



Operational challenges of implementing **Community Therapeutic Care**

**ENN Report on an
Inter-Agency Workshop**

Washington DC

February 28 – March 2, 2005



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Academy for Educational Development

Cover photographs: Valid International (2002-2005)

Acronyms

AED	Academy for Educational Development
ARV	Anti-retroviral
BMI	Body mass index
CFC	Community feeding centre
Child	A child aged over 12 months of age
Concern WW	Concern Worldwide
CSB	Corn soy blend
CTC	Community therapeutic care
DALY	Disability-adjusted life years
DOTS	Direct observed treatment
ENN	Emergency Nutrition Network
EPI	Extended programme on immunisation
FANTA	Food and Nutrition Technical Assistance
GAM	Global acute malnutrition
GFD	General food distribution
GMP	Growth monitoring programme
HAZ	Height-for-age z score
HBC	Home based care
HEM	High energy milk
HSA	Health surveillance assistants
HQ	Headquarters
IMCI	Integrated management of childhood illness
Infant	Child aged less than 12 months
IRC	International Rescue Committee
MoA	Ministry of Agriculture
MOH	Ministry of Health
MSF	Médecins Sans Frontières
MT	Metric tonne
MUAC	Mid-upper arm circumference
NGO	Non-governmental organisation
OFDA	Office of US Foreign Disaster Assistance
ORS	Oral rehydration solution
OTP	Outpatient therapeutic programme
PD	Positive deviance/deviant
PDI	Positive deviance inquiry
PEM	Protein energy malnutrition
PHC	Primary health care
PLWHA	People living with HIV/AIDS
QALYs	Quality-adjusted life years
RUTF	Ready to use therapeutic food
SAM	Severe acute malnutrition
SARA	Support for Analysis and Research in Africa
SC	Stabilisation centre
SC UK	Save the Children UK
SC US	Save the Children USA
SFP	Supplementary feeding programme
SOAS	School of Oriental and African Studies
SNNPR	Southern Nations, Nationalities and Peoples Region (Ethiopia)
TBAs	Traditional birth attendants
TFC	Therapeutic feeding centre
TFP	Therapeutic feeding programme
THs	Traditional healers
TINP	Targeted input nutrition programme
US	United States
USAID	US Agency for International Development
WFA	Weight-for-age
WFH	Weight-for-height
WHO	World Health Organisation
WHM	Weight-for-height % of the median
WHZ	Weight-for-height z score

Executive summary

In response to the growing numbers of agencies and Ministries of Health (MoH) implementing Community Therapeutic Care (CTC), a consortium of U.S. non-government organisations (NGOs), the Academy for Educational Development's (AED) Food and Nutrition Technical Assistance (FANTA) Project, Concern Worldwide (Concern WW), Save the Children US (SC US) and Valid International (VALID) organised a workshop to:

- identify issues and challenges in implementation, integration and scaling up of CTC programming, and
- discuss mechanisms to ensure quality control over CTC programming.

The workshop was held at the American Red Cross' national headquarters in Washington DC, February 28 – March 2, 2005. Participants included representatives of a broad cross-section of organisations including U.S. and European NGOs, the United States Agency for International Development (USAID), the Ethiopian and Malawian MoHs, the World Health Organisation (WHO), academia and the private sector.

Eight sessions were over the two days, with presentations and discussions focused on the operational challenges of implementing CTC in a variety of local contexts.

Day 1 opened with an overview of CTC, which included recent data and experiences demonstrating the approach to be as effective as centre based programmes in meeting Sphere standards. Future opportunities for CTC were highlighted, such as integration with primary health care (PHC) packages and HIV programming. Provision of locally available and affordable Ready to Use Therapeutic Food (RUTF) was identified as a key challenge to integrating and scaling up the approach.

The themes explored through the course of the two days were:

- Experiences and data (outcome indicators) for seven CTC programmes in complex emergency and development settings.
- Scope for linkages between PD/Hearth and CTC.
- Choice of indicator for screening and determining eligibility for CTC.
- Experiences of community mobilisation in CTC programming.
- Challenges faced in transition, integration and scaling up of CTC programmes.
- Issues and challenges in replication and scaling up of RUTFs, including alternative formulations and future plans for local production.
- Exploration of cases where some linkage had been established between elements of CTC and HIV programming.
- Ensuring quality and co-ordination of CTC programming.
- Future plans and research needs.

Case studies were presented on CTC/Hearth (Rwanda and West Timor), community mobilisation (Ethiopia and Sudan), challenges faced in transition, integration and scaling up of CTC programmes (Malawi and Ethiopia), RUTF production (Malawi), and HIV/AIDS programming (Malawi).

Key findings of the presentations and issues arising out of subsequent discussions were as follows:

The outcome indicators of all of the CTC programmes (with one exception) presented were within the Sphere standards. The shared experiences from both the emergency and development sector demonstrated that multi-sector programming is essential to maximise CTC impact. Remaining key challenges are programming in insecure areas in emergencies and ensuring sustainable funding in a development context.

There are common elements of PD/Hearth and CTC programming, and field situations where they could complement each other. However PD/Hearth interventions are probably only feasible in development/stable settings. Particular challenges to integrating PD/Hearth and CTC programmes were the different types of admission criteria used and the fact that PD/Hearth is based on behavioural change, while CTC is a more treatment based approach.

A strong case for using mid upper arm circumference (MUAC) instead of weight-for height in the context of CTC programming was presented. It is simple, low cost, low tech and intuitive, needs only one person to take the measurement and does not require the volunteers to be numerate or literate. Practical experiences of using MUAC and overcoming difficulties in CTC programming were shared, and the theoretical implications of using MUAC in screening and as eligibility criteria in programming were explored. Ultimately, however, there was no consensus view as to which eligibility measure should be chosen over the other.

Recurring issues around community mobilisation were the contrasting experiences in emergency versus development settings, and challenges inherent in using volunteers, e.g. motivation, payment. Problems in community mobilisation centred, in particular, around a lack of human resources, sustainability, production and availability of RUTF, and HIV/AIDS. VALID introduced a theoretical framework on community mobilisation with rules of thumb for agencies engaging for the first time in CTC programming. Case studies from Malawi and Ethiopia focused on managing transition and integration into the MoH in a secure relief to development context, while the Sudanese case study focused on the problems of integrating CTC in a highly insecure emergency setting.

HIV/AIDS programming is a relatively new territory for CTC. Key issues were examined, informed by two case studies from Malawi. The first shared experiences of distinguishing and treating HIV affected children in a CTC programme in Blantyre

Rural District, while the second outlined the preliminary results of action research undertaken by VALID to assess the use of CTC as an entry point for the support of HIV affected individuals in Dowa District. The meeting identified some of the many research questions that remain regarding how best to link CTC and HIV/AIDS programming.

Given the expansion in CTC programming involving many agencies, ensuring quality and coordination of CTC programming is essential. A framework of up to six interlinked initiatives was proposed and discussed:

1. Commitment and collaboration by CTC practitioners to work together in order to promote and maintain good practice in CTC.
2. Production of a manual to provide operational guidance, principles and standards for programme design, implementation and monitoring.
3. Incorporation of CTC into international technical guidelines, e.g. WHO publications.
4. Capacity building – a range of training, mentoring and inter-agency support activities for headquarters (HQ) and field staff.
5. Elaboration of the principles of CTC in a Code of Good Practice.

6. Collective self-regulation – a system which recognises an agency that meets the agreed standards.

In the final session, a number of key questions for future research were posited, centred on RUTF production, the role of CTC and RUTFs in HIV, simplification of admission and discharge criteria, integrating CTC and development programming, and long-term cost effectiveness analyses.

The meeting concluded that much of the data needed for this research is already available in project reports. Lessons learnt about these topics, whether practical field experiences or formal research, need to be written-up and disseminated as widely as possible to ensure maximum impact of future CTC programming.

1 Introduction

Community Therapeutic Care (CTC), a community-based approach for managing large numbers of acutely malnourished people, is gaining attention as a viable alternative to the traditional therapeutic feeding centres (TFCs). First implemented in 2000 in Ethiopia, CTC programmes have reached their five-year mark, with efforts now focusing on integrating the approach into national protocols for treating severely malnourished people. In response to the growing numbers of agencies and Ministries of Health implementing CTC, a consortium of U.S. NGOs, the AED FANTA Project, Concern WW, SC US and VALID organised a workshop to:

- identify issues and challenges in implementation, integration and scaling up of CTC programming, and
- discuss mechanisms to ensure quality control over CTC programming.

This workshop, held at the American Red Cross' national headquarters in Washington DC, February 28 – March 2, 2005, was a follow-up to a meeting held in Dublin in October 2004¹. Participants included representatives of a broad cross-section of organisations including U.S. and European NGOs, USAID, the Ethiopian and Malawian Ministries of Health, WHO and academia, as well as the private sector. This report summarises key elements of the presentations and discussions that emerged from a series of eight sessions at the meeting.

The workshop was focused primarily on the experiences of the CTC approach to manage and treat severe acute malnutrition (SAM) in a variety of contexts. The CTC approach was considered a complement to SFPs and facility-based treatment facilities for the medical complications associated with severe wasting. The overwhelming experience with CTC of SAM to date has been in rapid onset and complex emergency settings, with experiences in development settings more recent.

To date, children aged 6 months to 5 years are the main age-group to have benefited from CTC, and the focus of the meeting was largely on experiences working with this population group. To a lesser extent the approach has been used, and is increasingly being explored, in the treatment of SAM in adults, particularly in the context of HIV/AIDS.

The meeting synthesis was prepared by the Emergency Nutrition Network (ENN), in consultation with FANTA, SC US and Concern WW. Final editorial decisions were taken by the ENN.

¹ ENN (2003). Community based approaches to managing severe malnutrition. Report on the proceedings of an interagency workshop. Available from the ENN or online at: <http://www.ennonline.net/fex/indexsup.html>

2

Overview of CTC

By Steve Collins

The views expressed in this section are those of Steve Collins and are based on his extensive experience of CTC over the past five years. As well as presenting some of the history of CTC, Steve's presentation includes new data and recent experiences to build on those presented at the Dublin meeting in 2003.

The concept of CTC evolved from the experiences of Steve Collins working in TFCs and hospitals in developing countries between 1986 and 1998. In particular, an evaluation of centre-based therapeutic feeding programmes in South Sudan in 1998 showed that this approach was not effective during large scale famines. In response to these experiences, CTC was designed using a multidisciplinary approach, based on evidence from operational research conducted by multiple agencies and academic institutions. Box 1 summarises the important early milestones for the CTC approach.

Box 1 History of CTC

- 1998** Evaluation of TFCs in South Sudan shows that centre based treatment of severe malnutrition cannot address the problem in large scale food emergencies/famines.
- 2000** First CTC programmes undertaken by VALID in partnership with Concern and Oxfam in Ethiopia.
- 2001** CTC programmes undertaken with SC UK in Darfur, Sudan.
- 2002** CTC research and development programme begins. VALID forms a partnership with Concern WW and academic institutions (including SOAS, London and Oxford Brookes University, Oxford).
- 2003** Increasing numbers of partner agencies start to implement CTC. Interagency conference on CTC in Dublin.
- 2004** More focused investigations on the feasibility of CTC programming in development contexts and for HIV patients. Interagency CTC develops in Darfur – agencies specialise in delivering different parts of the CTC package to enable better implementation.
- 2005** CTC becomes a well accepted emergency nutrition intervention. Work focuses on trying to integrate the programme into national protocols.

2.1 What is CTC?

CTC is a nutritional intervention with the capacity to address severe acute malnutrition in both emergency and development contexts. The salient features of the approach are:

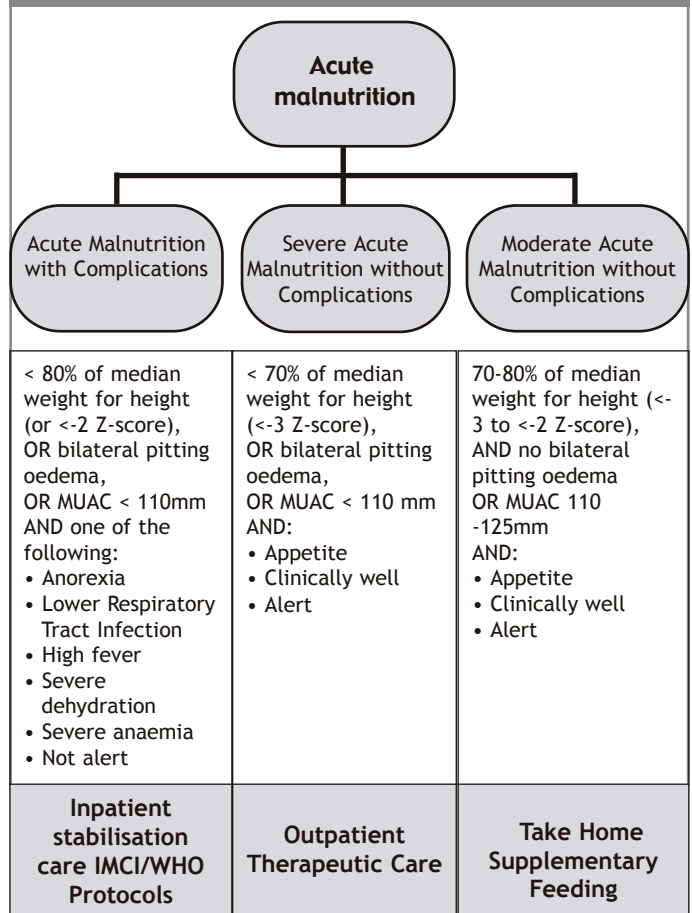
- It is adapted to the context in which it is implemented.
- It treats SAM in homes and not hospitals so the focus of assistance is villages, not centres.
- It works, wherever possible, through local people rather than imported experts.

- It considers the social, economic and cultural aspects of malnutrition, as well as the medical aspects.

Many of the characteristics of malnutrition lend itself to community, rather than centre, based treatment. For example, the heavy workload of women mitigates against prolonged absences away from the home base. Furthermore, the fact that malnutrition often reoccurs and hence households are chronically vulnerable, means that it is important to treat malnutrition at home. In addition, the risk of nosocomial infection due to immuno-suppression and reductive adaptation seen among malnourished individuals is reduced if treatment is home based.

The four basic elements of a CTC programme are (i) social mobilisation/participation, (ii) SFP (although this may depend on the context - it is always required in emergencies but may not be needed in a development context), (iii) outpatient

Figure 1 Classification of acute malnutrition for intervention



Adapted from ENN (2003). Community based approaches to managing severe malnutrition. Report on the proceedings of an interagency workshop. Note the version included here includes z scores.

therapeutic care (OTP), and (iv) stabilisation centres (SC), which provide treatment equivalent to the World Health Organisation (WHO) phase I therapeutic care.

The CTC model is based on a public health approach. This approach focuses on:

The classification of acute malnutrition employed in CTC programmes is shown in figure 1. This differs from the traditional WHO model as the treatment protocol is not the same as the standard WHO protocol for managing SAM in a centre.

2.2 Results of emergency CTC programmes

The pooled results of all patients admitted to emergency CTC programmes (SC and OTP combined) monitored by VALID is annexed in table 1a. Of note, 68% of these children were admitted directly into the OTP with no inpatient care. Figure 2 shows that when compared to results from centre-based programmes², or the Sphere standards (2004), CTC programmes are clearly effective. The only criterion by which the CTC programmes are less effective is weight gain. However, if a child is recovering in his home environment (with a lowered risk of nosocomial infection) then the rate of weight gain is less important. Relapse rates are also impressively low. After four months, Concern WW re-measured 125 children in Wollo and found that only 4% had relapsed and become severely malnourished. In Malawi, the relapse rate was estimated at 11% in the HIV negative group.

CTC programmes have also consistently obtained coverage rates between 60-70%. Good quality data on the coverage of centre-based therapeutic programmes is difficult to obtain but may range from 3% (in a rural setting in Guinea in 1996) to 39% (in an urban setting in Malawi in 2003). A study in Malawi compared the coverage of a TFC programme to the coverage of a CTC programme in two adjacent districts. The study estimated the TFC coverage at 26.3% (95% CI = 19.1%, 34.5%) and the CTC coverage at 73.9% (95% CI = 64.7%,

81.8%). In addition, because the coverage of a CTC programme is more uniform (not clustered around the centres), the service is more equitable.

2.3 Cost of emergency CTC programmes

Table 2 shows costs of different elements of a CTC programme. The OTP costs are comparable to TFC costs. One important difference between CTC and TFC based approaches is that the CTC model has almost unlimited capacity. The start-up costs are approximately the same, irrespective of beneficiary caseload at each distribution site, because there is only a need to add the costs of RUTF and medicine for the extra beneficiaries. This is not the case for TFC where additional centres may need to be built to accommodate an expanded caseload. Conversely, CTC may not be very cost effective where there is a low density of malnutrition. The figures in table 3 illustrate this point.

2.4 Future opportunities for CTC

The flowchart in figure 3 outlines the original (2000) concept for CTC. Until 2004, CTC programmes focused mainly on the top half of the flowchart. Future opportunities for the intervention could incorporate activities outlined in the bottom half of the chart.

CTC as a standard element in the primary healthcare (PHC) package

To date, the treatment of acute malnutrition has largely been inadequate in PHC systems. This is mainly because no practical or affordable treatment options have been available until now. However, CTC does provide an affordable option. In both Ethiopia (South Wollo) and Malawi, attempts are being made to incorporate CTC into PHC systems. Coverage in both of these CTC programmes, which are run through the MoH centres although supported and partially supervised by NGOs, is high

Figure 2 Outcome from CTC 2000–2003 and TFC 1992–98 compared to Sphere minimum standards

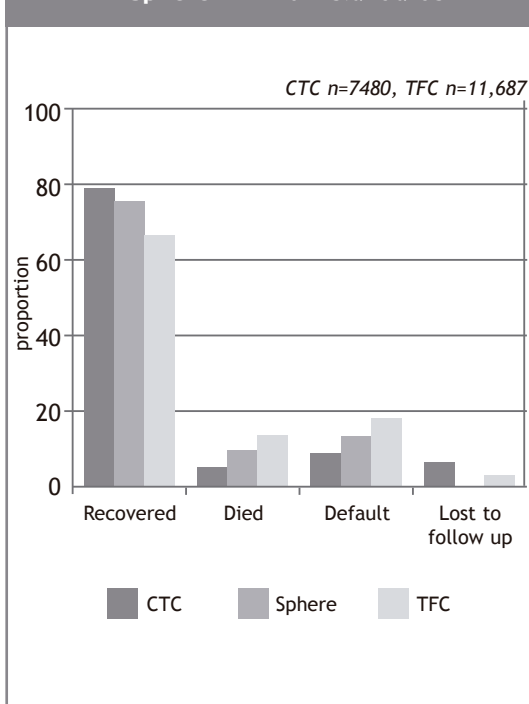


Table 2 Tentative division of costs by CTC programme elements based on data from Concern programmes³

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

Table 3 Sensitivity analysis estimating the variation for the combined SFP/OTP cost per beneficiary as beneficiary numbers change⁴

Country	Actual number of beneficiaries	+1000 beneficiaries	+2000 beneficiaries	-1000 beneficiaries	-2000 beneficiaries
S. Sudan	114 euro	87 euro	60 euro	141 euro	168 euro
Malawi	148 euro	132 euro	116 euro	164 euro	180 euro
Ethiopia	60 euro	53 euro	45 euro	67 euro	75 euro

² Data taken from Yvonne Grellety (2000). Management of severe malnutrition in Africa. PhD thesis: Aberdeen University.

³ Cauldwell, R and Hallam A (2004). The cost of selective feeding. Community based therapeutic care (CTC). ENN special supplement no. 2. Available from the ENN and online at <http://www.ennonline.net>

⁴ Ibid

– 77% in Ethiopia and 73% in Malawi. Mortality rates have remained low.

Furthermore, the treatment of SAM is an opportunity to improve the uptake of other PHC services as CTC has a very high motivational factor – mothers can observe rapid improvement in their children and develop an understanding of the treatment. Successful treatment motivates both mothers and healthcare workers. In the long term, this treatment has the potential for improving the credibility of the public health care system in general, and may encourage earlier referral and better compliance for other treatments.

In emergency conditions, the pace of most programmes, including CTC programmes, are driven by the availability of supplies, rather than demand for the programme, and is very resource intensive. In order to be effective in a development context, programmes need to be less resource intensive and more demand driven. This involves adapting programmes to the local situation, including employing local managerial staff, and community-based volunteer outreach workers, as well as local production of RUTF.

The implementing NGO needs to assume the position of facilitator at the outset (working with the MoH and communities) rather than the central implementer. This can be difficult in emergencies when there is an urgent need to start everything up very quickly. A potential solution is to focus the programme on ‘successful mothers’ who can then act as community volunteers. The NGO should also aim to support local community organisations at the outset and utilise existing MoH clinics where possible for the CTC distribution sites (see figure 4).

CTC and HIV programming

There is considerable overlap between severe acute malnutrition and HIV/AIDS, e.g. in Blantyre, Malawi an estimated 35% of children with SAM were also HIV positive. The direct association between HIV and malnutrition is shown in figure 5. CTC programmes share many essential features of home based care (HBC), which is now considered an appropriate model to care for HIV/AIDS affected people. The CTC model includes, or could be modified to include, decentralised nutrition support in homes, effective diets and protocols tailored to HIV/AIDS and, in doing so, contribute to reduced hospitalisation.

In addition, CTC could provide a legitimate, non-threatening and non-stigmatising, entry point for AIDS treatment. Programmes can be initiated to treat people with acute malnutrition and then, over time, incorporate nutritional support for chronically ill individuals without undermining informal support structures.

A further potential use for a CTC type programme is to improve adherence to anti-retroviral (ARV) treatment. It is increasingly being shown that DOTS programmes have greater compliance if patients are also provided with food. The same may well be true for ARV treatment.

RUTFs could have several important roles to play in the management of HIV/AIDS; (i) as an adjunct to ARVs, (ii) to increase adherence to ARV, (iii) to reduce the progression of HIV (there is some evidence for this from Tanzania⁵), and (iv) to decrease the transmission of the disease – as an aid to assist rapid weaning in infants.

⁵ Fawzi WW, Gernard I, Msamanga GI, Spiegelman D, Wei R, Kapiga S, Villamor E, Mwakagile D, Mugusi F, Hertzmark E, Max Essex M, and Hunter DJ(2004) Randomised Trial of Multivitamin Supplements and HIV Disease Progression and Mortality. *New England J Med* 351;1 2004.

Figure 3

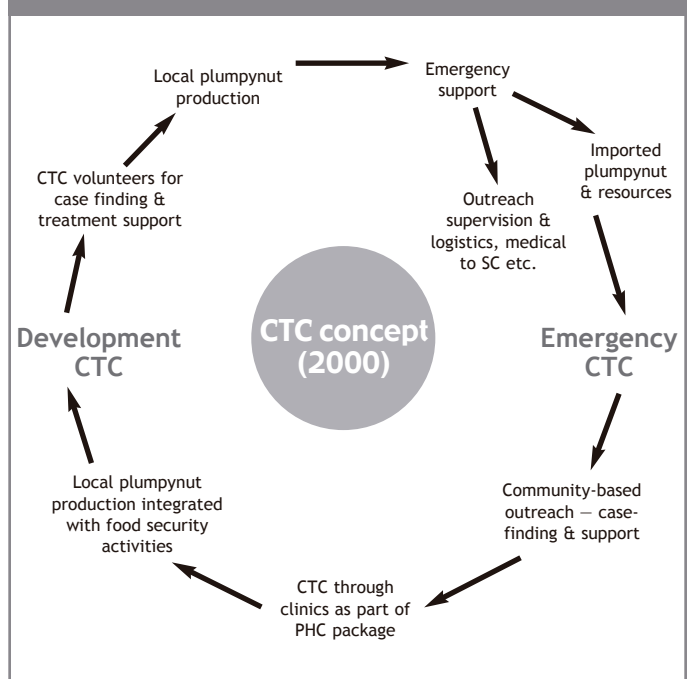
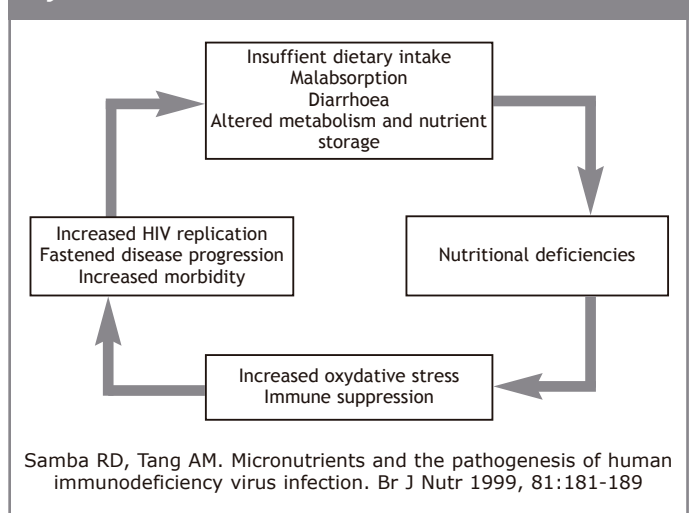


Figure 4



Figure 5



RUTFs have several characteristics which may be useful in the treatment of HIV/AIDS, namely they:

- Enable easy delivery of a precise dose of both macro and micronutrients.
- Place low demands on household labour as the product does not have to be cooked and therefore no firewood needs to be collected.
- Are easy to store.
- Vehicle for other additives that could decrease side effects of HIV/AIDS and/or drugs used for treatment (such as pro/prebiotics).

RUTFs have the potential to improve the care and support of people with AIDS. However, the potential for CTC/RUTFs to improve AIDS treatment/outcomes remains largely untested. There is a need to establish an evidence base showing the effectiveness of these ideas.

2.5 Future challenges for CTC

The use of the CTC model in development and HIV programming faces several important challenges, including:

- The cost and availability of RUTFs
- Facilitation of community level participation
- Harmonisation with Integrated Management of Childhood Illness (IMCI) and WHO guidelines
- Commitment to quality and standards central to the concept of CTC.

Cost and economics of RUTF

The capacity to make RUTF cheaply available is probably the single most important determinant of the future success of CTC

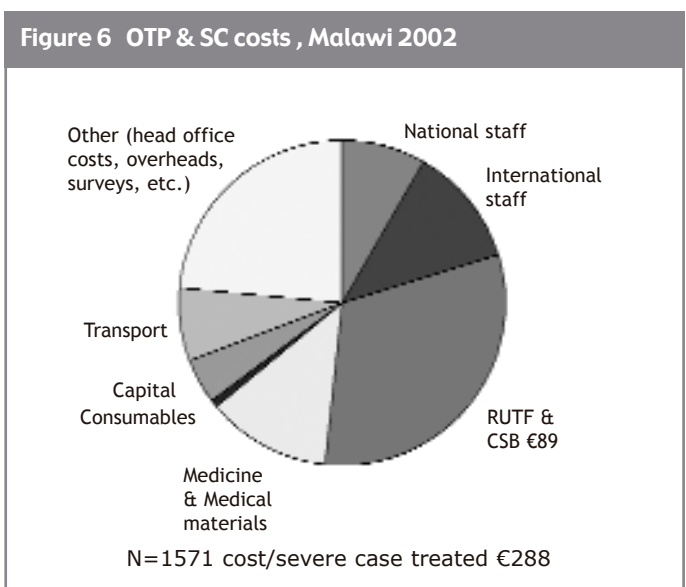


Table 4 Estimated relative costs of different types of RUTF

Type of RUTF	Cost per metric tonne (MT)	Cost per treatment (10-15 kg)
Imported Plumpy'nut (Nutraset, France)	\$3,500 + transport (often \$1,000/MT) = \$4,500	\$45-67
Locally made RUTF (using the Nutraset formula)	\$3,000 (delivered)	\$30-45
New formulation RUTF	\$2,000-2,500 (delivered)	\$20-37

in development programming. In an emergency, the purchase and transport of RUTF make up about 30% of the total cost of a CTC programme (estimated from Malawi in 2002). However, in a development setting, RUTF purchase/production may make up about 70% of costs. A breakdown of CTC programme costs are shown in figure 6, taken from the OTP and SFP programme in Malawi in 2002.

Table 4 shows an estimation of the relative costs of different types of RUTF (note that the costs will vary according to difficulties of transportation). The new formula RUTFs are cheaper because they do not use milk powders and use only locally produced crops. It is clear from these figures that every effort must be made to encourage the development, and evaluation, of new formulas made from locally grown crops. The new formulation RUTFs have several other advantages including (i) they will be available where the programme is running and (ii) they may generate revenue for people involved in their production and a small-scale demand for crops from local farmers.

Ideally, as CTC becomes a part of the PHC system, RUTFs will be accepted as part of the essential drug list. This will enable MoH staff to procure it more easily through government channels.

Improving community participation

Eventually, the community could implement several different parts of the CTC development programme, including outreach and the collection and distribution of RUTF. The MoH staff would be responsible for instituting medical protocols and finding and addressing complications or failure to thrive cases.

Harmonisation with IMCI and WHO guidelines

In order for CTC to become part of the standard PHC treatment package, there is a need for the programme's strategy to be incorporated into international and national treatment guidelines.

Quality and standards in CTC

If CTC programming is going to be rolled out, it is essential to maintain the high standards and quality of programming seen to date. VALID and a few other core agencies are beginning to develop a framework that could assist other agencies and governments to maintain the high quality of CTC programmes (see session 7).

2.6 Future research focus for CTC

Future research needs to focus on:

- New RUTF formulations
 - Clinical trials of new formulations
 - Studies of the cost effectiveness of different formulations
- Economics of RUTF
 - Social marketing
 - Decentralised quality control
 - Access to markets and raw materials
- Role of CTC and RUTFs in HIV
 - Whether RUTF can slow progression of HIV
 - As a nutraceutical adjunct to ARV therapy
- Developing simpler admission criteria and delivery procedures
 - MUAC only admission
 - CTC in-situ (communities running much of the programme)
- Long-term cost-effectiveness analyses
 - CTC integrated into PHC (calculating DALYs, QALYs, etc)
 - CTC and HBC and ARVs.

(Research needs were further elaborated in session 8 of the meeting and are summarised in section 10).

3

Session 1: Implementing CTC in different contexts

Chairs: Paul Rees-Thomas (Concern WW) and Hedwig Deconinck (SC US)

Presenters: Kate Golden (from Concern WW) talking about CTC in South Sudan; Cyprian Ouma (Tearfund) talking about South Sudan; Hassan Taifour (SC UK) talking about Darfur, North Sudan; Stanley Mwase (Concern WW) talking about Malawi; Alem Greiling (SC UK) talking about SNPPR, Ethiopia; Seifu Debeb (International Mercy Corps) talking about Ethiopia; Emily Mates (Concern WW) talking about South Wollo, Ethiopia.

Session 1 included seven presentations of CTC programmes in different contexts. The case studies presented can be divided into two categories;

- (i) CTC in a complex emergency setting and
- (ii) CTC in a development setting.

The most important characteristics of the case studies have been tabulated and included in annex 2, where table 5a relates to complex emergencies and table 6a to the development context.

3.1 Summary analysis of presentations

The outcome indicators of all the CTC programmes presented (with the exception of those from the SFP in South Sudan) were within the Sphere standards.

The main similarity between the case studies is that due to insecurity (in the complex emergency context) and the need to keep costs down (in the development context), all of the programmes required the capacity to run with limited external support. Thus all of the presentations emphasised the need to both understand and build upon existing community and health systems and structures, especially emphasising the importance of employing local staff and volunteers.

The main differences between the programmes presented were that the Sudanese programmes were less linked to the MoH than the other programmes and that they also paid their outreach workers. Imported Plumpy'nut (Nutraset) was used in all the programmes except for the Malawi/MoH programme.

In general, the case studies from complex emergency settings highlighted the importance of:

- An adequate general ration.
- Linking CTC programmes to other health programmes. If this is not possible, then it may be necessary to create a health programme.
- The difficulty in keeping staff/volunteers engaged in periods between emergencies – there is a need for continuous (donor) support.
- The water-nutrition interface problem.

The case studies from development settings highlighted the importance of:

- Starting the programme with a long-term plan for moving from emergency programming into development, in conjunction with the MoH.
- Allowing time to enhance the capacity of the MoH to implement a (new) CTC programme.
- Communities being able to see the benefits in order for a volunteer system to work.

3.2 Synthesis of discussion following presentations

Multi-sectoral programming

Successful treatment and sustained control of SAM requires a multi-sectoral approach. In some situations, where no other agency or government structure exists (e.g. Aweil West and North), it may be necessary to provide a self-contained CTC, including all elements needed for recovery. In other situations it may be possible to integrate the programme with other NGO or government programmes for certain aspects of the treatment, for example Médecins Sans Frontières (MSF) provided treatment for TB and malaria cases in Aweil South and East. However, providing an integrated programme to beneficiaries can be difficult, especially when various agencies are implementing different sectoral programmes – for example, water and sanitation activities are rarely implemented by agencies which treat SAM.

Insecurity

All feeding programmes, whether centre- or community-based, are much harder to implement in insecure areas. Transport and staffing issues become more complex and non-local staff are less likely to be able to work in insecure areas.

Funding in a development setting

CTC programmes become very expensive for NGOs to manage when the prevalence (or density) of malnutrition is low. NGOs should therefore, handover implementation to the MoH when this occurs. However, it can be difficult for resource poor governments to take over the costs of the transport and outreach workers' salaries.

4

Session 2a: Positive deviance/Hearth and CTC linkages

Session 2 dealt with issues and challenges in implementation: the relief to development continuum. The synthesis of this session is presented here in two parts, 2a and 2b.

Chairs: Kathryn Bolles (SC US) and Michelle Kouletio (Concern WW)

Speakers included: Judiann McNulty (Consultant) speaking on the basic constructs of PD/Hearth with comparison to CTC; Caroline Grobler-Tanner (FANTA consultant) speaking on illustrative examples linking PD/Hearth and CTC hearth in practice; Michelle Kouletio and Stanley Mwase (Concern WW) talking on exploring integration of CTC into PD/Hearth to address acute malnutrition in difficult development contexts.

4.1 Nutrition intervention in the development context: PD and Hearth programmes

The Positive Deviance/Hearth Model (PD/Hearth) is a community-based approach to reducing malnutrition used in non-emergency settings⁶. The programme was developed in response to the poor success rates of treatment of SAM in hospitals – recovered children often relapsed following discharge.

The PD approach recognises that some children living in poor households are not malnourished and therefore, that the positive feeding and nutrition care behaviours of the carers in these households are more successful (in terms of nutrition outcomes) than those in other poor households. The approach looks at the behaviours of these ‘positive deviant’ families and encourages other households to adopt them. PD/Hearth programmes have the following goals:

- to rehabilitate malnourished children.
- to prevent future malnutrition.
- to enable families to sustain improved nutrition status of child without external inputs.

Over the past 15 years, PD/Hearth programmes have been implemented in 40 countries in different populations including pastoralists, rural agriculturalists, urban and peri-urban settings. It is, therefore, a flexible programme, but (like all other programmes) it does not work everywhere. Communities in which PD/Hearth programmes have been implemented with success have the following characteristics; i) at least 30% of children are malnourished⁷, i.e. this level of malnutrition confers cost-effectiveness and ensures community interest, ii) local, affordable food is available most of the year (not recommended in areas of household food insecurity for more than three months in a year), iii) the houses are in close proximity to each other so that caregivers can walk to the volunteer mother’s home for Hearth sessions.

Success of PD/Hearth programmes depends on linking families with essential child health services such as immunisations, de-worming, micronutrient supplementation prior to beginning a Hearth session. Referral care for sick children further contributes to improved nutritional status of children.

PD/Hearth programmes begin with broad community mobilisation followed by a nutritional census of children and wealth ranking. Most PD/Hearth programmes limit the programme to children aged under two or three years, in order to have greatest impact on growth by reversing malnutrition and to focus on more manageable numbers of participants. Experience shows that Hearth sessions are most successful when limited to 10 caregivers, and ideally, with only six to eight. Once well-nourished children of very poor families are identified (positive deviants), good health, feeding and caring practices of PD families are identified through a Positive Deviance Inquiry (PDI). Findings are then applied to promote beneficial caring practices amongst mothers of malnourished children in Hearth sessions. Hearth sessions are held for 10 to 12 days within a two week period in the home of a PD mother or another community member’s home.

During a Hearth session, a small group of malnourished children are given an extra⁸ meal made from local foods every day. At the session, under the guidance of volunteers, caregivers practice new feeding behaviour and hygienic food preparation.

4.2 Similarities and contrasts between CTC and PD/Hearth

There are a number of similarities between CTC and PD/Hearth programmes including the fact that they allow children and their carers to sleep at home, and they both attain higher coverage and facilitate greater access. Both types of programme also need to be linked to other essential health services and require synergy with other programmes in order to improve long-term food security, prevent relapse of recuperated children, and avert the occurrence of child malnutrition in the future.

⁶ Hearth is the term used to describe a specific PD nutrition rehabilitation programme based on the PD approach, funded by USAID. For further information on the PD/Hearth Model, see CORE documents on Positive Deviance, <http://www.positivedeviance.org/> and http://www.coregroup.org/resources/pd_beyond_report.cfm

⁷ PD/Hearth uses weight-for-age (WFA) measures as they are easily understood by caregivers, relatively easy to administer, and commonly used by Ministries of Health.

⁸ Note that families are still expected to provide the children with other meals at home.

There are, however, some important differences between CTC and PD/Hearth:

- CTC has typically been used in emergency settings whereas PD/Hearth is only suitable for development contexts. PD/Hearth can only be implemented where households are close together, whereas CTC can be used in areas where the population is dispersed.
- CTC focuses on rehabilitation whereas PD/Hearth also aims to achieve sustained behaviour change. In both CTC and PD/Hearth, mothers are given individualised counselling/health education from the programme staff, while in PD/Hearth programmes carers also practice new behaviour/ modelling.
- In CTC programmes, carers feed their children RUTF in their homes, whereas carers prepare group meals from local foods in the PD/Hearth programme.
- The level of community participation is greater in PD/Hearth.

4.3 Case-studies linking PD/Hearth and CTC programming

Two case studies of programmes that explore PD/Hearth and CTC programming linkages were presented, a programme by CARE in West Timor and programmes by Concern WW in Burundi and Rwanda. A brief outline of the programmes followed by a synthesis of the ensuing discussion is provided below.

Case Study 1: West Timor

The community feeding centre (CFC) programme in West Timor had twin goals – to address acute malnutrition and to lay foundations for longer-term nutrition and health interventions. Population global acute malnutrition (using weight-for-height % of the median (WHM)) was estimated at 12% among children under-five. The programme was designed on the basis of the experience of the Hearth model in the regional context and also on the basis of the CTC model. The idea was to combine the

Hearth programme with an alternative to standard TFCs, which had been unpopular with carers and had low coverage and high costs. The structure of the programme is outlined in figure 7.

The CFC programme had several strengths including the fact that the coverage was high (>70%) as Growth Monitoring Programme (GMP) is compulsory in the area and large numbers of volunteers were able to mobilise the community. The programme was also relatively sustainable and was able to link relief to development.

Case study 2: Rwanda

Concern WW is implementing a five year child survival and health programme for a population of 161,000 in Kibilizi district. The area is relatively food secure, but has a high prevalence of orphans and child headed households, HIV, and endemic malaria. Forty-four percent of the population under two years of age have low weight-for-age (WFA) (Concern WW, Kibilizi Health Survey, January 2004). In October 2004, the nutrition programming component introduced monthly community GMP by volunteer health workers, vitamin A and iron supplementation and deworming. Moderately malnourished (using WFA) children are invited to the 12-day Hearth programme (which is followed by a 21 day follow-up programme) and severely malnourished children are referred to the clinic.

Preliminary results from performance tracking of the Hearth programme can be seen in table 7 (based on a convenience sample of 337 children, aged 6-36 months). The results show that more than 55% of Hearth participants did not gain the required weight in the first round, and a few who did gain the weight lost it during the 21 days of follow-up and had to repeat the Hearth programme. Programme staff revealed concern that the strategy is not effective enough in treating malnutrition in the Rwanda context.

Concern WW incorporated MUAC measures and information about the presence of oedema in the growth monitoring registers to better analyse the nutritional status of the children under three years of age. Analysis of these records from three GMP sites revealed that 7% of beneficiaries coming to the GMP were

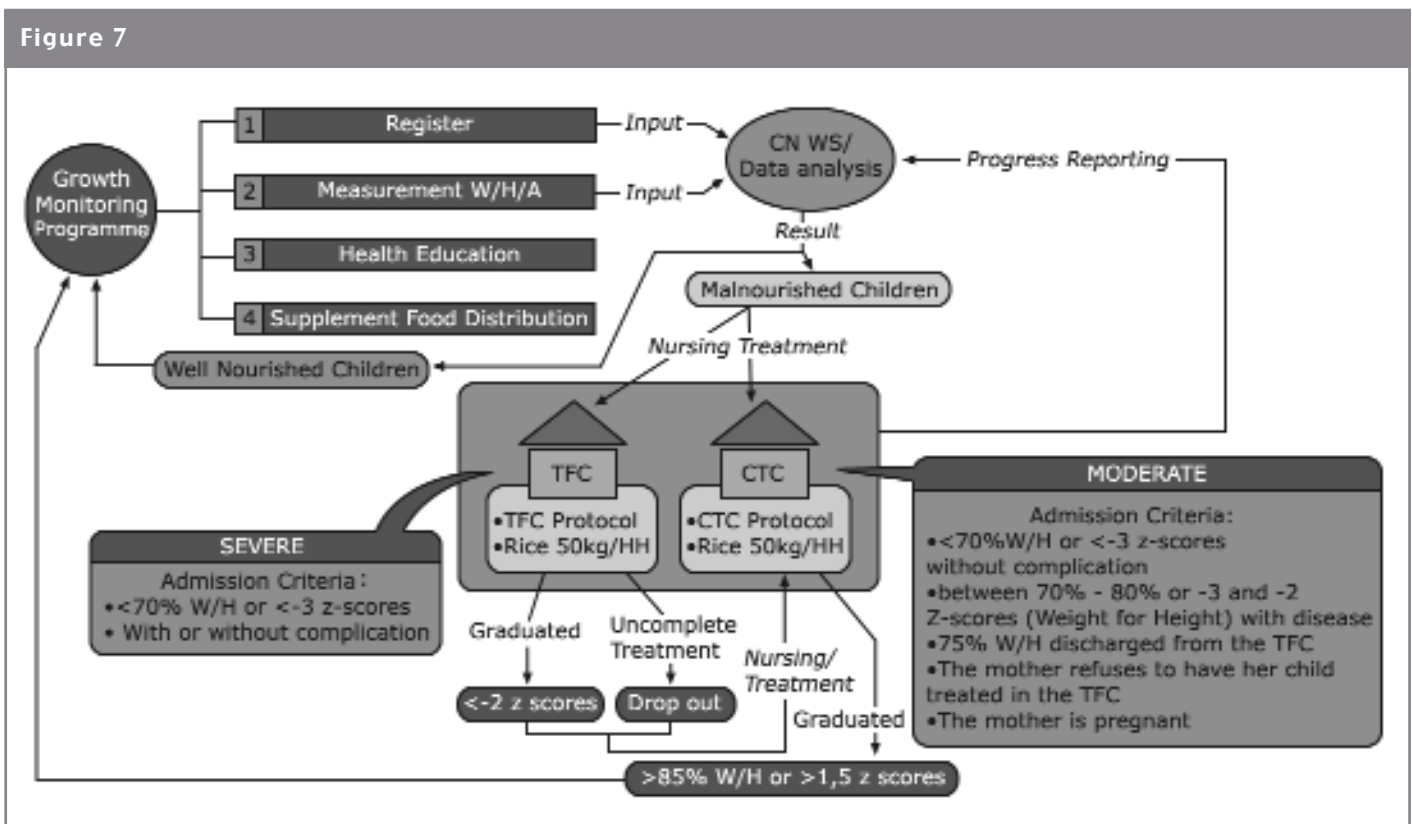
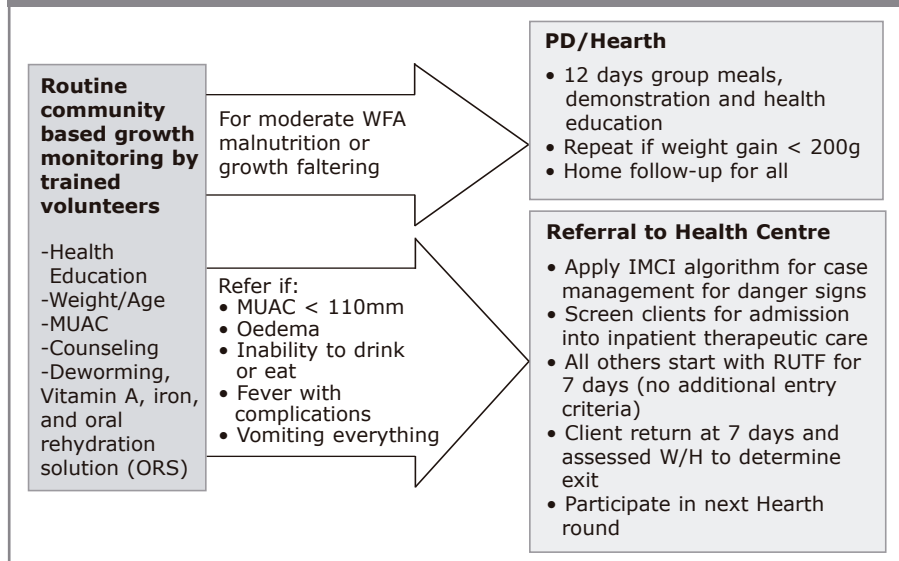


Table 7 Performance tracking of the Hearth programme in Rwanda

Monitoring variables	Number of children	Proportion (%)
Total children 6-36 months weighed (of those eligible)	168	19%
Referred for severe WFA and/or oedema (of those weighed)	13	8%
Hearth enrolment (moderate WFA or growth faltering)	48	29%
Graduation from programme		
- return to normal WFA	5	10%
- gained 200g or more	17	35%
Repeat Hearth (from starting group)	26	55%

Figure 8 Intergration concept for CTC into PD/Hearth programme with high levels of acute malnutrition



severely acutely malnourished (6% oedema and 1% MUAC<110mm⁹). While not fully representative, a rough extrapolation of these figures to the whole district would determine that there are 1,700 severely acute malnourished children in the district, which could warrant introduction of CTC along with PD/Hearth.

4.4 Issues resulting from the combined programming approaches

Admission criteria

In both West Timor and Rwanda, selection of programme admission screening criteria was difficult because of the different levels of malnutrition identified, depending on the criterion used. In West Timor, 90% of the admissions were moderately or severely malnourished by WFA criteria, but only 28% of those admitted to the TFC and one-third admitted to the CFC met standard criteria for acute malnutrition. In Rwanda, MUAC/oedema tracking is being included in the community GMP to improve individual assessment.

Given this, it may be useful to employ the following admission criteria:

- Use WFA to identify underweight children in combination with designated triggers of growth faltering. Admit these children to CFC or Hearth and monitor by weight alone. Children in CFC/Hearth receive high energy, nutrient dense local diet and/or a ready to use supplementary food.
- Use MUAC and/or oedema as indicator of acute malnutrition. Treat those identified as acutely malnourished according to CTC protocols using RUTF.

Mixing of behavioural change and treatment programmes

The programme in Rwanda highlights the conflict between treating severe acute malnutrition and efforts to promote sustainable nutrition behaviour change. Specifically, can referred mothers still benefit from demonstrations and Hearth education in PD/Hearth whilst the child is being fed RUTF? There is also a need to consider how the introduction of RUTF would influence feeding practices, e.g. would it lead to increased dependency and whether local production of RUTF is practical and feasible.

Time needed for communicating and sustaining behaviour change

CTC programme carers will usually interact with programme staff for about 10 minutes a week for assessment of anthropometric progress and distributing RUTF. In the Hearth programme, mothers/caregivers need to meet for 12 sessions of approximately 2-3 hours over a period of two-weeks. Does this mean the programmes are incompatible? Not necessarily – CTC can be used as an entry point for PD/Hearth. Further, if volunteer time is not available for intensive Hearth-type interventions, the positive deviance approach can be used on its own, e.g. in Ethiopia, positive deviant mothers are used as role models in CTC programmes. Also, in quiet periods between emergencies when the amount of OTP work is reduced, the volunteers could switch to working on PD/Hearth programmes.

Emergency contexts

To date, no programmes have yet attempted to combine the two interventions in emergency settings and it may be neither feasible nor necessary to do so. PD/Hearth Programmes to address moderate and severe malnutrition may be problematic in emergency settings since the locally available and affordable foods that are needed for a functioning PD/Hearth programme may not be accessible to many households in emergencies.

Food needed for the programmes

In a few PD/Hearth programmes, a particular PD food is found during the PDI which has a marked positive impact on nutritional status, e.g. shrimp were found in a programme in Vietnam. However, in other PD/Hearth programmes, it is more usual that the positive deviants combine different types of local foods in conjunction with positive health practices, such as breastfeeding, early recognition and treatment of child illness, sleeping under mosquito nets, etc.

Lack of standardised measurements for success of PD/Hearth programmes

It is difficult to measure the success of a PD/Hearth programme without standardised indicators. These need to be further developed.

Possible combined programme design

The Concern WW programme in Malawi has recently

⁹ Kwashiokor is prevalent in this region.

introduced PD/Hearth programming in the same area as a CTC programme. The PD/Hearth programme only admits mild/moderately malnourished children (defined by WFA). Severely malnourished children are referred to clinic or to OTP treatments. Currently, the CTC and Hearth programmes do not use the same volunteers but each are trained about the others' work. Children are not admitted to the Hearth programme if they are enrolled on the OTP programme, however their mothers are encouraged to attend to learn the practices. After the OTP programme, children can be admitted into the Hearth programme. Concern WW is beginning to learn how the two

programmes complement each other – CTC treats the acute cases and the PD/Hearth rehabilitates moderately malnourished cases while contributing towards the prevention of future malnutrition.

The West Timor and Rwanda programmes need to continue to document their experiences of combining CTC/Hearth. Analysis of programme indicators should continue in consultation with UNICEF and WFP. It would be useful to pilot the production of RUTF in both areas as well. If PD/Hearth and CTC programmes are going to be combined on a regular basis, then it will be necessary to revise the Hearth manual to include management and treatment of severe malnutrition.

5

Session 2b: Suggestions for solving indicator dilemmas

Chair: Caroline Tanner (FANTA consultant)

Presenters: Tanya Khara (from VALID) talking on MUAC vs WHM: the perspective of interface; Andre Briend (WHO) talking on whether agencies should use WFH or MUAC as admission criteria in CTC; Mark Myatt (University College, London) talking on MUAC vs WHM: screening, survival and response.

The focus of this session was on the use of MUAC in screening and admission criteria. The meeting did not explore or recommend the use of MUAC for monitoring or evaluation purposes.

5.1 The problem of referral/admission criteria

In a CTC programme, the recruitment and referral stages are managed by a large number of community volunteers. Thus, programme equipment needs to be inexpensive, while the generally low levels of literacy and numeracy requires that equipment should be relatively simple. This allows the programme to keep down training and supervision costs. Furthermore, as volunteers need to rely on local transport, equipment needs to be easy to carry.

These factors determine that MUAC is a more practical referral tool than WHM. Measurement of MUAC is simple, low cost, low tech and intuitive. In addition, it only needs one person to take the measurement and it does not require the volunteers to be numerate or literate. Community members can also easily understand the colour coding system and hence admissions/referrals are transparent.

However, for a number of reasons MUAC has generally been perceived as a poor indicator for identification of malnourished individuals; (i) MUAC and WHM cut-offs do not necessarily identify the same children as being malnourished, (ii) MUAC cut-offs generally mean that more young children are selected, and (iii) some tests have shown that MUAC measures have higher inter- and intra- variability than WHM measures under ideal conditions¹⁰.

5.2 Potential solutions

In order to overcome these problems, agencies have adopted a two-stage referral/admission system. Volunteers use an adequately sensitive MUAC to refer children to a central point where more highly trained staff then measure their weight-for-height (WFH) in order to determine whether or not the child should be admitted to the programme. This strategy has, however, been problematic as some children with a low MUAC do not have a low WHM and are therefore not admitted to the programme. One way of circumventing the 'rejection' problem is to use MUAC for both referral and admission, as Concern WW have in Wollo, Ethiopia (see box 2).

5.3 Deciding on admission criteria

The solution adopted by Concern WW in Wollo is only acceptable if MUAC is an accurate indicator for malnutrition. There are five aspects to consider in determining whether MUAC is a suitable index to use for admission to CTC programmes:

1. Compare indices to a gold standard
2. Compare prognostic value
3. Compare response to treatment of selected children
4. The risk benefit analysis of misclassifications
5. Looking for maximum performance of CTC

¹⁰ Note that although it is often reported that MUAC is not precisely measured, some papers have shown the opposite, i.e. that there are less mistakes with MUAC than with WHM. Velzeboer MI, Selwyn BJ, Sargent F 2nd, Pollitt E, Delgado H. The use of arm circumference in simplified screening for acute malnutrition by minimally trained health workers. *J Trop Pediatr.* 1983 Jun;29(3):159-66.

These aspects in conjunction with certain modelling exercises are discussed more fully in Annex 3. Key related points made in presentations were as follows;

- MUAC and WHM indicators will never select exactly the same malnourished children.
- One pivotal study¹⁰, comparing the ratio of lean mass/trunk (a gold standard) to various anthropometric indicators, challenges the assumption that WFH is a better measure of nutritional status than MUAC
- Certain studies have shown that MUAC predicts the risk of death better than WFH/WFA/height-for-age (HFA)
- Weight gain appears to be better related to WFH than MUAC on admission to feeding programmes.
- Whatever selection criteria is used, it is necessary to assess the risks and benefits associated with admission or rejection for treatment. These risks depend on the context of the treatment programme.
- In a TFC model, unnecessary admissions are more problematic because the child is at increased risk of infection and the household has to pay a heavy price in terms of social costs. However, in a CTC programme, unnecessary admissions may increase programme costs but the other problems are not relevant.
- The choice between MUAC and WHM will depend on whether agencies give greater importance to the assessment of the risk of death or to the response to treatment. Using MUAC will reduce overall mortality rates, but WHM measurements are better associated with weight gain measurements and hence response to treatment can be measured more easily.

Box 2 Using MUAC for referral and admission, Concern WW in Ethiopia

In Wollo, surveys by Concern WW revealed that of those children with a MUAC ≤ 130 mm, only 80% also had low WHM. Between February and May 2003, some 3,733 children were referred to a central point but only 1,957 were admitted (1,776 rejected referrals). These rejections impacted negatively on the programme. Carers became unwilling to come to the centre even if their children's condition had deteriorated and carers of rejected children also passed on the information to other parents. In turn, local leaders became disillusioned and unwilling to work with the programme. The prestige of the outreach volunteers/workers was also devalued, their morale affected and their output reduced. The overall impact was that programme coverage was reduced.

After focus group discussions with the community in Wollo, Concern WW started to compensate carers whose children were referred to the centre (via MUAC) but not admitted (using WHM criteria) with a bar of soap. Unfortunately, soap distributions created additional problems including the expense when many children are rejected (more than 700 children/month in Wollo), and it created a disparity between self-referrals and outreach referrals – children who were referred were given soap but those who were self-referred received nothing.

To overcome the issue of rejection, Concern WW are now using MUAC for both referral and admission in Wollo. The programme has 2,700 community volunteers supported by 20 outreach workers. Volunteers are required to refer children from their locality if they have a MUAC < 110 mm. These children are then all admitted to the CTC programme. The programme, after a small amount of re-training and some teething problems, is now running very smoothly with few errors recorded amongst volunteers' measurements. Coverage remained high at 77% in January 2005.

5.4 Implications of using MUAC as admission criterion

Impact on programme size

The use of MUAC as an admission criterion will result in a larger programme. This is demonstrated in a simulation exercise included in figure 9a (Annex 3). If agencies use MUAC alone as the admission criteria, the programmes will be roughly twice the size than if traditional WHM criteria are used. This has clear cost implications but will also mean that a higher coverage is obtained. As CTC programmes have high fixed costs but a great capacity to expand, an increase in beneficiary numbers would not be as expensive as for the centre-based approach.

Discharge criteria for low MUAC but high WHM patients

Typically, therapeutic feeding programmes discharge patients on WHM measures. If agencies move to admissions on MUAC, they will admit on MUAC and discharge on WHM. However, some low MUAC children will arrive at the programme above the WHM discharge criteria. A fuller discussion on implications for discharge is contained in Annex 4.

Survey analysis

If MUAC is adopted as the programme admission criteria, there would be a need to collect MUAC and report the prevalence of malnutrition by MUAC and oedema in anthropometric needs assessment surveys.

5.5 Discussion on issues related to MUAC presentations

Use of MUAC in children < 75 cm

Historically, MUAC measurements have only been considered useful in children whose height is more than 75cm (or aged ≥ 12 months) because the MUAC was used as a substitute for WHM measures. However, data from Wollo shows that if agencies exclude children measuring 65-75 cm, then they will die. Use of MUAC with infants less than 65cm long is more complicated. Infants under 6 months old should be exclusively breastfed and most of the infants under 65cm will be less than 6 months old. However, there will be some stunted infants over 6 months old who are less than 65cm. Agency staff may need to ask mothers how old their children are before measuring the MUAC in this height group, although it is possible that the mothers will exaggerate ages in order to get their children into the programme.

MUAC errors

Usually MUAC errors are caused by the measurer pulling the tape too tightly around the arm. This will make the cut-off more sensitive. The development of a new MUAC tape with an elastic band to standardise the pulling should be evaluated.

Costs of programmes if MUAC is employed

In emergencies, more funds are available so that larger programme sizes as a result of employing MUAC as the main admission criteria may not be problematic. However, these programmes may become very expensive for the MoH to take over following emergencies.

¹¹ Brambilla et al. Lean mass of children in various nutritional states. Comparison between dual-energy X-ray absorptiometry and anthropometry. Ann N Y Acad Sci. 2000 May;904:433-6.

6

Session 3: Issues and challenges in implementation: local capacity and community mobilisation

Chairs: Valerie Gatchell (Concern WW) and Karin Lapping (SC US)

Speakers: Saul Guerrero (VALID) talking on the overview of community mobilisation: theory, practice and lessons learned; Kate Golden (Concern WW) talking on issues and challenges in community mobilisation: Concern WW's experience in South Sudan and Ethiopia; Anne Walsh (VALID) talking on issues and challenges with volunteers.

This session provided an overview of the experience of community mobilisation in CTC programmes to date. A theoretical framework developed by VALID to undertake community mobilisation in CTC was presented. Case studies from Ethiopia and Sudan were discussed.

6.1 Community mobilisation in CTC programming

One of the fundamental principles of CTC is continued engagement with the community. Within the CTC methodology, these community activities have all been classified under the broad heading of community mobilisation.

Community mobilisation in CTC programmes has several aims including gathering information so that programmes can be context-specific; increasing programme coverage through strengthening case-finding, referral, follow-up and monitoring activities; and empowering the community to increase participation and programme ownership.

To achieve these aims, the CTC approach to community mobilisation has included three basic principles; (i) dialogue with different segments of the community to develop more context-specific CTC programmes, (ii) understanding the main socio-cultural characteristics of the beneficiary communities, and (iii) participation of the community in the processes of programme design, implementation and long-term integration/handing-over.

In order to identify features that may directly or indirectly affect the planning and implementation of CTC programmes, four general categories of information about the community have been found to be particular relevant. These are

- Key community figures
- Community organisations and groups
- Formal and informal channels of communication
- The population's health attitudes and health seeking behaviour.

This information is useful for different aspects of programming. For example, knowing who are the key community figures, and what community organisations and groups exist will help an agency to develop a programme sensitisation plan. Motivated individuals could be used to

facilitate active case finding. Understanding what the population thinks about health will enable better health education programming and more culturally appropriate sensitisation messages. The flow chart in figure 10 outlines how some of this information can be used in community mobilisation.

6.2 Case studies from Ethiopia and Sudan

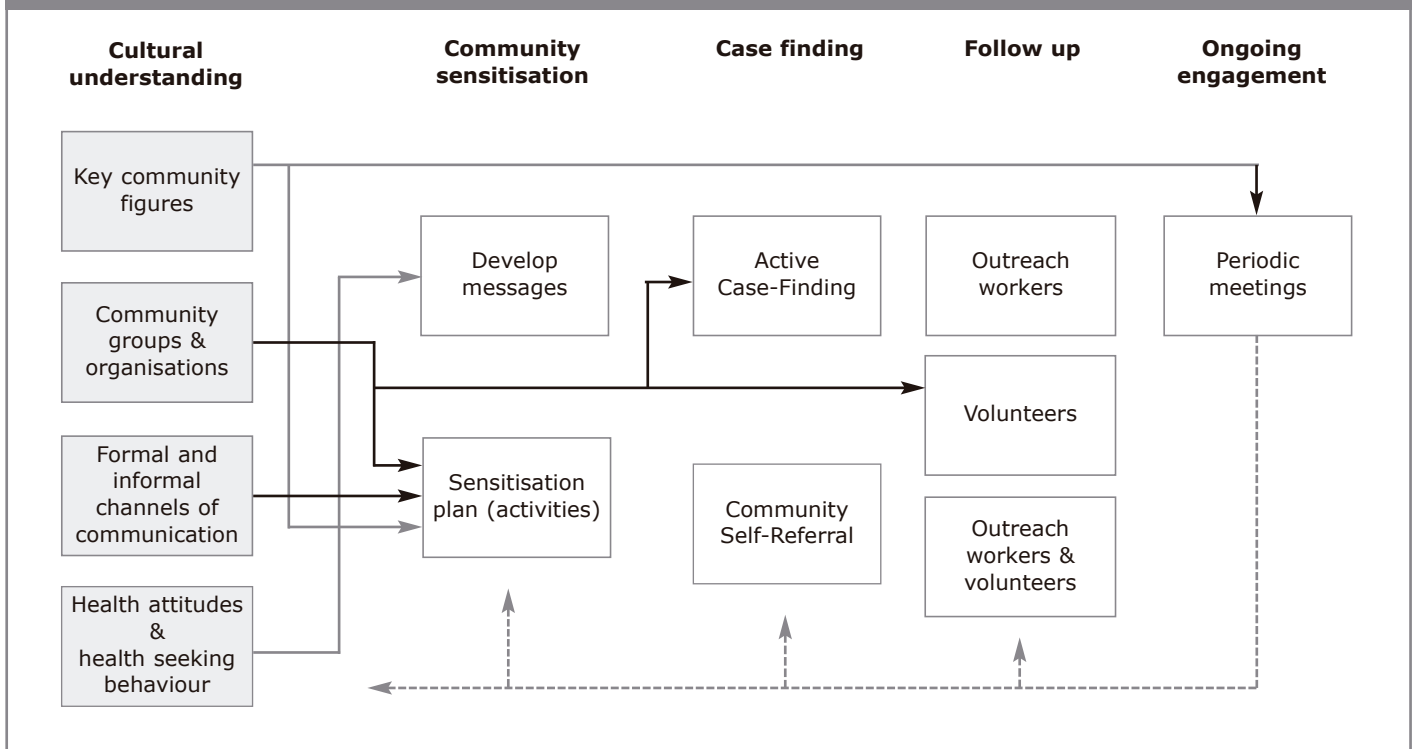
In the Concern WW Wollo programme, 2,700 volunteers have been successfully passing on health education and making MUAC-based referrals of SAM children to the CTC programme for the past 12 months. Coverage of the programme remains above 70%. The success of this scheme is attributable to a variety of factors including the democratic selection process of the volunteers and a commitment to quarterly training for them. In addition, there is a general ethos of self-reliance in Ethiopia, there has been no recent conflict, and the population has basic confidence in the government health structure. Women also have reasonable household decision-making power in Wollo, which has contributed to the successful implementation of community activities and programme uptake.

The Concern WW CTC programme in South Sudan differs from the Wollo programme in many aspects. Although the coverage of the Concern WW CTC programme in South Sudan is also above 70%, there have been problems in ensuring full community participation in the project. This is partially attributable to the long-term food insecurity and general insecurity in the area - this has created a situation where the population is used to and dependent on World Food Programme (WFP) general ration 'drops' but not on development programming. In terms of volunteers, the marginalised status of women and their very low literacy levels have made it difficult to recruit and develop competent women volunteers.

Based on experience with several CTC programmes conducted by a variety of NGOs, VALID has developed numerous tips to ensure successful community mobilisation in a CTC programme. These include;

- Engage with the beneficiary community early on.
- Regularly monitor and adapt the programme after

Figure 9 Stages of Community Mobilisation



discussions with beneficiaries and other population members.

- Allow appropriate allocation of resources for community mobilisation. It is useful to have a staff member specifically responsible for community mobilisation in the field.
- To successfully work with volunteers, consider the following issues; motivation, incentives, expectations, clarity of message, method and transparency of recruitment process.

6.3 Discussion following the presentations

Lessons learnt from development work

There is a large literature on community mobilisation, particularly with regard to working with volunteers, from development programmes which should be drawn on by agencies who undertake CTC.

Anthropometric targeting

Is anthropometric targeting an inherently 'anti-community' approach because only malnourished (as opposed to sick) children are admitted? Agencies encourage carers to bring their children to the programme but frequently turn sick ones away. This may discourage people from accessing PHC services more generally.

Sharing resources

In cultures where people are used to community-wide sharing (such as communities living in South Sudan), it may be difficult to accept the CTC programme approach that focuses resources on a few individual children.

Community mobilisation in emergency vs development settings

In a development setting, it is probable that an agency would already have a significant understanding of the cultural setting.

Motivation of volunteers

Much of volunteers' motivation comes from good quality supervision and feedback. NGOs may be able to provide this in the emergency phase, but it might be harder for the MoH to take on this role when the emergency is over. One way to overcome these problems is to make sure that local structures (e.g. political leaders, women's groups, etc) are involved in the supervision aspect of the programmes from the outset.

Payment of volunteers

The payment of volunteers, even in a development situation, should not always be seen as a 'bad thing'. Where people cannot meet their basic needs, they should be paid. Payments can be a useful way to infuse cash into the beneficiary population's economy. The Office of US Foreign Disaster Assistance (OFDA) considers the issue of incentives on a case-by-case basis.

Training materials for community mobilisation

Ideally, an anthropologist or social scientist would work with every CTC programme, at least during the set-up phase, to facilitate good quality community mobilisation. In reality, many agencies are unlikely to be able to afford this or be able to find an appropriate person for the role. It would be useful to develop a manual/guide to assist staff in the data collection and analysis techniques required.

Using volunteers from other development programmes

In order to improve the interface between different development programmes, it would be helpful to employ the same volunteers from different projects or to make sure that the volunteers working on different projects in the same area are at least informed about their counterparts' activities.

7

Session 4: Issues and challenges in transition, integration and scaling up

Chairs: Kate Sadler (Valid) and Paul Rees Thomas (Concern WW)

Speakers: Theresa Banda (MoH in Malawi), Hassan Taifour (SC UK) and Dr. Efrem (Co-ordinator of EPI IMCI, Ministry of Health Southern Nations, Nationalities and Peoples Region (SNNPR), Ethiopia) talking on integrating CTC into the national health system in Malawi, Sudan and Ethiopia respectively.

Three case studies examined the various challenges faced in transition, integration and scaling up of CTC programmes. The case studies from Malawi and Ethiopia focused on managing transition and integration into the MoH in a secure relief to development context. The Sudanese case study focused on the problems of integrating CTC into the MoH in a highly insecure emergency setting. A synthesis of the common problems and potential solutions suggested by the presenters, together with the discussion following the presentations, is given below.

Human resources

Staffing shortages in the MoH was a problem common to all three case studies. Vacancies exist at all levels of the MoH – federal, district, etc. Health centres are particularly short staffed. This means that there is a lack of trained personnel to supervise volunteers. In addition, because CTC is a new intervention, there is a need to train existing MoH staff on its implementation. Potential solutions include (i) creating a new cadre of MoH staff, (ii) appropriate remuneration of MoH staff to prevent them leaving the system, and (iii) developing a comprehensive training package on the treatment of SAM (including WHO treatment protocols, in the event that only F100/F75 is available).

In Ethiopia, government staff are frequently called for re-training. In-service training is expensive, therefore it would be useful to integrate the CTC training into the standard pre-service training package. In Malawi, most of the training is currently focused on the Health Surveillance Assistants (HSA's). Eventually, the Government aims to have one HSA worker: 1,000 people. The MoH would also like to reinstate the home-craft worker (renamed as a community nutrition worker) to assist with the CTC programming.

Sustainability

All case studies demonstrated the importance of planning a CTC programme with the MoH from the very start of the programme, to increase the likelihood of sustainability. Agencies also need to be prepared for a relatively slow handover to the MoH, understanding that integration is a process. Not all activities can be handed over to the MoH immediately and the number of NGO staff should only be reduced slowly. In Dowa, the MoH is responsible for the supervision and monitoring of the volunteers but Concern is still responsible for RUTF procurement. In Wollo, Concern

WW continues to support the MoH in some of the programmes activities.

Production and availability of RUTF

If CTC is to be integrated into the MoH system, then a safe, reliable local production source of RUTF is required, as imported RUTF is often too expensive for governments to purchase for long-term programmes. In Malawi, the scaling-up of CTC programmes across the country was considerably slowed down when local RUTF production systems failed.

Logistics

The logistics of CTC programmes are difficult for the MoH to deliver – particularly the distribution and management of RUTFs. If RUTFs could be placed on the government's essential drug list, then the product could be delivered as part of the normal package of drugs. This would ease management of logistics. (In Malawi, Concern WW continues to transport the RUTF for the MoH). However, the likelihood that the WHO will classify RUTF as a drug is remote. In Malawi there needs to be good quality evidence of the effectiveness of RUTFs in treating SAM in different parts of the country before RUTFs can be placed on the essential drug list. However, it has been difficult for the government to raise funds for the operational research needed to test this.

Impact of HIV/AIDs

HIV/AIDs has not only caused attrition of MoH staff but has also meant that more adults are looking after their sick relatives and hence unable to volunteer for community activities. HIV/AIDs will also probably increase the number of SAM cases in the community. The current interest (from both donors and governments) in seeking solutions to the HIV/AIDs pandemic could be viewed as an opportunity to embed the treatment of SAM into the PHC system.

MoH facilities

In both Darfur and Ethiopia, health facilities, through which most CTC services are provided, are in poor condition and may be very scattered. There is often a need to upgrade the basic health facilities.

Lack of CTC guidelines and training materials for non-emergency situations

Guidelines for implementing CTC in non-emergency situations would be very beneficial to governments (see section below on IMCI).

Multi-sectoral programming

Multi-sectoral programming is needed to prevent SAM from developing or reoccurring. This can be challenging. It has worked quite well in Malawi where the programme is a component of the safety nets programme and a targeted input nutrition programme (TINP), managed by the Ministry of Agriculture (MoA). The MoA members of the TINP also ensure that targeting includes the families of malnourished children. The district health officer is also a member of the targeting group.

Community ownership of programme

In emergency CTC programming, there may be less community ownership of the programme because of the need for external support. In development programming, it is essential that the community owns the programme. In Malawi there has been some success through the formation of health committees, whose main purpose is to maximise community mobilisation and participation in health programmes. It is hoped that the committees inform the population when drugs arrive and present results of the programme to the population, therefore encouraging people to support it. In addition, they can arrange for visits from one community to another to improve capacity of staff. Where the committees are active, there has been less misallocation of supplies.

Insecurity

All of the problems described above become more pronounced in insecure areas. Logistics become much more difficult and MoH facilities usually become more run down – or may even be appropriated by soldiers, etc. Issues of staffing can become even more problematic. In Darfur, for example, where ethnic or clan differences were related to insecurity, staff could only work in their own locality.

Technical challenges in linking CTC to existing protocols: IMCI, WHO and national protocols.

Currently, the IMCI is the WHO's main strategy to improve child health and reduce child mortality at the PHC level. IMCI is an integrated approach to child health that focuses on the well-being of the whole child. The strategy includes both preventive and curative elements that are implemented by families and communities as well as by health facilities.

IMCI has three main components; (i) improving case management skills of health-care staff, (ii) improving overall health systems, and (iii) improving family and community health practices. The primary emphasis of IMCI to date has been on improving case skills management of health workers in outpatient clinics.

A recent review of the effectiveness of IMCI in five countries found that the impact of the strategy has been relatively low. The only significant decrease in mortality was found in Tanzania¹². The authors of the review recommended that impact could be improved if the programme was expanded to the community level and the strategy was tailored to specific localities better.

The IMCI background documents do not recognise SAM as an important cause of death but do note that moderate malnutrition is a contributing factor to 54% of deaths. No mention is made of the number of deaths from SAM. The manual states that moderate malnutrition should be treated by giving dietary advice. It also states that cases of SAM should be referred to a facility that can cope with it and that diagnosis

of SAM should be made either by visually observing acute wasting or finding oedema. Anthropometric methods to assess nutritional status are not described.

There is a need to update the WHO manual on treatment for SAM (1999¹³). This manual (and future revised versions) can be used for treatment of referred cases in stabilisation centres. There is also a need to develop guidelines for the community-based treatment of SAM. WHO guidelines on treatment of SAM in the community are important because they reach a far broader audience (governments, including ministries, and agencies concerned with health) The WHO 'stamp' is particularly important for development programmes. Once the guidelines are available, they could be integrated into the next version of the IMCI teaching module.

¹² Schellenberg A, Adam T, Mshinda H, Masanja H, Kabadi G, Mukasa O, John T, Charles S, Nathan R, Wilczynska K, Mgalula L, Mbuya C, Mswia R, Manzi F, de Savigny D, Schellenberg D, Victora C. Effectiveness and cost of facility-based Integrated Management of Childhood Illness (IMCI) in Tanzania. *Lancet* 2004; 364:1583-94. <http://www.who.int/imci-mce/findings.htm>

¹³ Management of severe malnutrition: a manual for physicians and other senior health workers. Geneva, World Health Organisation, 1999. Available online at http://www.who.int/nut/documents/manage_severe_malnutrition_eng.pdf

8

Session 5: Issues and challenges in replication and scaling up RUTFs

Chair: Andre Briend (WHO)

Speakers: Steve Collins (VALID) presenting an overview of the issues; Mary Manary (Washington University, St. Louis and College of Medicine, University of Malawi) on experiences with small and medium scale production of RUTF in Malawi. Panel discussion by Judy Canahuati (USAID/Food for Peace), Bruce Cogill (FANTA), Theresa Banda (MoH Malawi), Isabel Sauget (Nutraset)

8.1 Relationship between RUTF and CTC

CTC and RUTFs have a symbiotic relationship – RUTF facilitates CTC and CTC provides markets for RUTF. The cost and accessibility of RUTF is a central determinant for the successful rolling out of CTC programmes in development settings. In Malawi, in 2002, total costs of the SFP/OTP programme were 288 euro/child treated¹⁴. The RUTF and Corn Soy Blend (CSB) cost 89 euro/child. This is too high for a development programme funded by a resource-poor government.

Table 9 shows the different stages of RUTF production as CTC evolve from an emergency to a development programme. (Note that the numbers given to the stages in the table are to assist the explanation in the text below and do not denote any formal delineation of programme types).

During the initial emergency, when CTC is usually implemented by an international NGO, it is likely that there will be a need to import RUTF (e.g. Plumpy'nut (stage 1)). At this stage of a programme, the most important elements of implementation are timeliness and quality – price is a secondary consideration. If the emergency programme is extended, then RUTFs can be produced at a centralised location in the country where the programme is being implemented. It is probable that the RUTF would be made up from the same recipe as the Plumpy'nut (stage 2). During the transition phase when CTC is implemented through local structures, it may be possible to produce the RUTF (still using the original recipe) at a district level (stage 3).

Table 9 Stages of RUTF production as emergency evolves into development

Stage	CTC programme	RUTF production
1	Emergency CTC	Plumpy'nut (Nutraset)
2	Extended emergency CTC	Centralised national-level production with original recipe
3	Transition CTC	District level production with original recipe
4	CTC fully integrated into the PHC	Alternative formulations and integration into agricultural programmes
5	CTC integrated into the local economy	Viable small production businesses

Once the programme becomes fully integrated into the local PHC and home based treatment of SAM becomes a standard element of the PHC package, then it becomes desirable to start to produce alternative formulations of the product based on locally available ingredients (stage 4). This is largely because the costs of the RUTF are an important determinant of CTC programmes' viability at this stage. Farmers living in the programme area would be encouraged to grow crops suitable for RUTF production. This could lead to a quasi-sustainable programme. Clearly, there would be a need for agricultural extension to promote good quality ingredients. Eventually (stage 5), CTC could be fully integrated into the local economy because RUTF production is part of the community's economic activities.

8.2 Experience of local RUTF production to date

Most of the experience in RUTF production for CTC programmes comes from Malawi. RUTF has been produced both at the national level and the district level in Malawi (stages 2 and 3). No programmes have reached stages 4 or 5 yet. Table 10 summarises experiences of RUTF production to date in Malawi.

A trial to compare the effectiveness of the RUTF produced in Queen Elizabeth Hospital to Nutraset's Plumpy'nut was conducted in 2002¹⁵. The results showed that the two products were comparable in terms of the proportion of children reaching their target weights. Although there are overwhelming reasons why it is important to produce RUTFs locally, and evidence that the production can be started relatively easily, the programmes do face challenges. Several important lessons to learn from the experience to date include:

- Quality control of the product remains a difficult issue, even after the initial start-up phase. Concern continues to support the Nambuna production unit in getting the RUTF

¹⁵ Home based Treatment of Malnourished Malawian Children with Locally Produced or Imported Ready-to-Use Food. Sandige, Heidi, Ndekha, MacDonald J, Briend, André, Ashorn, Per, Manary, Mark J. Journal of Pediatric Gastroenterology and Nutrition: Volume 39(2) August 2004 pp 141-146

¹⁴ Caldwell, R and Hallam, A (2004). The cost of selective feeding. Community-based therapeutic care ENN special supplement no. 2. Note: this data is based on Concern's programme in Malawi.

Table 10 Experiences of RUTF production to date in Malawi

	Tambala (2002–2003)	Queen Elizabeth Hospital (2002–2003)	Tambala (now replaced by Project Peanut Butter – a Nutriset franchise)	Nambuma (2002–now)
Scale of production	Medium scale – 500kg/day	Small scale – 150kg/day	Relatively large scale – 800kg/day	Small scale – 110kg/day
Programme use	<ul style="list-style-type: none"> Concern WW CTC programmes Production supported by VALID 	<ul style="list-style-type: none"> CTC programme in Blantyre rural District 	<ul style="list-style-type: none"> CTC programme in Blantyre rural District Other NGO programmes 	<ul style="list-style-type: none"> Concern WW CTC programmes in 2 districts. Production supported by VALID
Ingredients	<ul style="list-style-type: none"> Milk powder Oil Peanut butter Sugar CMV therapeutic 	Procured in a ready-to-mix form: <ul style="list-style-type: none"> 30% full cream milk¹⁶ powder 28% icing sugar 25% salt-free peanut paste 15% cottonseed oil 2% CMV therapeutic 	<ul style="list-style-type: none"> Peanut butter Sugar Mil powder Oil CMV therapeutic 	<ul style="list-style-type: none"> n/avail
Equipment	<ul style="list-style-type: none"> Multiple bakery mixers 	<ul style="list-style-type: none"> Bakery size mixer Weighing equipment Electricity 	<ul style="list-style-type: none"> Industrial size peanut butter making machinery Volumetric containers 	<ul style="list-style-type: none"> Bakery size mixer Weighing equipment Oil for generator
Packaging	<ul style="list-style-type: none"> Plastic bottles 	<ul style="list-style-type: none"> Wide mouth, screw top plastic bottles Filled by spoon Recycled 	<ul style="list-style-type: none"> Wide mouth, screw top plastic bottles Filled by an air compressor driven filling device to avoid entrapping air Labelled with production date and batch number 	<ul style="list-style-type: none"> Plastic 260g pots Filled by spoon
Quality control	<ul style="list-style-type: none"> Production manual prepared Training of workers Bottles periodically tested for nutrient composition by a food lab Tested for aflatoxins by national testing service in Malawi 	<ul style="list-style-type: none"> Bottles periodically tested for nutrient composition by a food lab Tested for aflatoxins by national testing service in Malawi Room surrounded by mesh cages to keep out rats 	<ul style="list-style-type: none"> Machines, equipment and process have been validated by Nutriset Head of local production trained by Nutriset Analysis of raw materials and finished products for each batch Local factory audited by the Malawi Bureau of Standards 	<ul style="list-style-type: none"> Bottles periodically tested for nutrient composition by a food lab Tested for aflatoxins by national testing service in Malawi

tested. Routine analysis did pick up an increase in aflatoxins in the RUTF produced by the Tambala production unit on one occasion.

- Procurement and movement of ingredients can also be difficult. Again, Concern WW provides support to the Nambuna unit. As the scale of production increases, the sources of the ingredients are likely to be more varied and extra attention to their quality needs to be given.
- Business support may be needed.

8.3 Development of alternative formulations of RUTF

The food square concept (see figure 10) is being used to develop alternative formulations of RUTFs at Oxford Brookes University, Oxford, UK. The goal is to produce RUTFs without using peanuts and milk powder but with other ingredients which are locally available in CTC programme areas. Over 15 trial formulations have been developed, including formulations based on brown chick peas and wheat, lentils and barley, split peas and wheat, and soybean and maize. During production, all the cereals and legumes are roasted and an appropriate amount of sugar, oil and vitamins and minerals are added to the mixture.

The samples were all tested for protein digestibility-corrected amino acid scores (a test assessing protein quality and quantity), gross composition (energy density and micronutrient content), low water activity, shelf-life, texture and taste and compared to the original plumpy'nut formula. Three of the new recipes are comparable to Plumpy'nut on the basis of all these tests.

Alternative formulations of RUTF products are desirable because they should cost less to purchase and there is an opportunity to integrate production with local agriculture. Producing the new formulations has also provided an

Figure 10

A The staple cereal (tubers and roots)	B Protein source Includes all legumes and any animal source
C Vitamins and mineral mixture	D Energy source Fats, oils, sugars

opportunity for RUTF recipes to be adapted for use in HIV/AIDs programming. The nutrients can be tailored to support the requirements of people living with HIV/AIDs (PLWHAs). Pre and probiotics can easily and safely be added to the product in order to reduce infection in immunocompromised individuals and promote growth. There is evidence to suggest that these products reduce diarrhoea severity in immunocompromised individuals by up to 50% in patients who have undergone a liver transplant¹⁷.

8.4 Future plans for local RUTF production

Concern WW plans to start up agriculture extension programmes, integrated with the ongoing CTC programme in Nambuma. By introducing a new formulation RUTF (made up from maize, sesame and chickpeas), the extension programme will support farmers to introduce sesame and chickpeas and help them with proper processing and storing methods. After

¹⁷ Rayes N, Seehofer D, Theruvath T. et al. (in press) Combined perioperative enteral supply of bioactive pre- and probiotics abolishes postoperative bacterial infections in human liver transplantation - a randomised, double blind clinical trial.

the new products have been tested (this is ongoing), farmers will be assisted by Valid Nutrition (a new not-for-profit company) to market their products to the Nambuna mission RUTF production unit.

There are also plans to provide business support for local institutions that choose to produce RUTFs. This support will include establishing quality control verification systems, development of a quality brand name and market development. Producers could be helped to access wider markets opportunities. For example, they could be introduced to agencies which use RUTFs for HIV/AIDS programmes and programmes to treat SAM in other areas of the country. Market research will determine whether or not RUTFs could be used by hospitals as standard rations and for other uses (e.g. as a nutrient dense food for complementary feeding¹⁸).

Local production of RUTFs poses some risks to CTC programming. The most important of these is that if the products are of poor quality or made from an inappropriate formula. Quality control mechanisms must therefore be stringent. Encouraging farmers to produce RUTFs also carries risks - inappropriate donations of the imported product could undermine the economic viability of local RUTF producers.

Local production of RUTF is still in its infancy. There is a need for more research assessing the effectiveness of different formulations, the cost/benefits of production at village level and market demand for the products outside of the treatment for SAM.

8.5 Panel discussion on RUTFs

Procedure to test effectiveness of new RUTFs

VALID will pilot a number of new RUTFs at Queen Elizabeth Hospital in Blantyre. The cell trial expects equivalence in mortality, but an improved weight gain of patients with SAM. The patients will be treated with either Plumpy'nut, or a new formula RUTF (made from chickpea, sesame and maize), or Plumpy'nut enhanced by pre- and probiotic products, or the new formula RUTF enhanced by the pre- and probiotic products. The different formulas will be randomly allocated to SAM children as they enter the programme, although the trial will not be 'blind' because the formulas look and taste slightly different.

Micronutrient content of the new RUTFs

Zinc is poorly absorbed if mixed with foods with high phytate content such as maize, peas, peanuts and sesame. As malnourished children require zinc, it is important to make sure that the molar ratio between phytate: zinc in the RUTF is at a minimum, ideally less than 5 as in the original recipe. This can be achieved by increasing the zinc content of the micronutrient mix of the RUTF. Although phytate contains phosphorous, most of it is not bioavailable. Severely malnourished children are phosphorous deficient and if the diet does not contain enough absorbable phosphorus, this may result in a higher mortality. However, it should be possible to add phosphorus to the fortification formula to solve this problem.

These concerns should be carefully evaluated during the formulation of any new RUTFs. The Malawian government, which supports local production, will not accept the use of any new RUTFs in CTC programming until good quality research showing their safety and effectiveness has been undertaken. The MoH currently requires agencies bringing in new RUTF products to produce evidence of trials of effectiveness of the product.

Why we need new formulations of RUTF

Peanuts are not available in all countries (e.g. Ethiopia) and in some countries they are only produced in a few districts (e.g. Malawi), thus alternative formulations are needed. RUTFs are currently being given to HIV patients in Malawi. Clearly, any formula which can improve outcomes for HIV/AIDS affected populations could potentially have a very big market.

Local production of RUTFs

Currently, all agencies implementing CTC programmes source either Plumpy'nut, CMV therapeutic for small productions, or a special premix for franchised production¹⁹ from Nutriset. Participants expressed concern that this gives a monopoly on RUTF production to Nutriset, which will lead to higher costs for the programmes. (Note that the special premix costs about 1/15 of the total costs of making the original formula RUTF, i.e. formulas made with milk powder).

The Nutriset representative at the meeting explained that there are three ways in which agencies can obtain RUTFs suitable for CTC programming:

- Agencies can buy Plumpy'nut directly from Nutriset.
- NGOs can produce an RUTF based on the original Plumpy'nut formula for their own programme's needs. Nutriset will provide the NGO with the special formulation and a production guide. Technical support, training modules and stock management tools are also available on request. The NGO is solely responsible for the quality of the finished product.
- Agencies can buy RUTFs from a network of franchised manufacturers. Nutriset proposes to set up a franchising system for RUTFs in countries that have a significant demand for the product. Nutriset will transfer their knowledge of the manufacturing process, quality assurance and control and management tools to a local producer. The local producer will be able to use the registered Plumpy'nut name. In return, the producer will be obliged to buy the special premix from Nutriset. The local producer will not have to pay any royalties or fees, but will have to comply with implementation guidelines. Nutriset and the franchisee will set up a committee to manage the relationship between it and the local producers. The committee and Nutriset will select new producers and ensure that implementation guidelines and rules are correctly followed (e.g. adequate quality control measures are in place). Under this scenario, there could potentially be an array of competing producers in one country.

One of the problems with the proposals described above is that if Nutriset is over-stretched, or its staff is too busy, there may be a significant delay in setting up a local RUTF production company. Nutriset would not stand in the way of a private/public partnership to produce a micronutrient enriched, energy dense oil-based spread to treat severe malnutrition.

How much can local production reduce costs of RUTFs
In development programmes, RUTFs have accounted for a large

¹⁸ RUTFs have been formulated for the management of severe malnutrition and are not an appropriate complementary food for infants and young children. RUTF should not be used in infants under six months of age. Source: *Infant and Young Child Feeding in Emergencies, Operational Guidance for Emergency Relief Staff and Programme Managers*. Updated version (2.0). Available from the ENN.

¹⁹ The special premix consists of CMV therapeutic plus other additives which help extend the product's shelf life plus a tracer to see if the product is well mixed or not.

proportion of the programmes' costs. However, it is not yet clear how far the costs of RUTF production can be reduced by making it either in-country or from new formulations.

Can NGOs run a good business?

The production unit at Tambala closed because of weak business practices. This was a considerable set back to the rolling out of CTC programming in Malawi. NGOs may not have the capacity and experience necessary to run a business. There will be a need to closely support and monitor the success of local RUTF production programmes.

Will RUTFs be seen as the only food to feed children with?

There is a risk, especially if RUTFs are promoted for purposes other than the treatment of SAM (e.g. promoted to athletes), that communities will start to think that RUTFs are the best and only product to feed their children. This happened to some degree in Pakistan when CSB was first produced in-country. Currently, CTC programmes try to avoid this problem by stressing that the RUTF is a medicine. Future marketing of the product will need to take this issue into account²⁰.

'Weaning' children off RUTFs

In some of the early CTC programmes, a number of carers complained that it was difficult to 'wean' the child off RUTF and re-introduce the family diet. Most VALID-supported CTC programmes now overcome this problem by (i) providing the carer with nutrition education on locally available nutritious foods as the child is approaching discharge, and (ii) giving the carer seven extra packs of the RUTF at discharge so that they can gradually phase the product out of the child's diet.

Relapse rates in CTC programmes

In the CTC programme in Blantyre Rural District (Malawi), 95% of the children in the programme recover. After 6 months with no other treatment, 1% of these children have relapsed and after 12 months 2%. This is an area with a high rate of HIV infection. In Wollo, children were re-weighed 3-4 months after they had graduated from the programme. About 4% of the children had become severely malnourished again.

²⁰ ENN editorial note: This contradicts the panel discussion point earlier under local production of RUTF, where marketing RUTF as a complementary food for infants is suggested (see also footnotes 18 and 26).

9

Session 6: CTC and HIV/AIDS

Chair: Bruce Cogill (FANTA)

Speakers: Ellen Piwoz (SARA project, AED) speaking on operational research in CTC and HIV/AIDS; Mark Manary (University of Malawi and Washington University) speaking on HIV infection in malnourished children cared for in a CTC programme in Malawi; Kate Sadler (VALID) speaking on lessons learnt from a CTC HIV/AIDS study in Malawi and opportunities for expansion.

Following an overview of HIV/AIDS and malnutrition and related programming, two case studies, describing CTC programmes working in conjunction with HIV/AIDS programmes in Malawi, were presented. The first case study provided some information about how to distinguish and treat HIV affected children in a CTC programme based on experience from Blantyre Rural District. The second case study described the preliminary results of action research undertaken by VALID to assess the use of CTC as an entry point for the support of HIV affected individuals in Dowa District.

9.1 Overview of link between HIV/AIDS and malnutrition

Protein-energy malnutrition compromises all aspects of the immune system: cell mediated immunity, antibody production, the acute phase response and the protective integument. HIV infection eliminates effective T cell function. When malnutrition and HIV occur together the immune compromise is compounded, as the two conditions synergistically work to

make the individual more susceptible to infection and make the infections that occur more severe. A study in the Gambia found that HIV infected adults with a low BMI (<18 kg/m²) had an increased risk of death even after controlling for their CD4 count and other risk factors²¹. Micronutrients, including vitamins A, B, C and E and iron, zinc and selenium²², also affect the immune system and bolster resistance to infections.

HIV affects malnutrition through multiple mechanisms, including increased energy requirements, reductions in dietary intake, nutrient malabsorption and loss, and metabolic changes. The increase in energy requirements occurs even during the asymptomatic infection when a person may not know they are infected²³.

²¹ Van der Sande et al, JAIDS, 2004. Body Mass Index at Time of HIV Diagnosis: A Strong and Independent Predictor of Survival. JAIDS Journal of Acquired Immune Deficiency Syndromes. 37(2):1288-1294

²² FRIIS H (2005). Micronutrients and HIV infection: A review of current evidence. Background paper No. 2. Consultation on nutrition and HIV/AIDS in Africa: Evidence, lessons and recommendations for action, Durban, South Africa, April 10-13, 2005 (in press)

²³ WHO. Nutrient requirements for people living with HIV/AIDS. Report of a technical consultation. World Health Organization, Geneva, 2003.

Table 11 Potential uses of nutrition programming at different stages of HIV progression

Nutrition programming	Stage of HIV/AIDS progression			
	HIV+ asymptomatic	HIV+ symptomatic	AIDS	After AIDS-related death
Counselling/care	Nutrition for 'positive living'	Nutrition management of HIV-related opportunistic infections, symptoms, and medications	Nutrition management of ARV therapy (where available) Nutrition counselling in home based care	Counselling on special food and nutritional needs of orphans and vulnerable children
Targeted food and nutrition support	For high risk groups, e.g. pregnant and lactating women, non-breastfed infants, and young children	For high risk groups including persons who are losing weight, or do not respond to medications Therapeutic feeding for severely malnourished adults and children	Therapeutic feeding for severely malnourished adults and children	For high risk orphan and vulnerable children's groups e.g. non-breastfed children < 2 yrs, and those with growth faltering

Adapted from Piwoz, E. of the SARA Project. Nutrition and HIV/AIDS: Evidence, Gaps, and Priority Actions, April 2004.

9.2 Nutrition and HIV/AIDS programming

There are a number of different nutrition programmes which may be usefully implemented in conjunction with HIV/AIDS programmes. The appropriate mix of these interventions will depend on local circumstances and the individual's disease progression (see table 11). Several possible positive outcomes may be achieved by these programmes, including improved quality of life, increased adherence to ARV treatment, improved birth outcomes and increased participation in programmes. However, research is needed to confirm these assumptions.

9.3 Case study 1: the Blantyre experience

Approximately 15% of the Malawian adult population is HIV+. Until recently, individuals with SAM have not been tested for HIV because testing facilities were not widely available and the treatment of SAM was the same for both HIV+ and HIV- patients. Recently, however, ARV treatment has become available.

In the urban centres, up to 25% of SAM children in referral

hospitals are HIV+. This figure drops to 10% in rural health centres. Community screenings find that 1-2% of children with a weight-for-age <-2 z-scores in Blantyre rural district are HIV+²⁴. Thus, the majority of severely malnourished children do not have HIV.

The experience from Blantyre suggests that ARV treatment and CTC programmes can be usefully linked but should not be implemented together. This is because the two programmes have different foci; CTC is community based and public health focused, while the ARV treatment programme is hospital based and focuses on individuals.

Differentiating between severely malnourished HIV+ children and severely malnourished non-infected children is difficult. The Blantyre programme recently assessed the characteristics and progress of 633 SAM children of whom 27% were HIV+. All the children received RUTF. Table 12 summarises the most important findings of the study.

The results of the study show that without biochemical testing, it is not possible to ascertain whether a severely malnourished child is HIV+ on admission to the feeding programme. Significant differences in response to treatment were recorded whereby HIV+ children recover more slowly. The CTC Blantyre programme staff offer testing to the parents of children who have not made progress by 4 weeks. They are also concerned about children who show prolonged symptoms of infection. The results of this study do show, however, that it is important to admit severely malnourished HIV infected children into the programme – many recover and their families may also benefit from the education components.

9.4 Case study 2: VALID study in Dowa district

The VALID action research (supported by Support for Analysis and Research in Africa (SARA)/AED) aims to assess the potential for CTC to (i) treat malnutrition in HIV affected

Table 12 Potential uses of nutrition programming at different stages of HIV progression

	HIV+(n=171)	HIV-(n=462)
Demography		
Age, months	28 ± 14	28 ± 13
Mother alive	157 (93%)	431 (93%)
Father alive	142 (84%)**	423 (92%)
Nutritional status on admission		
Weight-for-height z score (WHZ)	-2.2 ± 0.9**	-1.9 ± 0.9
Height-for-age z score (HAZ)	-3.7 ± 1.5	-3.5 ± 1.4
Oedema	75 (44%)**	367 (77%)
Progress in programme		
Weight gain (g/kg/day)	2	5
Relapse rate	40%	5%
Length of stay in RUTF programme (weeks)	9	6
Days of illness recorded during the programme		
Fever	10%**	3%
Cough	22%**	7%
Diarrhoea	8%	4%

** means statistically significant at the 5% level.

²⁴ Note that the definition of SAM in the referral hospitals and district centres is <-2 weight-for-height z scores. This differs from the community screening definition.

²⁵ This research, which VALID is currently undertaking, has several elements. A retrospective survey asked mothers and children who had been in a CTC programme to return (on average 9 months after discharge). When they came back they were asked if they would be willing to be HIV tested – approximately 90% came back, and 90% of children and 60% of carers agreed to be tested. The next element was a prospective trial where HIV status was tested on admission. This was followed by a social enquiry examining needs expressed by HIV affected people and families and the extent to which these were met by HIV support service, in order to determine whether CTC could fill any gaps.

Box 3 Research questions and related factors on linking CTC and HIV/AIDs programming

- Can CTC be used as an entry point for HIV prevention and treatment activities?
 - High uptake of HIV testing by parents of CTC children in Malawi (Dowa study)
 - Low prevalence of HIV in children in community setting
- Is CTC an effective intervention model for managing severe malnutrition in HIV+ adults and children?
 - How does CTC interface with other models such as PD Hearth, home based care?
- What is the role of RUTF in HIV programmes?
 - Feasibility and impact of RUTF for replacement feeding of non-breastfed children > 6 months (less expensive than infant formula)?
 - Use in ARV/TB treatment programmes
- Will providing HIV-related CTC support affect community attitudes toward, and uptake of, CTC for acutely malnourished children?
 - Minimising programme stigma

populations, and (ii) strengthen ARV treatment programmes. Thus, the research is looking at the synergy between CTC and home based care and CTC and ARV treatment programmes²⁵.

The ARV treatment scale-up strategy in Malawi is based on the principle that all people should have access to testing and treatment. However, important barriers to treatment exist; first, the number of centres is currently limited to about three per district and second, the fear of stigma is reported to prevent people coming forward and taking the treatment. Preliminary results from the research suggest that combining CTC and ARV treatment programming could reduce the problem of access.

To date, the study's results show that uptake of HIV testing has been very high for both children and their primary caregivers (92% and 98% for the retrospective and prospective cohorts respectively). In some of the study areas, many adults without children in the CTC programme came to seek voluntary counselling and testing (VCT) after been informed about the study by volunteers and villages headmen. Many factors could be implicated in this high uptake, including (i) offering referral through CTC sites closer to people's homes, (ii) the credibility of the CTC programme in Dowa District, and (iii) the use of people trusted by local communities, namely chiefs, volunteers and local medical staff members, for the mobilisation components of the programme.

This suggests that the delivery of VCT services through CTC meant less fear of stigmatisation and discrimination by local people, indicating that CTC could be a practicable entry point for VCT as well as providing support for HIV/AIDS patients. Other synergies between CTC and ARV treatment programmes may also exist. ARV treatment can aggravate nutritional problems and reports suggest that access to good nutrition is one of the main challenges for HIV infected individuals. New formula RUTFs could be optimised from a nutritional perspective with regard to HIV infection and RUTF production could be closely integrated with local agricultural practices and needs. There may also be potential to link up to the 'guardian' scheme, whereby local people are 'buddied' with individuals on the ARV treatment programme to improve compliance with ARV treatment. CTC support mechanisms could link with and support this scheme.

In Malawi, building informal support for HIV/AIDS programming is an essential factor for effectiveness and sustainability and forms an important component of the ARV scale up plan. Over reliance on external assistance may weaken

these systems but CTC programming, with its emphasis on integration with local systems, should help to strengthen the traditional support mechanisms – or at least not undermine them.

The results presented above are preliminary. A number of research questions remain regarding how best to link CTC and HIV/AIDS programming (see box 3).

9.5 Discussion around CTC and HIV/AIDs presentations

Advantages of RUTF compared to infant formula or F100

Commercial infant formula is both more expensive and has more stigma attached to it than RUTF for treatment of very young HIV+ children. In Malawi, commercial formula costs \$17/kg but locally produced original formula RUTF costs approximately \$4/kg. However, note that in some cases, infant formula is donated.

There are some reports of severely malnourished HIV+ adults having difficulties tolerating F100 but, to date, evidence from MSF's work in Malawi indicates that RUTF is very popular with HIV+ adults with a BMI<16/kg/m². It is possible that the F100 was problematic because an adult patient needs to ingest about 5 times the volume of F100 compared to RUTF, to get his/her energy requirements. For treatment in homes, RUTF has the added advantage of being easier to prepare than F100.

Food aid tied to HIV programming

Increasingly, food aid interventions are implemented in the name of HIV programming. There are concerns that the programmes are driven by an excess of food aid rather than hard evidence to show that the food can slow down HIV progression. There is an urgent need for more information exploring the links between HIV progression and diet and the effectiveness of these programmes²⁷.

²⁶ There are many factors to consider when comparing RUTF, infant formula and F100 in the context of replacement feeding which were not discussed at the meeting. For example, differences in formulation and their implications, milk-based versus semi-solid intake in infants, and sources of fluid in infants fed RUTF. (ENN, eds)

²⁷ See Field Exchange 25, Special Focus on Food Aid and HIV/AIDS. May, 2005. Available online at <http://www.ennonline.net> or in print from the ENN.

10

Session 7: Ensuring quality and coordination

Chairs: Caroline Tanner (FANTA consultant), Anne Walsh (VALID)

Speakers: Steve Collins (VALID) speaking on a framework for initiatives to improve and promote good practice; Frances Stevenson (VALID) speaking on the purpose and status of the CTC manual; Valerie Gatchell (Concern WW) speaking on best practice training; Paul Rees Thomas (Concern WW) and Tobias Stillman (SC US) speaking on a CTC working group; Andre Briend (WHO) speaking on movement towards the development of WHO guidelines for the community based treatment of severe malnutrition; Caroline Abblas (OFDA) speaking on supporting quality assurance through technical assistance.

The discussion below is a synthesis of the six presentations and comments made by the participants.

The importance of ensuring quality

Both agencies and donors are concerned about maintaining the high quality of CTC programming as more agencies become involved in CTC programming, and more variations on the strategy are being rolled out.

To ensure CTC programming remains of high quality, VALID and other agencies (including OFDA, Concern and SC US) are supporting initiatives to (i) identify and disseminate good practice, (ii) produce high quality tools and mechanisms like The Sphere Project, Red Cross Code of Conduct, etc, and (iii) ensure quality and accountability. Together the initiatives would establish, improve and promote good practice in CTC. A framework of up to six interlinked initiatives was proposed:

1. Commitment and collaboration by CTC practitioners to work together in order to promote and maintain good practice in CTC.
2. Production of a manual to provide operational guidance, principles and standards for programme design, implementation and monitoring.
3. Incorporation of CTC into international technical guidelines, e.g. WHO publications.
4. Capacity building – a range of training, mentoring and inter-agency support activities for HQ and field staff.
5. Elaboration of the principles of CTC in a Code of Good Practice.
6. Collective self-regulation – a system which recognises an agency that meets the agreed standards.

These initiatives are discussed in more detail below.

Commitment and collaboration by CTC practitioners to work together

Agencies need to develop and agree on appropriate technical standards, build a system to monitor progress against the agreed standards and support each other to achieve the skills and capacity that are necessary to maintain those standards. One step towards achieving these goals could be the formation of a CTC inter-agency working group.

It was proposed that the inter-agency group, which would initially be organised by Concern WW and SC US, would have an open membership but would mainly involve organisations with established operational experience including NGOs,

governments and donor agencies. The group would have links to the emergency nutrition working group based in the UN Standing Committee on Nutrition (SCN).

Initial activities will include producing terms of reference for the group. This will be published on a listserv on which members will also post CTC-related dialogue, including a draft code of practice. Subsequent activities will include arranging field exchanges and meetings to exchange information on practical programming, best practice and ongoing operational research.

Manual development

A manual focusing on CTC principles, operational guidance and monitoring and evaluation methods is currently being produced by VALID. The manual will highlight the difference between CTC and other home based treatment methods.

Incorporating CTC methods into international technical guidelines

WHO's current manual on the treatment of severe malnutrition does not include information on CTC programming and needs to be adapted. The current manual will remain valid for treatment in the stabilisation phase. WHO plans to organise an informal meeting to review the evidence of CTC and other home based treatment methods in the autumn of 2005. The background papers and the meeting report will be published on the WHO website and in a journal.

OFDA has recently incorporated information on CTC into its manual used by assessment staff, to inform agency staff that CTC is an option for programming.

Capacity building

VALID is currently able to provide experts to assist agencies in the design, implementation and monitoring of programmes. Generally, VALID's experience has shown that agencies that have not implemented CTC before require an initial 1 month of training from a nutritionist and 1 month training from a community mobilisation expert. This is usually followed-up by a mid-term evaluation with a coverage survey after about 3 months. This amount of training, possibly with a short visit in the second year of the programme, should be sufficient to ensure good quality programming, unless staff turnover is very high.

VALID is currently also undertaking training of students at the University of Khartoum and is in discussion with the

Ethiopian and Ugandan MoHs and the University of Makerere about developing pre-service training courses.

Concern WW is designing a two-tier training process to roll out CTC programming. Tier 1 will focus on field staff and practitioners (nutrition and public health) from Concern WW as well as other CTC working group agencies. The 1 week training will include a field visit and will take place in countries where CTC is currently implemented. Current plans envisage 2-3 trainings per year for about 10-15 participants. Staff from the MoH and other key partner agencies will be asked to participate as presenters. Tier 2 training will target senior management and technical staff.

The inter-agency group will also assist in co-ordinating trainings and the capacity building of staff. This could include exchange visits between programmes.

Code of good practice

Agencies proposed the production of a code of good practice that would elaborate the principles outlined in the CTC manual. It will include guiding principles (core values), organisational principles (how we work), and programming principles (what we do). The code will include standards and benchmarks for good practice. By adopting the code, an agency demonstrates its commitment to practice that is responsible, accountable and ethical.

Collective self-regulation and recognition

Agencies would collaborate to develop and agree the principles and standards in a code which they would apply internally in their own agency. They could also participate in a verification process that would give them access to support as necessary. Where participating agencies are found not to be in compliance with a standard, they will seek support to develop and implement an action plan to address the problem.

Three potential routes for effecting collective self-regulation were discussed:

i) Voluntary system of self regulation – agencies who adopt the principles and standards commit to abiding by them. Compliance is by self-certification. An agency gathers the information required for each of the principles or standards from its own programmes. Self-certification is low-cost and easy to administer and is accessible to a wide range of organisations, although the effectiveness of the mechanism depends largely on the rigour with which individual agencies apply it.

ii) Certification by peer review – a group or committee of agencies oversees the code and compliance with it. The committee develops (with the relevant agencies) a certification form that defines the evidence of compliance needed for each standard and makes it objective and auditable. Peer review verifies compliance with standards in a more rigorous way – the reviewers are more independent and objective and there is substantial responsibility on agencies to produce evidence of compliance with each standard. Because of its rigour, this mechanism is likely to be more meaningful to donors, the public, and other stakeholders, however it is a more expensive process, and the high standards may place it out of reach for some small or new organisations.

iii) Watchdog agency – an independent external agency establishes a rating system and measures the performance of organisations against the standards. This kind of accreditation by an external agency provides the highest assurance that an organisation meets the required standards but it is also an

expensive mechanism to implement. This model is unlikely to be acceptable to independent-minded agencies.

Another option may be to have a kitemark – a symbol of integrity and reliability that shows something has been independently tested and conforms to relevant standards. A CTC kitemark could be awarded when an agency demonstrates that:

- it has made a public commitment to the code, and has informed its staff that the agency is committed to the code.
- it has given responsibility and authority for implementing the code to a specific project manager and team.
- agrees that an external social auditor may review the agency's report on performance in relation to the code - not to make judgments about the agency's performance but to assess and report back on adequacy of systems and accuracy of information in the report.

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Session 8: Determination of next steps and potential research to strengthen CTC programming

Chairs: Jeremy Shoham (ENN) and Steve Collins (VALID)

Participants were asked to vote on four topics that they wanted to discuss further in the last session. The topics selected were: improving how to plan for transition, role of the inter-agency group, use of MUAC as entry and discharge criteria, and RUTF production and supply. Given that these topics had been discussed elsewhere in this report, we have amalgamated any additional points that emerged in this last session into the text on earlier sessions.

The following topics were put forward by the conference participants as potential research areas for agencies and academic institutions interested in refining and expanding CTC programming.

RUTF production

- Clinical trials of new formulations.
- The economics of RUTF production at different levels (national, district, local).
- The potential for social marketing of RUTFs (e.g. as foods in hospitals or as complementary foods for infants).
- How to maintain decentralised quality control of RUTF production.
- Need to assess WFPs experience of the development and production of CSB in the developing world. Also, assess the local production of malaria nets.
- Need research on the impact of BP-100 biscuits (compared to RUTF formulations).

The role of CTC and RUTFs in HIV

- Whether RUTF can slow progression of HIV.
- Whether RUTFs act as a nutraceutical adjunct to ARV therapy.
- The best way to integrate CTC and home based HIV/AIDS programming.
- Whether CTC programmes improve compliance to DOTS and ARV programmes any more than other feeding programmes.

Simplification of admission and discharge criteria

- The consequences of using MUAC only as an admission criterion. Need to consider how this would work for children <65cm.
- The relationship between gains in weight, MUAC and WHM during the treatment of SAM and hence use of these measurements as discharge criteria.
- Whether the development of a new MUAC tape with an elastic band to standardise pulling would increase the precision of the measure.
- Need to document adult MUAC, including PLWHAs.
- Implications of using MUAC alone for admission and discharge criteria on programme size.

Integrating CTC and development programmes

- Research into the number of deaths due to SAM is needed to advocate for the inclusion of SAM treatment at the PHC level in government and WHO strategies, such as the IMCI strategy.
- More experience is needed on how best to combine CTC and PD/Hearth programming.
- Use of MUAC in growth monitoring programmes and/or PD/Hearth programmes.
- Assessment of the long-term sustainability of CTC programmes after NGOs have finished working in the area.
- Explore how CTC programming could develop an emergency response strategy that uses national/existing resources, such as Red Cross volunteers.

Long-term cost effectiveness analyses

- Studies of the cost effectiveness of different formulations of RUTFs.
- Studies looking at the costs of integrating CTC into PHC systems (calculating disability-adjusted life years (DALYs), quality-adjusted life years (QUALYs), etc).
- The cost of combining CTC, home based care and ARV programming.

Note that much of the data needed for this research is already available in project reports. Lessons learnt about these topics, whether practical field experiences or formal research, need to be written-up and disseminated as widely as possible to ensure maximum impact of future CTC programming.

12 Annexes

Annex 1

Table 1a Outcomes from all patients admitted to CTC programmes monitored by VALID up to 2003²⁸							
Country, date and agency	No. SAM treated (OTP & SC) <i>n</i>	Direct admission to OTP %	Recovered %	Default %	Dead %	Transfer %	Non-recovered %
Ethiopia, 2000 Concern WW	170	100	85.0	4.7	4.1	-	6.5
N Sudan, 2001 SC UK	836	98	81.4	10.1	2.9	5.6	-
N Sudan, 2002 SC UK	299	69	65.1	6.5	7.9	20.5	-
Malawi, 2002 Concern WW	1,900	19	69.4	15.0	8.9	3.0	2.8
Ethiopia, 2003 Concern WW	794	95	74.6	9.7	7.5	-	8.3
Ethiopia, 2003 Concern WW	194	24	69.6	5.2	7.3	10.5	-
Ethiopia, 2003 Concern WW	445	94	83.5	5.3	1.5	9.6	-
Ethiopia, 2003 SC US	1,232	81	83.8	4.4	1.3	10.1	0.5
Ethiopia, 2003 SC UK	232	99	85.8	6.0	4.9	3.3	-
S Sudan, 2003 Concern WW	610	92	73.4	17.3	1.4	4.2	3.7
S Sudan, 2003 Tearfund	696	71	81.8	15.4	1.4	1.4	0.0
Total	7,408	68%	77%	11%	4.7%	5.3%	2.1%

²⁸ Source: ENN (2004). Community based therapeutic care, special supplement no. 2. Compiled and edited by Tanya Khara and Steve Collins. Produced and available from the ENN, <http://www.ennonline.net>

Annex 2

Table 5a CTC programmes in complex emergency settings			
	Concern WW South Sudan	Tearfund South Sudan	SC UK North Sudan
Location	Aweil West and North	Aweil East and South; Wuror ²⁹	North and South Darfur
Level of insecurity	Relatively insecure	Very insecure	Very insecure
Population size	333,000	Aweil east and south: 761,805	North Darfur: 1.5 million South Darfur: 2.8 million
Programme dates	2003-2005	May-Sept 2004	2001-2004
Prevalence of malnutrition (defined using WHZ and/or oedema)	From March, 2003 – Sept,2004 Range 24-13%	From Feb2003-Nov,2004 Range 25-13%	2004 North Darfur 33.4% South Darfur 11.9%
Programme indicators:	2004	East	South ³⁰
	OTP/SC SFP	OTP/SC	OTP/SC
Recovered	77%	79%	78%
Died	5%	0.6%	0.9%
Defaulted	8%	7.2%	15.2%
Transferred	3%	13%	5.3%
Non-recovered	7%	8.6%	10.3%
Discharged last day	Not closed		
Coverage	70%	n/avail	n/avail
Set-up	<ul style="list-style-type: none"> • 12 OTP sites • 1 SC • Medicalised SFP • TB cases treated at MSF hospital 	<ul style="list-style-type: none"> • Integrated SFP & OTP • 2 SCs • Micronutrients distribution • Immunisation • Referred to MSF for malaria 	<ul style="list-style-type: none"> • Integrated SFP & OTP • 2 SCs • Vaccination
RUTF	<ul style="list-style-type: none"> • Plumpy'nut (Nutraset) • Delivered by air and boat (wet season) 	<ul style="list-style-type: none"> • Plumpy'nut (Nutraset) • Delivered by plane and bicycle/donkey 	<ul style="list-style-type: none"> • Plumpy'nut (Nutraset) • Delivered by vehicle
Outreach strategy	<ul style="list-style-type: none"> • Paid Concern WW workers • Local leaders/chiefs 	<ul style="list-style-type: none"> • Paid local extension workers • Political/church leaders • TBAs/traditional healers • Women's groups • Contact mothers 	<ul style="list-style-type: none"> • Community nutrition and health workers (paid) • Local leaders/chiefs
Internal co-ordination	<ul style="list-style-type: none"> • Livelihoods prog • Water prog • Health education 	<ul style="list-style-type: none"> • Health programme • Agricultural training • Women's labour saving ventures 	<ul style="list-style-type: none"> • Early warning system • General food distribution • Water and sanitation prog • Health prog
Links with MoH	<ul style="list-style-type: none"> • No MoH in area • Nutrition & health coordination bodies at national level 	<ul style="list-style-type: none"> • No MoH in area • Link to International Rescue Committee (IRC) health programme • Train traditional practitioners • Nutrition & health coordination bodies at national level 	<ul style="list-style-type: none"> • Been in area 20 years, strong links • Seconded MoH staff • SC in clinics where possible • Nutrition coordination meetings at state and federal levels • Developing curriculum
Links with WFP	<ul style="list-style-type: none"> • Government/NGO provide general ration 	<ul style="list-style-type: none"> • WFP provide general ration 	<ul style="list-style-type: none"> • NGO provides general ration

²⁹ Results from Wuror not shown as not available at the time of the conference

³⁰ SFP data not available but reported that SPHERE standards not achieved

³¹ SFP data not available

Table 6a Summary of CTC programmes in a development setting

	Concern WW Malawi	Concern WW Ethiopia	SC US Ethiopia
Location	Dowa and Nkhotakota districts	South Wollo	Southern Nationalities and Nations Peoples Region
Level of insecurity	Secure	Secure	Secure
Population size	Dowa: 411,000 Nkhotaoka: 229,000	486,614	761,855 (4 districts)
Programme dates	2002 (emergency) -2004 (development)	2002 (emergency)-2003-2005 (development)	2003 (emergency) – 2004 (development)
Prevalence of malnutrition (defined using WHZ and/or oedema)	2.0% (0.5% severe)	In 2002: 15-17% GAM, SAM >2% Current: 6-10% GAM, 0.2-0.3% SAM	Information based on screenings (WHM) (Jan 2005 and April 2005): Boricha: 7% GAM & 0.6% SAM Lanfro: 3% GAM & 0.1% SAM Dalocha: 2.5% GAM & 0.3% SAM Konso: 3.6% GAM & 0.3% SAM
Programme indicators:	2002-2003 (data from ongoing programme)	2003-2005 OTP/SC	2003-2004 OTP/SC
Recovered	69%	81%	80%
Died	9%	5%	4%
Defaulted	15%	6%	3%
Transferred	3%		
Non-recovered	3%	8%	2%
Discharged last day	n/a		
Coverage	73%	>70%	n/avail
Set-up	Dowa • 17 OTP centres • 5 Nutrition rehabilitation units • No SFP	• 18 OTP sites • 1 SC (in hospital) • No SFP	• 2 SCs • 12 OTPs • SFP
RUTF	• Locally produced original formula and testing of new formula • Delivered by NGO vehicle where necessary	• Plumpy'nut (Nutraset) • Delivered by NGO vehicle	• Plumpy'nut (Nutraset) • Delivered by NGO vehicle
Outreach strategy	• More than 700 volunteers • Drama and bands • Community meetings	• 2,700 volunteers (from CHAs, TBAS, THs etc) • Local/church leaders	• Volunteers • Local/church leaders
Internal co-ordination	• OTP mothers targeted for seed distributions • PD/Hearth • HIV study	• Health • Food security	• Health • Watsan • Health & nutrition education • Kitchen gardening
Links with MoH	• MoH staff jointly implement • Use PHC structures • Close national & district level links • Working on policy with national MoH	• MoH supervisors seconded • OTP at clinics with MoH staff • SC located in hospital, concern non-medical staff as liaison officer	• SCs in MoH structures • MoH staff very involved in programme
Links with WFP	• SFP provided by WFP	• NGO/Government provides ration	• WFP provides ration

Annex 3

Suitability of MUAC as an index for admission to CTC programmes

1. Compare indices to a gold standard

MUAC and WHM indicators will never select exactly the same children as malnourished because the two measurements are measuring different things. MUAC is more directly related to muscle mass than weight for height, although muscle mass is still 80% water.

The 'gold standard' measure of nutritional status is body composition measurements. One seminal study³², compared the ratio of lean mass (arms + legs)/trunk to various anthropometric indicators and found that MUAC was more closely correlated with measures of body composition measured using x-ray absorptiometry than other indices. This challenges the assumption that weight for height is a better measure of nutritional status than MUAC.

2. Compare the prognostic value of the indicators

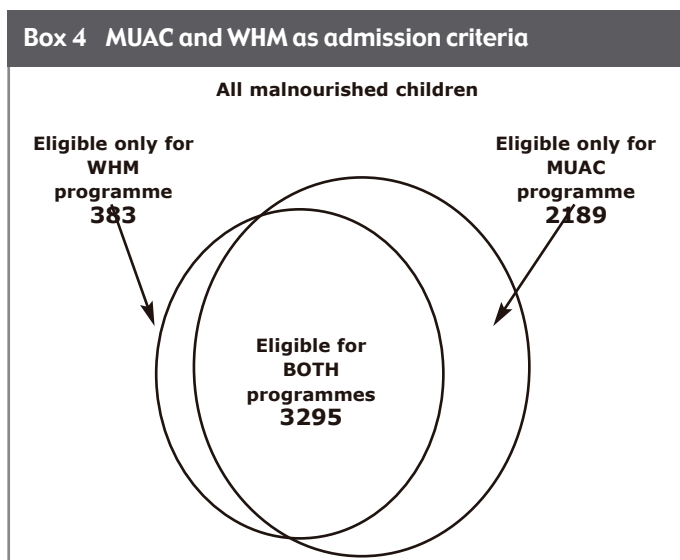
Receiver Operating Characteristic (ROC) analysis of the sensitivity and specificity of MUAC versus WFH indicate that MUAC predicted the risk of death better than WFH/WFA/HFA in a study in Senegal³³.

The Concern WW CTC programme in Wollo provided information on rates of recovery of children with low MUAC (<110mm) but WHM>70%, aged more than 12 months but less than 75cm in length, when they were enrolled either in an SFP or in an OTP programme. The recovery rates, survival proportions and measures of weight gain in the two separate groups are shown in table 8a. The data show that children with low MUAC did not do well in the SFP but did recover in the OTP. All the differences shown are statistically significant. The differences in survival proportions remained significant after controlling for the effects of age or height at admission.

It is probable that MUAC assesses the risk of death better because (a) it is more closely correlated with muscle mass, and (b) as MUAC increases with age, a fixed cut-off will preferentially select younger children and they have a higher risk of death.

3. Compare response to treatment

Weight gain appears to be better related to WFH on admission.



Observations have shown that young children with low MUAC but moderate wasting usually have only moderate weight gain. Historically, this has been part of the rationale for NOT using MUAC to admit to therapeutic feeding programmes – especially in the younger age groups.

4. The risk benefit analysis of misclassifications

If a MUAC of 110mm alone is used to admit children to a programme, then children with a WFH <70% but a higher MUAC will not be admitted for treatment. In order to assess the risks associated with this, a simulation of outcomes using different programme admission criteria was run (see figure 9a). A composite dataset of 200 nutritional anthropometric datasets (>210,000 children) was created. In this sample, the prevalence of global acute malnutrition was 11.7% including moderate 9.1%, 1.3% severe wasting and 1.3% oedema. The simulation compared admitting children by either (i) oedema and/or WHM <70% and MUAC<125mm, or (ii) oedema and/or MUAC<110.

The simulation found that MUAC and WHM define many of the same children as malnourished (see box 4). When using MUAC, the number of excluded low WHM children is small compared to relative estimated need - estimated need is 5,867 and use of the MUAC excludes 383 (6.5%) at-risk children. When using WHM, the number of excluded children is larger – 2,189 are excluded (37.3%). Because the use of MUAC as an admission criteria will result in higher numbers of young children being added to the programme and a smaller number of older children, mortality rates will be higher among those excluded by MUAC than those excluded by WHM.

The problems of excluding at-risk children with low WHM

³² Brambilla et al. Lean mass of children in various nutritional states. Comparison between dual-energy X-ray absorptiometry and anthropometry. Ann N Y Acad Sci. 2000 May;904:433-6.

³³ Briend A, Garenne M, Maire B, Fontaine O, Dieng K. Nutritional status, age and survival: the muscle mass hypothesis. Eur J Clin Nutr. 1989; 43: 715-26. Similar results were also obtained from Alam N, Wojtyniak B, Rahaman MM. Anthropometric indicators and risk of death. Am J Clin Nutr. 1989; 49: 884-8.

³⁴ Note that the disparity in number is due to missing data. This was a retrospective cohort study using routine monitoring data and MUAC was not used for routine monitoring.

Table 8a Recovery, survival and weight gain in the Wollo programme, February–November 2003

Variables	SFP	OTP
	N (%)	N (%)
Number of children	56	42
Survived	46 (82%)	40
Died	8 (14%)	0
Defaulted	2 (4%)	2
Mean weight gain (g/kg/day)	1.9	4.3
Mean MUAC gain (mm/day)	0.2	0.4

Note: n=24 SFP, n=19 for OTP in this analysis³⁴

but normal MUAC are less important if the programme is working in conjunction with an SFP which has a referral facility. In this situation, children with a MUAC < 110mm would be referred to the OTP. Children with an MUAC \geq 110mm and < 125mm would be referred to the SFP. Once children are admitted to the SFP, they will have their weight and height measurements taken as usual. If they have a WHM < 70% they could be referred to the OTP.

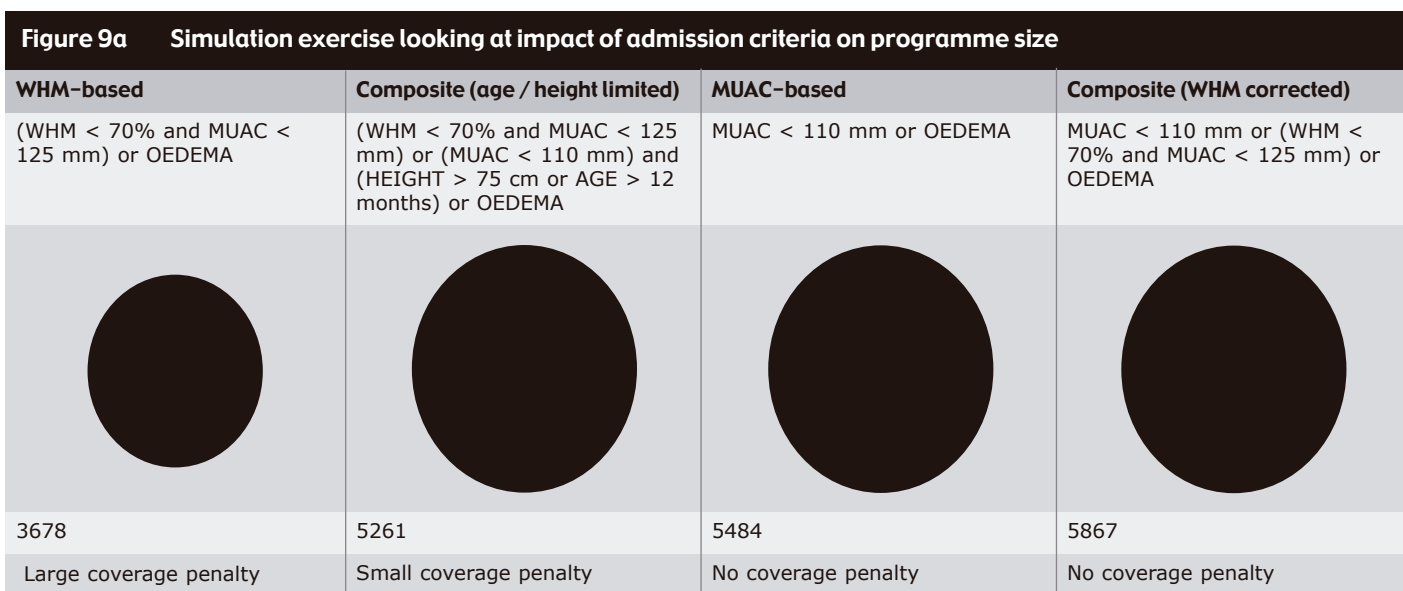
However, where there is no SFP and CTC admissions are based on only MUAC or oedema, then low WHM and high MUAC children will be excluded. This situation is unlikely to arise in an emergency context where SFPs are normally implemented. In a non-emergency context, there are likely to be other programmes targeted at vulnerable households and communities and existing service providers (e.g. MoH) may refer the children into the OTP. In a transition context, when SFPs have ceased operation, outreach workers should operate a

watch-list system and refer children they have concerns about.

Whatever selection criteria is used, it is necessary to assess the risks and benefits associated with admission or rejection for treatment. These risks depend on the context of the treatment programme. In a TFC model, unnecessary admissions are more problematic because the child is at increased risk of infection and the household has to pay a heavy price in terms of social costs. However, in a CTC programme, unnecessary admissions may increase programme costs but the other problems are no longer relevant.

5. Looking for maximum performance indicators for CTC

The choice between MUAC and WHM will depend on whether agencies give greater importance to the assessment of the risk of death or to the response to treatment. Using MUAC will reduce overall mortality rates but WHM measurements are better associated with weight gain measurements and hence response can be measured more easily



Annex 4

Discharge criteria for low MUAC but high WHM patients

The current practice with low MUAC but high WHM admissions is either (i) discharge as cured after a minimum of 2 months in OTP if MUAC > 110mm and there is evidence of sustained weight gain and patient is 'clinically good', or (ii) discharge as a non-responder after a minimum of 4 months in OTP if weight is stable and all available treatment options (e.g. home visits, inpatient stabilisation, hospitalisation) have been pursued. These options could be strengthened.

It would be simpler if agencies could employ MUAC as both the discharge and admission criteria. For example, agencies could use MUAC \geq 125mm as a discharge criteria for cured patients. Unfortunately, there is not enough information on MUAC growth trajectories available yet to allow agencies to adopt this strategy. In the Wollo example, MUAC gains were 0.25mm/day. This would mean each child had to stay approximately 80 days in the programme. More research is

needed to see if this growth rate is similar in other populations, particularly among the youngest children.

An alternative to both MUAC and WHM as discharge criteria could be the percentage increase in weight ((current weight/admission weight - 1)*100). This method would be a less radical change than switching entirely to MUAC, plus there would no longer be any need to calculate WHM. However, there is still a need to work out what the ideal percentage of weight increase would be.

13 Participants

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