Community Therapeutic Care (CTC): A new approach to managing acute malnutrition in emergencies and beyond

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Traditionally, the management of severe acute malnutrition (SAM) in emergencies includes setting up therapeutic feeding centers (TFCs). Over the last decade, the focus has been on the attainment of acceptable minimum standards of mortality. Recovery and clinical outcomes in TFCs managed by experienced agencies has been positive. However, TFCs have critical limitations; they are difficult to establish, expensive to operate, and they often have very limited coverage. Furthermore, TFCs do not build on the capacity of the community, and at times, they can undermine traditional coping strategies. Mothers or caregivers are often required to stay with their malnourished children for three weeks or longer in the TFC. Such a demand has tremendous opportunity costs and disrupts family life. Moreover, the congregation of people in and around feeding centers can lead to the spread of infection, an important cause of increased morbidity and mortality in an already weakened population.

Despite technical advances in the management of SAM, including the implementation of national protocols in many countries, there are important gaps between projected numbers of SAM and the capacity of existing mechanisms to respond effectively. For example, UNICEF projections in Ethiopia in 2003 showed an estimated 60,000 severely malnourished children with less than 30% of these treated in some regions. Projections in Southern Africa in 2003 showed a similar situation with significant increases in SAM partly attributed to the high prevalence of pediatric HIV/AIDS.

Community Therapeutic Care (CTC) is a new approach to managing acute malnutrition in emergencies and beyond. Conceived by Valid International, CTC seeks to address some of the challenges that traditional center-based approaches face. It aims to provide rapid, effective, low cost assistance that is least disruptive to affected communities and builds a foundation to link relief and development interventions for long-term solutions to food insecurity and threats to public health. CTC aims to treat the majority of the severely malnourished at home, build local capacity to better manage care of acutely malnourished children, and address repeated cycles of relief and recovery.

This technical note responds to the frequently asked questions associated with CTC. It describes the CTC approach, implementation, and the role of Ready to Use Therapeutic Food (RUTF). It summarizes results to date and outlines ongoing and planned activities.

Acronyms and Technical Terms

**Acute malnutrition** WFH <-2 Z scores or WHM < 80% and/or bilateral edema

**CTC** Community Therapeutic Care (encompassing SC, OTP, SFP, RUTF local production, community mobilization and integrated programming)

**CSAS** Centric systematic area sampling

**F75** Milk-based product designed for initial (phase 1) treatment of severely malnourished children

**F100** Milk-based product designed for rehabilitation (phase 2) of severely malnourished children

**HT (HBT)** Home treatment (home based treatment)

**IMCI** Integrated Management of Childhood Illness

**MAM** Moderate acute malnutrition (WFH >-3 Z scores and <-2 Z scores or WHM > 70 and < 80% median)

**MUAC** Mid Upper Arm Circumference

**NGO** Non-governmental Organization

**NRU** Nutritional Rehabilitation Unit

**OTP** Outpatient Therapeutic Program (treatment at home with weekly follow up)

**Phase 1** The initial phase in the treatment of severe acute malnutrition, sometimes called “stabilization phase”

**Phase 2** The rehabilitation phase in the treatment of severe acute malnutrition.

**RUTF** Ready to Use Therapeutic Food

**SAM** Severe Acute Malnutrition (WFH <-3 Z scores or WHM <70% and/or bilateral edema)

**SC** Stabilization Center

**SFP** Supplementary Feeding Program

**TFC** Therapeutic Feeding Center

**WFH** Weight for Height

**WHM** Weight for Height % of the median

**WHO** World Health Organization
1. **What is Community Therapeutic Care (CTC)?**

The CTC approach treats the majority of the severely acutely malnourished at home and focuses on outreach and community mobilization to promote participation and behavioral change. Central to the home-based care of the severely acutely malnourished is the provision of appropriate therapeutic foods containing the right mix of nutrients that will aid in treatment and rehabilitation. Ready to Use Therapeutic Foods (RUTF) have been specially designed for this purpose.

CTC adopts a public health approach to managing acute malnutrition that aims to maximize impact and coverage. The CTC approach facilitates access and coverage by bringing services closer to the household, rather than waiting for caregivers to bring malnourished children to a center. This is in contrast to standard inpatient center-based programs that focus on individual medical care and hence can only manage limited numbers. The CTC approach increases impact by addressing the needs of the greatest number of acutely malnourished children throughout an entire community.

CTC has four basic principles:

- **Access and high coverage**: uses a decentralized distribution system for easier access and large numbers of outreach workers and community volunteers to follow up outpatients in their homes.

- **Timeliness**: provides services and initiates active case finding before the prevalence of malnutrition escalates. CTC aims to treat acute malnutrition before additional medical complications occur.

- **Sectoral integration**: integrates with other programs, including health and nutrition education, promotion of exclusive breastfeeding, hygiene promotion, food security interventions, and conflict resolution programs.

- **Capacity building**: builds on existing structures through collaboration, training, and ongoing support, rather than establishing parallel systems.

The CTC approach combines three modes of care and treatment:

1. **Supplementary Feeding Program (SFP)**: dry take-home ration for children with *moderate acute malnutrition without complications* (e.g., anorexia, life threatening illness).

2. **Outpatient Therapeutic Program (OTP)**: home-based treatment and rehabilitation with a specially formulated RUTF provided on a weekly or two-weekly basis, medical treatment using simplified medical protocols, and regular follow-up for children with *severe acute malnutrition without complications*. OTP is implemented through a large number of decentralized points using the existing health infrastructure.

3. **Stabilization Centers (SC)**: inpatient care, also known as “phase 1 treatment,” for acutely malnourished children with *medical complications* and no appetite using standard WHO/IMCI protocols.
2. Why does implementation of the CTC approach propose an update in the classification of acute malnutrition?

Implementation of the CTC approach resulted in a proposal to update the classification of malnutrition. The current WHO classification consists of moderate and severe categories, defined according to anthropometry and the presence of bilateral pitting edema. This is appropriate and relevant for inpatient TFCs for severe acute malnutrition and outpatient SFPs for moderate acute malnutrition. However, the CTC approach has three modes of treatment, as described in the previous section. A new system of classification differentiates "malnutrition with complications," from "severe acute and moderate acute malnutrition without complications," as shown in Figure 1.

Acute malnutrition with complications can arise in either severely or moderately malnourished children. In practice, whether malnutrition is complicated dictates whether children are admitted for inpatient care in SCs or treated as outpatients in the OTP. Admitting children with severe malnutrition without complications into TFCs has potentially

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**Figure 1. Suggested Classification and Treatment System for Acute Malnutrition**

<table>
<thead>
<tr>
<th>Acute Malnutrition with Complications</th>
<th>Severe Acute Malnutrition without Complications</th>
<th>Moderate Acute Malnutrition without Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 80% of median WFH (&lt; -2 SD-score) OR bilateral pitting edema OR mid-upper arm circumference &lt;110 mm AND one of the following: • Anorexia • Lower respiratory tract infection • High fever • Severe dehydration • Severe anemia • Not alert</td>
<td>&lt; 70% of median WFH (&lt; -3 SD-score) OR bilateral pitting edema OR mid-upper arm circumference &lt;110 mm AND: • Appetite • Clinically well • Alert</td>
<td>70-80% of median WFH (&lt; -3 SD-score to &lt; -2 SD-score) AND no edema OR mid-upper arm circumference 110-125 mm AND: • Appetite • Clinically well • Alert</td>
</tr>
</tbody>
</table>

**Notes on the classification:**

1. WHO/IMCI does not have a category for moderate malnutrition with complications. WHO contends that there is no need to stabilize children with moderate acute malnutrition, even if they have complications.

2. This classification does not take into account the different grades of edema. Some agencies have treated children with grade 1 (i.e., edema +) and no other complications in the malnutrition-without-complications category and children with grades 2 and 3 (i.e., edema ++ and edema ++++) in the malnutrition-with-complications category. Others have treated all cases with edema, irrespective of grade, as malnutrition with complications, requiring admission to center-based phase 1 treatment. This area needs further research and clarification.

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adverse consequences both for patients and the management of emergency nutrition programs. It needlessly exposes them to additional risks of cross-infection and forces the caregiver to spend time away from family and daily activities. At the same time, admitting children who do not need inpatient care leads to overcrowding in TFCs, reduces the impact of treatment interventions and increases unit costs. By contrast, not admitting cases of moderate malnutrition with complications for inpatient care is likely to increase morbidity and mortality and decrease the effect of emergency nutrition programs.

3. How is the CTC approach implemented?

The planning stage involves dialogue with target communities and local authorities to ensure sensitization and agreement regarding the aims and methods of the program, admission criteria and screening and location of distribution sites.

Initially, an SFP is established rapidly. An OTP program is added to the SFP and all severely acutely malnourished children enrolled in the OTP receive RUTF and are treated using simple medical protocols on a routine basis. Children return weekly or, in some cases, every two weeks for monitoring. The OTP can be set up in a few days. This initial implementation stage is accompanied by increased focus on community mobilization to increase participation and understanding of the program. In the middle stage, SCs within existing structures are improved and strengthened to provide individual care for malnourished children with complications. New SCs are established where no previous infrastructure exists only when absolutely necessary, and after basic SFP and OTP services are up and running.

The final stage of “full CTC” involves extensive use of volunteer community mobilizers working with employed outreach workers. These volunteers and outreach workers follow up malnourished children at home, provide support, encourage return of defaulters, and actively find new cases. Efforts are made to integrate the program with other sector programs, as well as initiating the local production of RUTF where appropriate. Figure 2 shows how a typical CTC program evolves over time.
4. What is the difference between CTC and home-based treatment (HBT)?

Home-based treatment (HBT) is a generic term used to refer to the treatment of malnourished children at home. It has often been used to refer to the treatment at home in the rehabilitation phase (i.e., phase 2) following phase 1 inpatient care in a TFC. In some cases, the terms CTC and HBT have been used interchangeably. However, it is acknowledged that there is a distinction between CTC and HBT in terms of principles, objectives, and implementation strategies.

Several organizations have been piloting ways to treat severe malnutrition at home. These HBT models have been called “home treatment,” “ambulatory treatment,” and “community feeding centers” and differ from CTC in that they essentially see treatment at home as “a progressive development from the TFC to the community” and believe that emergency strategies should be developed from the existing TFC model. By contrast, CTC is predicated upon the public health principle of maximizing program impact and cost effectiveness through access and high coverage. These differences in underlying principles can have important practical consequences. CTC programs engage primarily at the community and household level before adding SCs for the small proportion of children that require it.

5. What is Ready to Use Therapeutic Food (RUTF)?

Ready to Use Therapeutic Foods (RUTF) are specifically designed for the treatment of severe acute malnutrition. Currently, there are two commercial RUTF products available: an energy dense peanut paste called Plumpynut® that is produced and distributed by the French company, Nutriset, and a bar called BP100 made by Compact, Denmark. Both of these products are nutritionally equivalent to the F100 milk-based therapeutic product, which is widely used for the inpatient management of severe and moderate malnutrition during the rehabilitation phase of treatment for infants and children.

RUTF has significant advantages over liquid based diets. The paste is oil-based with low water activity and, as such, can be stored at home with little risk of microbial contamination. It is easily used at home by mothers and caregivers, and is digestible and popular among sick and malnourished children and adults. RUTF is effective in promoting rapid weight gain in malnourished children. Plumpynut® contains ground, cooked peanuts, oil, sugar, powdered milk, and a multi-micronutrient mix. Most CTC projects use imported Plumpynut®, which is packed in foil wrapped sachets of 92g/ or 500 kcal/sachet with a shelf life of up to 18 months. Plumpynut® costs approximately $3500/MT.

The high cost of the imported RUTF is a significant barrier to the wide-scale implementation of CTC. To overcome this barrier, the CTC program currently promotes local production of RUTF. Local production of RUTF has been successful in Malawi. The cost of the local version is about half that of the imported version. The locally produced RUTF...
follows the same recipe as original Plumpynut® and is packed in 250g plastic jars with a shelf life of up to six months. Comparison efficacy studies demonstrate that the locally produced RUTF is nutritionally equivalent to the imported version.  

6. What are the results from the CTC program to date?

To date, CTC programs have treated over 7000 children in Sudan, Ethiopia, and Malawi. Results from CTC interventions have shown lower mortality rates, fewer drop-outs and better coverage than standard center based approaches. CTC programs have also shown that implementing many decentralized distribution and monitoring access points instead of a few inpatient TFCs results in better coverage and is preferable to caregivers and communities, as demonstrated by anthropological studies conducted in Malawi and Ethiopia. The CTC approach demonstrates that when people have easier access to services and sufficient information, they tend to present to the program earlier, often before serious complications arise. The CTC program has demonstrated that children suffering from severe acute malnutrition without complications can be safely treated at home. Results from four completed pilot programs in Ethiopia and Sudan show that mortality rates have met Sphere minimum standards. Cure and default rates also met Sphere standards in three out of four programs. Interim data from ongoing CTC programs in Malawi and Ethiopia suggest similar outcomes.

The CTC Program

The CTC program is a multi-donor funded two-part program managed by Valid International, a U.K.-based organization specializing in operational research in emergencies. CTC is implemented in North and South Sudan, Malawi, and Ethiopia by NGOs including Concern Worldwide and Save the Children/U.K., Tearfund, and Save the Children/U.S. A multi-disciplinary team working under the direction of Valid International is conducting operational research to monitor the effectiveness of CTC in different contexts.

Since early 2003, USAID’s Bureau for Democracy, Conflict and Humanitarian Assistance/Office of U.S. Foreign Disaster Assistance (DCHA/OFDA) and the Bureau of Global Health have been supporting FANTA to work with Valid International and its partners to conduct studies in the “proof of concept phase.” The findings of these studies will better inform donors and program managers about the merits and limitations of the CTC approach. Currently the CTC program is focusing on the expansion, development and refinement of the CTC approach. Details of the CTC program can be found at www.fantaproject.org.

12 Data from Valid-supported CTC programs in Ethiopia, Sudan, and Malawi, 2000-2003.
16 Studies supported by FANTA in Year 1: a) Investigation of the alternative formulations of RUTF; b) Ethiopia study of lessons learned through implementation of CTC in a large-scale emergency; c) Malawi study of standard of care for the severely malnourished provided through Nutritional Rehabilitation Units (NRUs) compared with outpatient treatment using locally produced RUTF.
Average rates of weight gain in CTC programs are between 4.4-7.6 g/kg/day, which is lower than the international minimum standards (>8 g/kg/day). Lengths of stay are between 36 and 80 days, and are longer than the international recommendations of 30 to 40 days. Since severely malnourished children are vulnerable to infection, rapid recovery and high rates of weight gain have traditionally been seen as important features of successful treatment and rehabilitation programs. However, in outpatient programs, severely malnourished children are not removed from their home environment and are not congregated together. This means that exposure to infection and the risks associated with treatment are likely to be lower than in TFC/NRUs making the rate of recovery a less important determinant of program success. Rate of weight gain is dependant upon the amount of RUTF eaten by the specific child, as well as the absence of infection and positive caring and feeding practices. In Ethiopia, mothers and caregivers of children with high rates of weight gain are teamed with those not doing as well to curtail sharing and improve feeding practices. This has been shown to positively influence outcomes.

Coverage is a key determinant of impact in any humanitarian intervention. Initially, coverage in the CTC projects was assessed using standard Expanded Program of Immunization (EPI) methods. Using this method, coverage of a CTC program in North Sudan was found to be up to three times greater than coverage estimations for a TFC project operating in the same location, and much higher than those usually reported for TFC projects. However, EPI methods for coverage assessment yield wide confidence intervals, rendering them meaningless. The CTC program has therefore developed a new direct method of assessing project coverage, known as centric systematic area sampling (CSAS). This method has been field tested in Malawi to compare coverage of the CTC project in Dowa district with that of traditional TFC operating in the neighboring district. The field trial study estimated CTC program coverage at 74 percent and TFC coverage at 26 percent. The study also found that participants of the CTC program were more fairly spread throughout the district, whereas participants of the TFC program were clustered around the TFCs.

Comparisons to date between CTC and TFCs in Sudan and Malawi strongly suggest that CTC achieves greater impact than TFCs:

- Mortality rates (between 10 and 50 percent of those seen in TFCs.)
- Default rates (between 10 and 50 percent of those in TFCs.)
- Coverage rates (two to five times greater than TFCs.)

Results from HBT programs conducted as part of the CTC program also show positive outcomes. A pilot study in Malawi demonstrated the efficacy of HBT programs using RUTF at home for the severely malnourished after a period of initial inpatient/stabilization in an urban based referral hospital Nutrition Rehabilitation Unit (NRU). Two current studies in Malawi aim to test whether HBT is feasible in rural-based NRUs and in an urban-based NRU attached to a central referral hospital with very high HIV/AIDS prevalence. Results to date suggest that treatment at home with RUTF in the rehabilitation phase (i.e., phase 2) after a period of stabilization can be effective. The rural-based study comparing the
The standard of care (i.e., receiving treatment according to national and WHO protocols)\(^\text{25}\) in seven rural NRUs and HBT using RUTF found that children receiving RUTF at home were more likely to reach their target weight, less likely to die, had greater rates of weight gain, and less fever, cough, and diarrhea than those in standard care.\(^\text{24}\) Similarly, a switch to HBT in phase 2 in the urban-based study at the Blantyre Queen Elizabeth Hospital NRU has been associated with a reduction in mortality.\(^\text{27}\) These findings demonstrate that HBT using RUTF may be successfully used to address acute malnutrition within existing systems. However, challenges remain in expanding coverage and following up defaulters these programs.

7. Is the CTC approach cost-effective?

Most of the CTC programs are either ongoing or have only recently been concluded, and there are presently limited cost data available. Full cost analysis will need to be conducted once programs have been completed. Preliminary cost data for the CTC programs operated by Concern Worldwide in Sudan, Malawi, and Ethiopia suggest that cost per beneficiary is $250-$400, which compares favorably with TFC programs.\(^\text{28}\) The CTC and TFC approaches differ with regard to the potential for economies of scale. The TFC model is a fixed capacity model — once a center is full, other centers must be built involving similar additional capital expenditure.

The CTC approach has high initial capital costs, which include recruiting and training mobile teams, transportation, instituting decentralized logistics for food, and mobilizing the population. However, once these are in place, the approach has the potential to treat large numbers of severely malnourished children with few additional capital or fixed costs. In addition, CTC programs have scope to develop from an emergency intervention to a long-term program. As such, the costs to date can be seen as an investment in structures and processes that will allow for a more sustainable program to treat severely malnourished children.

An important feature of CTC is that the burden of costs falls more on the implementing agency and less on the program beneficiary. Traditional center-based programs often incur significant costs for caregivers and families of enrolled children primarily because caregivers are removed from their families for up to a month, in order to stay with the child in the TFC. Siblings of the malnourished child are often deprived of care for this period. Furthermore, the caregiver is unavailable to work in the fields or participate in other income-generating activities. The costs to beneficiaries and their communities are largely avoided in the CTC model.

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Workshop on community approaches to managing severe malnutrition: Dublin, Ireland, October 2003

In October 2003, Concern Worldwide and Valid International organized a workshop in Dublin, Ireland. The workshop brought together key players around the management of severe malnutrition, including implementers of CTC and HBT, as well as technical advisors, academics, bilateral donors, and multilateral agencies. The objectives were to compare lessons learned after three years’ implementation experience, compare similarities and differences in CTC and HBT protocols among agencies, and identify knowledge gaps.29

The workshop highlighted several areas that require further discussion and research, including:

- Detailed cost analysis comparing CTC/HBT and standard center-based approaches;
- Determination of appropriate nomenclature for CTC and HBT;
- Determination of where, when, and in which context CTC/HBT is appropriate or not;
- The wider use and implications of RUTF for people living with HIV/AIDS and for use in replacement feeding;
- Documentation of the lessons learned, challenges, and implications of transition and handover to Ministries of Health and communities; and
- Development of treatment protocols for infants less than 12 months in CTC programs and for patients with edema.

For more information, visit the FANTA website at www.fantaproject.org.

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8. What are the ongoing and planned activities?

Given the promising results to date, the CTC program will build on acquired knowledge and experience and expand implementation. This will include:

**Rolling out CTC:** CTC will be expanded in a controlled manner to explore and test various modes of replication and scaling up. It is necessary to ensure that new agencies and partners adopting the CTC approach have sufficient technical expertise for implementation. Initially, CTC will be rolled out in Malawi and Ethiopia.

**Refining CTC concepts:** This includes further developing the community empowerment aspects of CTC to enhance impact and reduce costs. It also includes refining new methods for assessing coverage and prevalence of malnutrition and case finding.

**Expansion of local production and testing of alternative formulations of RUTF:** This includes testing alternative formulations of RUTF that do not contain peanuts or milk but have a comparable nutritional composition to Plumpynut®. Avoiding peanuts will reduce the risks of aflatoxin contamination and allergic reactions and eliminating milk powder from the formulation should reduce the cost. This also includes supporting the local production of RUTF and in-country distribution mechanisms as well as linking local production of RUTF to food security, agriculture, and micro-enterprise programs.

**Using CTC as an entry point to support other interventions:** CTC can be an entry point into communities to enhance the credibility of other public health/food security interventions such as community-based care for people living with HIV/AIDS. Experience to date suggests that CTC is a viable approach for the treatment and support of HIV-infected and affected children, adults, households and communities. Valid International, FANTA and SARA/AED are exploring CTC as an entry point to HIV/AIDS care in Malawi.30

**Development and dissemination of guidelines and protocols:** CTC guidelines detailing protocols and experience learned to date will be developed. The guidelines and protocols will be published as a manual, and training workshops are planned.

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30 FANTA and SARA projects at AED and Valid International are conducting a study in Malawi to examine how the CTC approach can be used to support HIV/AIDS infected and affected individuals, households, and communities. This study is supported by USAID.
In summary, experience to date has shown that CTC:

- Provides a promising alternative approach for selective feeding in emergencies and transition programming;
- Meets or exceeds mortality, default and recovery rates against Sphere minimum standards;
- Achieves high impact in terms of coverage;
- Is well accepted by beneficiary communities and local and national authorities;
- Appears to be cost-effective in comparison to TFC/NRU approaches; and
- Differs in guiding principles from the standard TFC/NRU approaches used to date.

The emphasis in CTC approach is to start in the community and obtain high coverage first. The addition of coverage in the Sphere minimum standards for emergency nutrition programs reflects this public health impact perspective. 31

For more information about Community Therapeutic Care visit:

www.fantaproject.org
www.validinternational.org
www.concern.ie
www.ennonline.net

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