need for inpatient care for a minority of cases, the director of the zonal hospital allowed the paediatric ward to act as a referral unit for stabilisation care.

Outcomes

Outcome indicators for the CTC programme in South Wollo up to January 2004 (summarised in Table 3) have compared well with the Sphere Project's international standards for therapeutic care. Coverage was also impressive: three months into the programme, in May 2003, a specialised coverage survey estimated that 77.5% of all the severely malnourished living in the two target *woredas* had been admitted into the programme.

The average weight gain of children discharged was 4.4g/kg/day, with an average total length of stay of 81 days. The long length of stay and low weight gains in the

programme reflect some of the challenges faced by a community-based programme. Factors inherent to the home environment (poor water sources, malaria, poor-quality food and sub-optimal caring practices) will affect the recovery time of some children. The length of stay is to a degree artificially prolonged in an effort to minimise readmissions: children were kept for longer in the OTP to allow them to put on more weight before they were discharged. Consequently, the programme used 85% of the percentage of the median weight for height as a criterion for discharge to the SFP (where the patients then stayed another two months), rather than the usual 80% WFH recommended by WHO. Increasing weight from 80% to 85% takes some time, and most subsequent CTC programmes have used the WHO-recommended 80% WHM as a discharge criterion, substantially reducing the length of stay. On clinical grounds, medical staff also believed that TB (possibly associated with HIV/AIDS) was likely to be an important influence in prolonging the length of stay for some OTP patients. However, although the hospital tested for TB and identified some cases, the sensitivity of this testing was poor. There was no HIV testing.

Initially, progress in gaining acceptance of updated therapeutic feeding and drug protocols within the Ministry of Health was slow, but close dialogue and respect for the constraints experienced by staff led to great improvements in the care of the severest cases. The combination of the introduction of new protocols, UNICEF's training for the hospital's chief medical officer and the decongestion of the wards after the majority of the severely malnourished were treated in the OTP dramatically decreased hospital mortality rates for the severely malnourished. Prior to the

Table 3: CTC interim outcomes in Wollo, Ethiopia, February 2003–January 2004

	Hospital	%	OTP	%	Combined	%
Still in project			204		204	
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		667		590	

Notes: * All OTP deaths were followed up. All were under two years of age; none of the deaths occurred in the early stages of treatment, and the average length of stay for those who died was 50 days. Ten deaths were children admitted with oedemas, ten occurred in children who had already spent some time in the hospital and three occurred when the carer refused to be transferred to the hospital. The main causes of death reported by families were diarrhoea, suspected malaria and cough.

** The rate of transfer from the OTP to the hospital is high partly because a proportion of children with poor weight gain were sent for investigation of underlying chronic disease (e.g. TB). Nineteen transfers came back with positive results (based on X-ray) and subsequently continued in the OTP whilst receiving standard DOTS treatment. The outcomes of all transfers are represented in the combined results.

*** After four months in the programme, cases who had not yet attained the discharge criteria of $\geq 85\%$ WHM were reviewed by the supervisory team – those over 80% WHM were discharged non-recovered if their weight was remaining stable and if all counselling, home-visit, or hospital referral alternatives had been pursued. Many of these cases were found to be children with some physical disability.



Darfur: assessing crowds for prevalence of anaemia

programme, the hospital's medical director estimated that 50% of severely malnourished children treated in hospital died, compared with less than 10% (within Sphere standards) after the CTC started, despite the unit treating only the most severe cases of severe malnutrition with complications.

CTC in North Darfur, North Sudan²²

Context

North Darfur lies 1,000km to the west of Khartoum. It is an extremely large state with a very low population density, inhabited by only 1.4 million people. It is ecologically varied, with desert in the north (average annual rainfall of less than 100mm) and semi-arid arable land in the south (average annual rainfall of 100–300mm). A number of different livelihood strategies are in use. The majority of the population practices traditional, subsistence-oriented rain-fed agriculture, predominantly of millet. Pastoral communities depend on camels, cattle, sheep and goats, and cash-crop farmers cultivate chewing tobacco, vegetables, sesame, groundnuts and watermelon seeds. The area has a long history of severe food shortages. Major famines resulting in widespread loss of life occurred in the late eighteenth century, in 1913–14 and in 1984–85. More recently, there have been cyclical episodes of drought, eroding traditional coping mechanisms.

In October 2000, the annual assessments of food needs concluded that crop production in two-thirds of North Darfur's villages was poor or very poor. Subsequent nutritional surveys in mid-2001 and food security assessments by Save the Children UK identified rates of acute malnutrition higher than 20% in the under-five population and a severe food security situation. In 2001,

SC-UK supported by Valid International implemented a short-term CTC programme to address these problems. In 2002, the annual food needs assessments once again predicted large shortfalls in food availability for 2002/3, and nutritional survey assessments in May 2002 forecast a new crisis. In August 2002, SC-UK and Valid initiated a further emergency CTC response.

The CTC programme in 2001–2002

In the first, short-term CTC intervention in 2001, SC-UK set up a programme in ten of the worst-affected districts. This was run entirely by Darfur-based national staff with support from one expatriate health and nutrition advisor for three months and a three-week consultancy by Valid. It was very decentralised, with 104 distribution sites allowing beneficiaries good access to treatment without requiring them to spend prolonged periods away from their

fields. The deployment of ten mobile teams composed of SC-UK national staff and some medical staff seconded from the Ministry of Health allowed the programme to scale up very quickly, covering all of the 104 distribution points in little over a month. These teams assessed children and provided medical and nutritional treatment at weekly outpatient sites, while a network of several hundred community nutrition workers screened and followed up children in the villages. SC-UK also supported four small SCs based in local health structures, to provide phase 1 care to children with severe complicated malnutrition.

The CTC programme in 2002–2003

In the 2002 response, 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. The programme operated through a decentralised system of 57 distribution points, 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 administered nutritional and medical treatment for all those registered in the programme. A network of community nutrition workers (one from each village in the target area) provided 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 in local health structures, to provide phase 1 care to children with severe complicated malnutrition.

The programme included the following components:

1. Dry supplementary feeding for all moderately malnourished children under five years of age. Each child received 4kg of a fortified blended food (UNIMIX) mixed with oil and sugar according to national and international protocols.
2. Medical screening and treatment of all malnourished children, and subsequent referral for those with complicated malnutrition who agreed to a period of inpatient admission. Each distribution team included a medical assistant who screened patients for acute illness, verified measles vaccination and vitamin A status, and provided a single curative dose of an anti-worm drug.
3. OTP for all children under five years with uncomplicated severe malnutrition. The programme teams identified all patients who were severely malnourished. After identification, they either entered them into the OTP or referred them to one of the four SCs. OTP patients received:
 - Medical treatment – At admission, all patients underwent a clinical examination and received a week's course of broad-spectrum antibiotics (amoxil), deworming treatment, anti-malarials, folic acid and vitamin A. If unvaccinated for measles they were referred to the local clinic for vaccination. At the subsequent weekly visits, patients underwent a medical examination and received specific treatment accordingly.
 - Nutrition treatment – At admission, each severely malnourished child in the OTP received 1.28kg of RUTF and 7.5kg of UNIMIX. At weekly clinic visits thereafter patients received 14 sachets (92g) of RUTF (total 1.28kg). This ration of RUTF provided 4.2MJ (1,000kcal) of energy and 24.3g of protein per day (protein/energy ratio = 10%). In addition, all patients in the OTP received 7.5kg of UNIMIX, providing 8.26MJ a day (1,967kcal) of energy and 79g of protein (protein/energy ratio = 16%).
 - Regular monitoring – Children returned to the same distribution site every week to be assessed by the medical assistant and to receive a ration of RUTF and UNIMIX.
 - Education and follow-up from the community nutrition worker.
 - Discharge – Patients were discharged from the OTP once their WFH was greater than 85% of the reference weight-for-height on two consecutive weeks, and they were free from infectious disease.
4. Four small phase 1 SCs. Treatment in the SCs was based on the standard WHO inpatient treatment protocols for the initial re-feeding (phase 1) and transition phase. This included the use of formula milks (F75 and F100) adapted for the treatment of severe malnutrition and systematic medical treatment. Children were discharged from the SC into the OTP once appetite had returned and infection was under control.

Table 4: Combined SC and OTP outcomes for the CTC programmes in North Darfur

Programme outcomes	2001-2 (%) (n=836)	2002-3 (%) (n=299)
Mortality	2.9	7.9
Default	10.9	6.5
Recovery	81.4	65.1
Transfer from OTP to SC or TFC	5.6	20.5
Coverage	30–64%	60% (50–100%)

Outcomes

Results for the 2001 and 2002 programmes are summarised in Table 4. They compare well with the Sphere standards for therapeutic care. Between 1 August and 12 December 2001, the first CTC programme treated 836 severely malnourished children (and approximately 24,000 moderately malnourished children and 23,000 pregnant and lactating women) in ten rural areas of North Darfur. The short-term impact of the programme was positive, with all outcome indicators exceeding Sphere standards. Of the 836 cases of severe malnutrition enrolled in the programme, only 17 children were admitted to the stabilisation centres; the rest were admitted directly into OTP, with no period of inpatient care. Overall, there were 25 observed deaths amongst the children treated in the OTP. External evaluators concluded that this number was around half what would have been expected in a conventional, well-run TFC.²³ During the 2002 programme, there was more emphasis on persuading carers to allow patients with complications to be admitted to the SC. Results from this programme were broadly similar, apart from a large increase in transfers and a corresponding reduction in the recovery rate. This was due to the introduction of a protocol to identify children demonstrating poor weight gain, and to transfer them back to a stabilisation centre to see if the rate of weight gain could be improved. At present, data is only available for the first 299 of 446 patients admitted during this programme, and the outcomes of the 61 children (20.5%) transferred back to the SC using this protocol are not available. This artificially decreases the recovery rate.

The project evaluation team used nutritional surveys, population numbers and programme monitoring data to estimate programme coverage. Although this method does not give precise results, overall coverage was estimated to be approximately 60% (50–100%), and so above the new Sphere standard of over 50% for rural communities.

CTC during the 2004 crisis in Darfur

During the 2004 crisis in Darfur, many of the newly set up selective feeding programmes have seen high default rates, low cure rates and poor coverage. This has encouraged many agencies to examine the potential for working with CTC.²⁴ At the time of writing, the author and

Concern Worldwide had set up a CTC programme in West Darfur primarily targeting displaced people living in nine IDP camps in and around El Geneina and Kulbus. The residents in these camps come from many different tribes, districts and villages, and many have been displaced for months, often moving between several areas before settling in any given camp. The camps are unstructured and unplanned, and residents are frequently not in contact with traditional leaders from their home communities. However, despite this social disruption, initial work to sensitise people to the CTC programme and plan distributions, points of access, mobilisation, case-finding and follow-up has been successful. In each camp, brief investigation has revealed a whole range of community structures to interact with and work with to help start the programme: sheiks, either attached to their original communities or appointed by the local Ohmbda (senior chief) to support a section of a new camp; members of women's groups; Imams (in some camps, the distribution sites have become local mosques); and Fakirs (local healers), some of whom have set up in the distribution sites when they are not in use. Interaction with these people has so far produced very positive results. In the first two weeks of operation, the CTC programme identified and admitted over 2,000 moderately malnourished and 138 severely malnourished people, referring several more severely malnourished people to an MSF-France Stabilisation Centre. This represents more than a 50% increase in the numbers of severely malnourished children in treatment in two weeks. In total, after three weeks the OTP programme had admitted 296 severely malnourished people, receiving 121 severely malnourished patients handed over by MSF-F when it closed its Ambulatory Therapeutic Feeding Centre programme, and 30 patients discharged by MSF-F as they converted the TFC into a Stabilisation Centre.

The CTC programme in El Geneina provides an example of how agencies can cooperate within the CTC framework to maximise the links between interventions and enhance the effectiveness of each of the individual programmes. MSF-F has converted its TFC into a Stabilisation Centre, discharging patients to OTP after they complete phase one treatment, and has used CTC criteria to admit only acutely malnourished patients with complications. This has reduced congestion in the therapeutic centre and facilitated the provision of very intensive treatment for patients with severe malnutrition with complications. Concern, Tearfund and SC-US have implemented OTP, SFP and community mobilisation, treating the majority of cases of acute malnutrition with minimal disruption to families and communities, and referring children with complications or medical cases to outpatient departments (OPDs) and stabilisation care. This has improved the coverage of both nutritional and healthcare interventions, and has helped to promote earlier referral, thereby increasing cure rates. MEDAIR and MSF-Switzerland have implemented outpatient medical clinics, active case-finding and health/hygiene promotion, improving the

quality of OTP and SFP care by providing medical support to the Concern OTP/SFP distributions, and improving coverage by referring children to OTP, SFP and SC where appropriate. Valid International has supported this process through the provision of an overall strategy, criteria, technical guidelines and mentoring for the implementation of CTC.

CTC in Dowa District, Central Region, Malawi²⁵

Context

In February 2002, the Malawian government declared a national nutritional emergency and the UN launched an international appeal for emergency assistance. The Ministry of Health and Population and humanitarian agencies began to develop plans to treat large numbers of severely malnourished people. Nutritional Rehabilitation Units (NRUs) across the country were upgraded to provide centre-based therapeutic treatment by the end of the year. UNICEF and several NGOs provided therapeutic products, training and support. The Ministry of Health and Population gave Concern Worldwide permission to pilot CTC in two districts in central Malawi. This case study concerns the CTC programme in one of these districts, Dowa District.

The CTC programme

The CTC programme was set up to be delivered through the existing health system, with Concern and Valid International providing mobile CTC teams to deliver training and on-the-job support for health staff. The programme consisted of:

- Decentralised supplementary feeding delivered through 17 health units on a fortnightly basis. These units were run jointly by the Ministry of Health and Population and the Christian Health Association of Malawi (CHAM).
- Decentralised outpatient therapeutic feeding delivered through 17 MoHP/CHAM health units on a weekly basis.
- Stabilisation centres for phase 1 treatment delivered through four nutritional rehabilitation units.
- Community-based case-finding, referral and beneficiary follow-up through 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.

Outcomes

The Dowa CTC programme achieved good short-term impact. It saved lives and reduced morbidity by achieving high coverage and good cure rates (see Table 5). The large number of patients in the stabilisation centres reflects government policy that all severely malnourished children

Table 5: Interim monitoring results from Dowa District CTC (August 2002–December 2003)

	Stabilisation Centre		OTP		Combined	
Discharged	1,299	87%	1,160	69%	1,160	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	1,495		1,692		1,671	

Table 6: Direct estimates of CTC and TFC coverage

	CTC in Dowa (March 2003)	TFC in Mchinji (March 2003)	CTC in Dowa (May 2004)
Severely malnourished found	76	136	40
Children in feeding programme	46	29	110
Coverage WFP/HCR method (%)	73%	28%	72%
95% Confidence interval (%)	63.6–80.1	20.8–35.8	66.4–78.0

Note: Data in this table are derived from the new method developed by Myatt, described briefly in Chapter 4.

should be treated in SCs. The initial Ministry of Health requirement that all children pass through inpatient care slowed initial mobilisation and diverted resources away from mobilisation and coverage, hence the slow uptake. After about five months, the four SCs became overloaded, and a policy of direct admission to OTP was adopted. Table 6 provides a direct comparison of coverage with a TFC programme in a neighbouring district.

Since June 2003, Concern Worldwide has progressively reduced the level of support to the CTC programme, handing increasing responsibility and control over to the district health authorities. In June 2004, eight months after Concern withdrew almost all its support for case-finding and mobilisation, the CTC programme coverage was still greater than 70%.²⁶

Chapter 4

The effectiveness of CTC

The previous chapters have described CTC and provided examples of CTC interventions. This chapter describes the effectiveness and impact of CTC in terms of clinical outcomes and coverage, and compares this to results from TFC programmes. It also examines some of the issues around implementing a community-based approach in humanitarian crises.

Clinical outcomes

Table 7 presents outcome data from the first 7,400 severely malnourished patients treated in CTCs for whom data is available (see also Annex 1). Outcome indicators amongst these patients are substantially better than the Sphere indicators for recovery, death and default. Death rates were 4.7%, under half the Sphere standard of 10%; cure rates were 76.8%, better than the Sphere standard of 75%, whilst default rates were 10.6%, compared with Sphere's 15%. These CTC outcomes also compare favourably with TFC outcomes. The largest study of TFC clinical outcomes to date contains data from 11,287 patients (8,484 children) admitted to 20 TFCs run by a

specialist TFC agency between 1993 and 1998. These TFCs achieved an average mortality rate of 12%, an average recovery rate of 65% and an average default rate of 18% (excluding those who refused admission into the TFCs).²⁷

The average length of stay and average rates of weight gain in CTC programmes are, however, worse than those recorded in TFCs. In CTC the average length of stay is approximately 40–50 days; depending on the context, up to 20% of children recover very slowly in the community and stay in the programme for several months. Average rates of weight gain are approximately 5g/kg/day. This gives a recovery period significantly longer than the 30 days in the Sphere standards or the 28 days reported in the TFC centres described above. It is also worse than the 8g/kg/day in Sphere and the 12–14g/kg/day reported in the TFC centres.²⁸ However, as death rates are low and the final cure rates are high, and there are few opportunity costs in participating in a CTC and the risk of exposure to infection is low, this slow recovery does not appear to be a serious problem. Indeed, the main difficulty with slow recovery is that the increased duration of care decreases the cost-effectiveness of CTC.

Table 7: CTC outcomes

Country	SAM treated (OTP + SC)*	Direct admissions to OTP (%)	Outcomes (OTP and SC combined)					Comment^^
			Recovery	Default	Death	Transfer**	Non-recovery	
Ethiopia (Hadiya)***	170	100%	85.0	4.7	4.1	–	6.5	
North Sudan (Darfur)	836	98%	81.4	10.1	2.9	5.6	–	
North Sudan (Darfur)	299 ±	69%	65.1	6.5	7.9	20.5	–	
Malawi (Dowa)	1,900	19%	69.4	15.0	8.9	3.0	2.8	
Ethiopia (South Wollo)	794	95%	74.6	9.7	7.5	–	8.3	
Ethiopia (Wolayita (Damot Weyde))	194	24%	69.6	5.2	7.3	10.5	–	4 registered on closure
Ethiopia (Wolayita (Offa))	445	94%	83.5	5.3	1.5	9.6	–	
Ethiopia (Sidama)	1,232	81%	83.8	4.4	1.3	10.1****	0.5	
Ethiopia (Hararge (Golo Oda))	232	99%	85.8	6.0	4.9	3.3	–	49 registered on closure
South Sudan (BEG)	610	92%	73.4	17.3	1.4	4.2	3.7	39 registered on closure
South Sudan (BEG)	696	71%	81.8	15.4	1.4	1.4	0.0	58 registered on closure
Total	7,408		76.8%	10.6%	4.7%	–	–	

Notes: * 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 SC-US TFC as separate TFC/hospital transfer figures are unavailable.

^^ Children still registered on programme closure are not included in outcome calculations.

± Records of the first 299 admissions out of a total of 446 available at time of writing.

Coverage²⁹

Assessing programme coverage is vital to the assessment of the overall impact of interventions. In 2003, specific coverage indicators for selective feeding programmes were included in the Sphere project's humanitarian guidelines for the first time, with standards of 50% coverage for a rural population, 75% for an urban population and 90% for a camp population.³⁰

Historically, assessment of coverage rates for selective feeding programmes has been hindered by the absence of a useable assessment tool providing coverage estimates with acceptable levels of confidence. The CTC research and development programme uses a new technique of coverage assessment, the Systematic Quadrat Sample Method (CQAS). This involves dividing the survey area into non-overlapping squares of equal area (quadrats) and sampling the community or communities located closest to the centre of each quadrat. Sampling uses an active case-finding approach, with cases defined as a child from the programme target area aged between six and 59 months, who is severely malnourished according to the programme's entry criteria. The active case-finding method uses key informants, such as traditional birth attendants, traditional healers, village leaders and Health Surveillance Assistants (HSAs), to identify children who are thin, sick, oedematous, are on the feeding programme, and/or are considered vulnerable. Further case finding is undertaken by asking the carers of any cases identified if they know of a child in the community that fits the description of a case. Once sampling starts in a community, it continues until no further cases can be found. No communities are partially

sampled. Data is analysed both to provide an overall headline coverage figure and to give the spatial distribution of coverage by plotting the coverage rates in each quadrat on maps upon which a grid of quadrats is superimposed.

In Figure 5, the overall coverage of the CTC programme is greater than that of the TFC and there is a very different pattern of coverage. In the TFC programme, coverage was highly dependent on access, being greater close to the TFCs or along roads providing easy transport. In the CTC programme, coverage is more evenly dispersed throughout the district.

Table 8 presents the result of six CQAS coverage surveys, together with two other estimates of CTC programme coverage implemented amongst rural populations using older, less precise methods. The table shows that, in all but the 2001 programme in Darfur, CTC coverage rates are substantially above the new Sphere standards, and even exceed the coverage standards for urban populations.

Coverage of TFC programmes

Little coverage data exists from the past 20 years of TFC implementation, and there have been few specific studies of coverage. 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%.³¹ Other data suggests that such low levels of TFC coverage are not unusual. Table 9 presents coverage data from the national NRU programme in Malawi. This data, obtained ten months after the start of the emergency

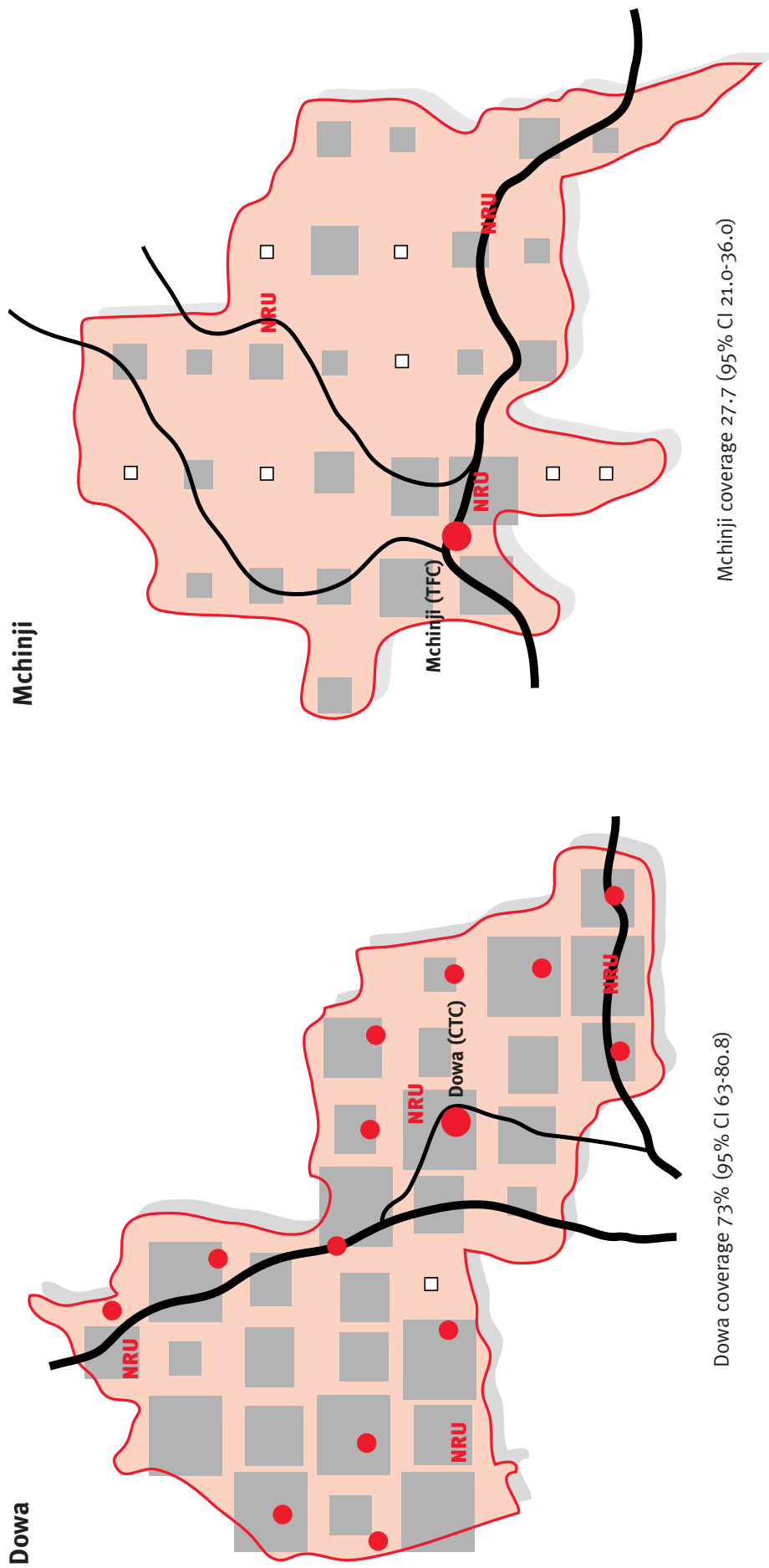
Table 8: Summary of coverage results for selected CTC programmes

Programme	Date	Coverage	Method used
N. Sudan (Darfur)	August 2001–December 2001	30–64%	Estimation from nutritional surveys and patient numbers in OTP/SC
N. Sudan (Darfur)	September 2002–May 2003	> 60%	Estimation from nutritional surveys and patient numbers in OTP/SC
Malawi (Dowa)	August 2002–December 2003	73%	CQAS direct estimation
Ethiopia (S. Wollo)	February 2003–December 2003	78%	CQAS direct estimation
Ethiopia (Sidama)	September 2003–February 2004	78%	CQAS direct estimation
Ethiopia (Hararge)	April 2003–January 2004	81%	CQAS direct estimation
Malawi (Dowa)	June 2004	73%	CQAS direct estimation

Table 9: Reported coverage rates in the national NRU programme in Malawi, April 2003³²

District	Target nos. (SAM), nutritional surveys, April 2003	No. in NRUs (April 2003)	% Coverage
Lilongwe Rural	1,459	178	12.2%
Ntchisi	270	23	8.5%
Kasungu	516	107	20.7%
Rumphi	46	8	17.4%
Rural totals and average coverage	2,291	316	13.8%
Lilongwe Urban	315	62	19.7%
Blantyre	270	164	60.7%
Urban total and average coverage	585	226	38.6%
Total and average coverage	2,561	480	18.7%

Figure 5
Coverage maps (Dowa and Mchinji)



intervention, shows low coverage rates for all the NRUs. The average NRU coverage of cases of severe acute malnutrition was approximately 18.7% (13.8% rural and 38.6% urban), and none of the NRU programmes met current Sphere standards for coverage. Initial reports from the WFP/CDC survey in Darfur during August 2004 suggest TFC coverage rates of below 5%.

Costs³³

This cost analysis is based on the actual costs incurred in implementing CTC programmes as recorded in the Concern field accounting systems for Malawi, Ethiopia and South Sudan. At the time of this analysis, all these programmes were still operational, and many children were still being treated. The analysis therefore uses the number of beneficiaries *admitted* as the denominator, rather than the number of beneficiaries *cured*. This cost analysis splits CTC costs into therapeutic (OTP and SC) and supplementary (SFP) elements. All overheads and the costs for items used directly for both OTP and SFP beneficiaries (weighing equipment, distribution centre set-up, supplementary food) are split according to the ratio of SFP to OTP beneficiaries. The costs for outreach and distribution staff used for both OTP and SFP programme beneficiaries were split 50/50 because, although the proportion of severely malnourished is smaller, a relatively higher proportion of staff time was focused on them. All costs for supporting Stabilisation Centres have been included in the severely malnourished costs. The results of this analysis are presented in the bottom two lines of Table 10.

The following factors affected costs:

- *South Sudan*. South Sudan is recognised as a difficult and expensive country in which to operate. High costs are incurred for the transportation of food, medicines and staff, mostly 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. The cost per beneficiary is expected to be substantially reduced as the programme continues.
- *Malawi*. Two major factors affected costs in Malawi: the high overhead costs allocated to the CTC programme, and the high cost of vehicles. Concern Worldwide started

operations in Malawi only six months prior to the period under review, and throughout the programme had relatively few operational activities in Malawi. Hence the CTC programme carried a far higher than normal burden of overheads, including the costs of setting up the standard Concern infrastructure, including vehicles, head office staff and communications and IT equipment. For most of the programme, Concern was not a registered NGO in Malawi and could not benefit from tax-free vehicle imports. Consequently, the CTC programme rented several four-wheel-drive vehicles at high cost for most of the first year, before buying new vehicles.

- *Ethiopia*. Ethiopia is a well-established Concern Worldwide field operation, with many relatively inexpensive programmes. The CTC programme integrated well with the health, nutrition and agricultural interventions already in place. The cost per beneficiary in this case was therefore lower than in the two other examples.

Factors affecting the cost-effectiveness of CTC relative to TFC programmes

A number of factors are important influences on the cost-effectiveness of the CTC approach relative to TFC. In particular, CTC's focus on achieving high coverage requires a good logistics system. The higher the density of severely malnourished children in a given geographical area, and the easier the transport infrastructure, the cheaper it is to implement CTC. By contrast in a TFC model, these costs are borne by the patients, who must use their own resources and suffer the opportunity costs of travelling to and staying in the centre. These costs do not appear in usual cost-effectiveness analysis.

The costs of RUTF and of mobilisation vary greatly in CTC programmes, according to their stage of evolution. The volunteer system of mobilisation required for CTC is relatively expensive for an NGO to set up. However, as in Malawi, as the programme evolves, most outreach and case-finding can be handed over to formal and informal local networks, substantially decreasing costs. At the start of a CTC programme, the cost of imported RUTF plus international transport is approximately \$4,500 a ton, falling to less than half this once local production of RUTF starts. By contrast, TFCs rely predominantly on paid outreach workers and

Table 10: Cost analysis of CTC programmes in South Sudan, Malawi and Ethiopia

	S. Sudan	Malawi	Ethiopia
Type	Established	New	Established
Programme duration	3 months	10 months	5 months
Prevalence of severe malnutrition	4%	1%	0.4%
Severely malnourished numbers	339	1,571	519
Moderately malnourished numbers	3,144	8,164	7,855
Combined CTC cost/beneficiary (€)	114	148	60
Cost/severely malnourished beneficiary (€)	255	257	301
SFP cost/moderately malnourished beneficiary (€)	96	115	43

Table 11: Variations in cost per beneficiary according to beneficiary numbers (euros)

Country	Cost/beneficiary (1,000 beneficiaries)	Cost/beneficiary (2,000 beneficiaries)	Actual cost per beneficiary	Cost/beneficiary + 1,000 ben.	Cost/ beneficiary + 2,000 ben.
S. Sudan	141	168	114	87	60
Malawi	164	180	148	132	116
Ethiopia	67	75	60	53	45

imported F100 and F75, and the costs of these stay relatively constant throughout the life cycle of the programme.

Economies of scale

CTC's great potential for economies of scale relative to TFCs means that patient numbers and the density of patients disproportionately affect the cost of CTC programmes relative to TFC. The CTC model has high fixed initial costs for recruiting, training, equipping and providing transport for the mobile teams; instituting decentralised logistics; and interacting with and mobilising populations. However, once these components 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. For example, SC-UK estimated a cost of \$390 per beneficiary for the CTC programme in North Darfur during 2001–2002. These costs included recruiting, training and providing a car for ten mobile OTP teams, setting up a logistics chain supplying the 110 distribution sites, scattered across an area over half the size of France, and selecting and training over 250 community nutrition workers.³⁴ During the four months of the programme, the teams treated on average only eight severely malnourished children at each distribution site (the programme also treated 24,000 moderately malnourished and 24,000 pregnant and lactating women from the 110 sites). The Concern CTC programme in West Darfur 2004 targets densely populated camps with relatively high levels of acute malnutrition, initially using two teams working from nine sites. After the first three weeks of this programme, each site had on average 30 severely malnourished and 300 moderately malnourished people, and each team was treating an average of 150 severely malnourished and 1,500 moderately malnourished people. These large numbers only caused minor increases in transport, logistics and mobilisation costs, and the only significant increased costs were the extra RUTF required (representing between 10% and 20% of the cost of a CTC programme). By contrast, the TFC model is a 'fixed capacity model'; once a centre is full (more than 100 children), others 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 economies of scale in TFC programmes, making them relatively less cost-effective in major emergencies such as Darfur.

Table 11 presents a theoretical model examining the impact on the cost per beneficiary of changing beneficiary numbers by 1,000 and 2,000. This model demonstrates the large potential for economies of scale inherent in the emergency CTC approach.

Comparing the costs of CTC and TFC

Little information is available on the cost-effectiveness of TFC interventions. A comprehensive review, performed by ECHO, suggests that proposal costs for stand-alone TFC interventions are between €115 and €150 per individual per month depending on the context, and €355 for each child actually rehabilitated.³⁵ ECHO also estimates that the actual programme costs for more integrated nutrition and health interventions closer in scope to CTC (including preventative and curative health, education, surveillance and water and sanitation activities) vary between €288 and €592 per child.³⁶

Given the different aims, structure and timeframe of CTC and TFC interventions, a comparison on a purely cost-per-beneficiary basis is difficult and largely inappropriate. It is also important to include hidden costs when estimating cost-effectiveness. 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 substantial costs for the families and communities of programme beneficiaries which need to be included in any comparative analysis of the CTC and TFC approaches. In the latter, mothers are removed from their families for up to a month, in order to stay with their children 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 on the community – a cost that is largely avoided in the CTC model.

Working with communities in crisis³⁷

One of the concerns of critics of the CTC approach is the apparent fragility of communities in situations of crisis. The argument is that, if communities fragment under the stress of war, famine or mass dislocation, then CTC, with its emphasis on community mobilisation, logically becomes unworkable.³⁸ CTC has yet to be implemented in areas

where access to the population is extremely limited, and it cannot be ruled out that mobilisation under these conditions will prove impractical. Yet the experience with CTC to date is that some form of mobilisation has always been possible. Indeed, there is much to suggest that important elements of community (or culture, or society) remain intact and even gain in importance under conditions of stress, and that the objectives of community assessment and mobilisation can still be pursued.

Critiques of relief

Influential works published in the last 15 years make the point that indigenous capacity is often greater than it may appear to foreign relief workers. Barbara Harrell-Bond has written forcefully about the tendency of international agencies to sideline both refugees and host-country institutions in their operations.³⁹ Alex De Waal has shown how the international system of disaster response has caused certain communities to 'sell themselves' to outsiders by exaggerating the extent of their collapse.⁴⁰ Thus, agencies and beneficiaries alike may emphasise socio-economic collapse and overlook the strengths of existing community institutions. Relief workers must also guard against reading too much into their own (sometimes frustrating) relations with displaced communities. Recent work on the survival strategies of Eritrean refugees in Sudan, for instance, suggests that apparent deceit and moral breakdown was a selective response on the part of refugees towards the camp authorities, and that reciprocity, trust and cooperation continued to characterise refugees' relationships with each other and with the host population.⁴¹ These observations do not invalidate concerns about the limits to community resilience, but they do suggest that relief workers, as cultural outsiders, need to think carefully before discounting the contribution that community institutions can make.

The ethnography of violence

The effect on communities of exposure to violent conflict is a subject only recently taken up by anthropology, and there is much yet to be learned concerning the limitations of community action in these circumstances. However, there is evidence from several chronically violent settings that traditional bodies and practices remain relevant – and even become more relevant – under conditions of extreme violence. During the civil war in Mozambique, for instance, communities adapted traditional practices to ritually cleanse rape victims and mark their re-entry into their families and communities.⁴² Carolyn Nordstrom also found that Mozambique's *curandeiros* (local healers) played a critical role in treating the social effects of violence.⁴³ The

power of traditional midwives in Sierra Leone has endured despite continuous violence and dislocation, making them invaluable allies for clinicians serving communities displaced by fighting.⁴⁴ During fighting in Southern Sudan in 1993, the Agar Dinka used elaborate ritual ceremonies to affirm kinship and community.⁴⁵ All of this research shows that there is reason to believe that war-affected communities may still offer structures and practices that emergency interventions can use.

For CTC, answering the somewhat abstract question of whether communities may or may not be said to exist is less important than determining whether there is someone to work with – especially in case-finding and follow-up. In establishing itself in a given setting, CTC asks several questions about the community as a matter of practical urgency: are there local practitioners (healers, midwives, diviners) who diagnose illness in children, and do they relate symptoms of wasting and swelling back to diet? What channels of communication exist (secular committees, religious or spiritual associations and leaders, groups of kin or neighbours), and can they be used to publicise the programme – its objectives, its methods and target groups? What type of person or group has the confidence of families, making them suitable for outreach and/or home visiting of severe cases? What features of the social landscape might lead to the exclusion of individuals or groups (ethnic, occupational, spatial) from screenings and OTP services? These are questions that may be asked of almost any community, including those in stressful circumstances.

Finally, it is well to remember that TFCs are also problematic in an environment of violent conflict, because of the need to centralise treatment in camps. Apart from the health hazards involved, centralised camp populations face a variety of other risks. Relief camps established on the margins of fighting in the Nuba mountains in Sudan, for example, have served government forces as centres for labour exploitation, Islamisation and forced recruitment.⁴⁶ During the worst of the fighting in Bahr el Ghazal, displaced Dinka were relocated to camps in South Darfur that were close to strongholds of Baggara militia (their antagonists), where they were at risk of Baggara reprisals for losses elsewhere.⁴⁷ While there may well be instances where camp settings provide people with greater security than their communities of origin, this may not be the norm. Ultimately, communities under stress have the clearest idea of the tradeoffs involved, and can be expected to vote with their feet. By offering treatment for the malnourished in the community, CTC can give people the chance to postpone congregating in centralised relief camps until they deem it truly in their interest.

Chapter 5

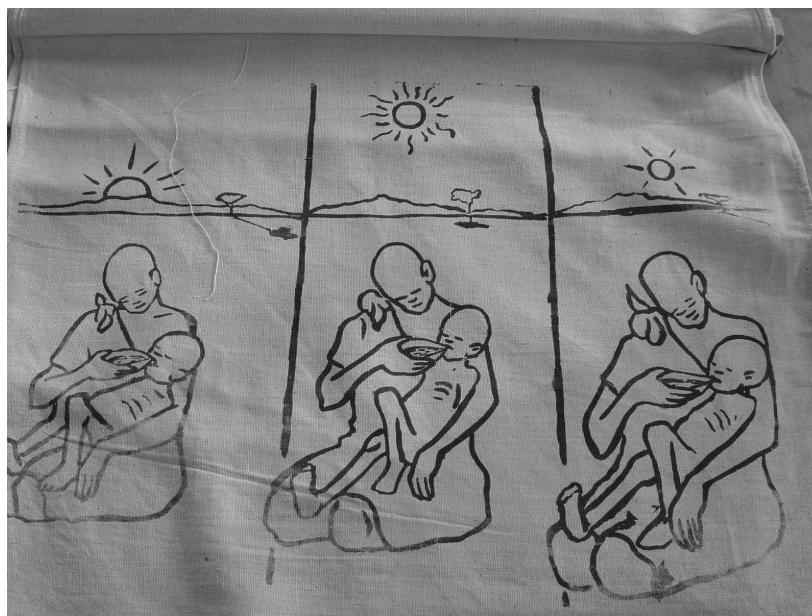
The implications of CTC for humanitarian agencies and donors

Implementing CTC will require substantial changes on the part of humanitarian agencies, in terms of staffing, logistics and resource allocation. It will also call for a new spirit of cooperation between agencies. Agencies, donors and the wider public will have to assess and evaluate interventions in terms of population-level impacts rather than the clinic-level outcome indicators that are currently in vogue. This impact assessment will require programme coverage estimations based on specific coverage assessment techniques, and these must become a standard part of emergency monitoring and evaluation. To maximise the longer-term benefits of CTC, donors will need to take into account the gradual nature of programme handover to local control, and will need to introduce longer funding cycles for humanitarian interventions. The remainder of this chapter explores these issues in more depth.

Staffing implications

TFC interventions are major elements of humanitarian relief operations, employing large numbers of expatriate and skilled local workers and absorbing large amounts of donor funding. Médecins Sans Frontières (MSF) guidelines, for example, stipulate that a single 24-hour TFC to treat a maximum of 100 patients requires one supervisor, one nutritionist, four nurses, four nursing assistants and three registrars.⁴⁸ Implementation is manual/protocol-driven, and must be tightly controlled if patients are not to suffer high rates of acquired infection; as a result, one TFC looks very much like another irrespective of location. With a health background and access to a good manual, even first-time volunteers can oversee the technical aspects of these generic treatment centres relatively effectively. Consequently, the TFC model fits very well with the volunteer ethos of major humanitarian organisations such as MSF and Action Contre la Faim (ACF).

CTC programmes, by contrast, are tailored to the context in which they operate, and require a manager with broad humanitarian experience and cultural understanding. They require few if any imported specialist medical staff, and only a small number of skilled local staff. The CTC programmes in Darfur in 2001–2003, described in Chapter 3, were implemented by a well-established national team with only an initial three-week consultancy from Valid and three months' support from one expatriate health advisor. CTC mobile teams implementing OTP and SFP consist of one team leader, one or two nurses, a registrar, an educator and two



Wall charts used for training in South Sudan

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people to weigh and measure potential recipients. In contrast to TFC manuals, which often run to 200 pages or more, CTC protocols are very short, simple and easy to teach to primary healthcare workers; the basic OTP protocols are three pages long, and can be taught in a day. However, adapting programmes to fit the context is not work for inexperienced managers or advisors, and requires broad experience or expert technical advice from a specialist CTC agency.

Logistics

Both TFC and CTC programmes require substantial logistic support. TFCs require large inputs in building centres, with sanitation, hygiene and cooking facilities. The large number of expatriate staff TFCs need means that the typical TFC intervention also requires a substantial supporting infrastructure of vehicles, housing, special food for the team, flights and visas and translators. By contrast, CTC interventions require little construction or support infrastructure for expatriates. But since OTP/SFP points are highly decentralised, there are high logistics demands, particularly when transport is difficult or CTC areas are very remote. Establishing this logistic system – and ensuring its continuity over the life of a programme – is a major challenge, calling for logisticians with skills in transport and procurement rather than construction.

Interagency cooperation

The broad spectrum of activities within the CTC framework will frequently require that agencies integrate their different operations (SC, OTP, SFP, mobilisation, etc.) more closely. For example, CTC's focus on local staffing does not

imply that current agency expertise in phase 1 stabilisation care or high-quality outpatient and inpatient medical services is redundant; CTC, like TFC, also has an important stabilisation component, and requires medical outpatient support and inpatient referral facilities. The range of interventions contained within CTC is usually too much for most single agencies to implement properly, and it is more effective if agencies work closely together, using common CTC protocols as a framework. In West Darfur, Sudan, multi-agency cooperation between Concern, MSF-France, Medair, MSF-Switzerland, SC-US and Valid International within a CTC framework is producing very positive results.

Prioritisation of resources

By their nature, humanitarian operations are often implemented after a disaster has taken place, and at a time of high mortality rates. Humanitarian agencies, donors and the media will have to understand that, in these contexts, the allocation of resources for OTP and SFP coverage must be prioritised above intensive inpatient care. In some emergencies this will mean that SFP and OTP will initially operate without associated SCs. In such cases, admitting people directly into OTP will result in higher mortality rates within the programme. (At present, programme coverage is almost always low at the start of interventions; people die out of sight in their homes, and do not show up in feeding programme statistics.) This will be hard to accept, and will require that agencies become more accustomed to



A child eating RUTF

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evaluating operations in their entirety and coping with the political repercussions of reporting higher initial intra-programme death rates. The inclusion of specific coverage indicators in the new Sphere guidelines is a major step towards this.

Conclusion

This paper has presented a large evidence base indicating that CTC is a highly effective model for nutritional intervention in humanitarian emergencies, with substantial advantages over present intervention modalities. This is perhaps the first time that such a comprehensive evidence base has been developed and used to argue for change in humanitarian practice. The community-based methods described here can also be applied to

other sectors, such as water, sanitation and healthcare, and developing similar evidence for these other sectors will be an important step towards the development of truly rational and effective humanitarian interventions.

The evidence presented here indicates strongly that the adoption of the CTC model by the humanitarian community will increase the positive impacts of selective feeding interventions, and decrease some of the unwanted negative effects commonly associated with such interventions. The adoption of CTC will help humanitarian interventions to strengthen local capacities, thereby decreasing vulnerability to future crises and paving the way for realistic exit strategies.

Annex 1: CTC programmes: summary information

Country	Year	Agency	Figures for period	Ongoing or completed	No. SAM treated (OTP + SC)*	No. MAM treated (SFP)	Direct admissions to OTP%	OTP coverage [^]	Outcomes OTP and SC combined						Comment ^{^^}	
									Recovery	Default	Death	Transfer ^{**}	Non-recovery			
Ethiopia – Welayita +	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%	–	4.7	4.1	–	–	6.5	–	–	
N. Sudan – Darfur	2001	SC-UK	Aug 01 – Dec 01	Completed	836	25,633	98%	30–64%	10.1	2.9	5.6	–	–	–	–	
N. Sudan – Darfur	2002	SC-UK	Sept 02 – May 03	Completed	446	6,019	69%	>60%	6.5	7.9	20.5	–	–	–	–	Outcome data for first 299 discharges
Malawi – Dowa	2002	Concern	Aug 02 – Dec 03	Ongoing	1,900	7,564	19%	73% [^]	15.0	8.9	3.0	–	2.8	–	–	
Ethiopia – South Wollo	2003	Concern	Feb 03 – Dec 03	Ongoing	794	11,573	95%	77.5% [^]	9.7	7.5	–	–	8.3	–	–	
Ethiopia – Welayita (Damot Weyde)	2003	Concern	Apr 03 – Dec 03	Completed	194	3,346	24%	–	5.2	7.3	10.5	–	–	–	–	4 registered on closure
Ethiopia – Welayita (Offa)	2003	Concern	Aug 03 – Apr 04	Ongoing	445	4,359	94%	–	5.3	1.5	9.6	–	–	–	–	
Ethiopia – Sidama	2003	SC-US	Sept 03 – Feb 04	Ongoing	1,232	3,571	81%	78.3% [^]	4.4	1.3	10.1****	–	0.5	–	–	
Ethiopia – Hararge (Golo Oda)	2003	SC-UJK	Apr 03 – Jan 04	Completed	232	2,332	99%	80.6% [^]	6.0	4.9	3.3	–	–	–	–	49 registered on closure
South Sudan – BEG	2003	Concern	Jun 03 – Jan 04	Completed	610	3,844	92%	–	17.3	1.4	4.2	–	3.7	–	–	39 registered on closure
South Sudan – BEG	2003	Tearfund	Jul 03 – Nov 03	Completed	696	5,433	71%	–	15.4	1.4	1.4	–	0.0	–	–	58 registered on closure
Ethiopia – Hararge	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%	–	–	–	–	

Notes: * 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 implementing CTC

*** This was the only OTP programme with little mobilisation or community engagement

**** Includes those transferred to the SC-US TFC as separate TFC/hospital transfer figures are unavailable

[^] Children still registered on programme closure are not included in the outcome calculations

[^] Calculated using the optimally biased coverage estimated method

+ Many children were transferred to TFC halfway through programme. As there is no follow-up data for these children, overall outcome data are misleading (Recovery 42.0%, Default 31.0%, Death 2.0%, Transfer 24.8%)

Notes

- 1 In particular, systematic antibiotics and phased feeding with F75 and F100. See M. H. N. Golden and A. Briend, 'Treatment of Severe Child Malnutrition in Refugee Camps', *Eur.J.Clin.Nutr*, 47, 1993.
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- 15 This section draws on work by Paluku Bahwere of Valid International.
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