Evaluation of the outpatient therapeutic care programme, Save the Children UK, North Darfur, Sudan, 2001

Summary of key findings

Acknowledgements:
Many people contributed their expertise and commitment to this project and its evaluation and they deserve our thanks. The consultants who have been involved in the project cycle are: Steve Collins (surveys and project design), Yvonne Grellety (evaluation) and Mark Myatt (surveys and evaluation). This report draws on project documents, survey reports and the consultants' reports.

Context of the programme

North Darfur experienced a severe drought in 1999 and 2000. This caused widespread crop failure, disruption to markets, decrease in the earning power of all families and a generalised decline in food security.

In October 2000, the annual assessment of food needs undertaken by SC-UK and the Development & Rehabilitation Committee (DRC) of north Darfur, concluded that during 2001 between 17,192 and 26,057 MT of relief grain would be required, in order to prevent loss of life and destitution. The report recommended that this food be distributed from March 2001, to preempt the start of an extended hunger gap and to ensure that food was available before the planting season in July.

Despite efforts repeated efforts by SC UK from October 2000 onwards to advocate for a response, it was not possible to mobilise donor support for food distribution. It had been hoped that a general ration would be distributed to prevent a further deterioration of the food security situation.

Nutrition surveys carried out in April revealed the following rates of malnutrition and it became clear that supplementary and therapeutic feeding would be needed to prevent further loss of life in the population under 5[1].

- *Global* (< -2 z-scores or oedema) = 23.4% (95%CI 21.8 – 25.0)
- Severe (< -3 z-scores or oedema) = 2.1% (95% CI 1.6 – 2.6)

On the basis of the survey results, blanket supplementary feeding was proposed for all 21 rural councils. Again it was not possible to secure donor support for this. A proposal was made for targeted supplementary feeding in the six worst effected rural councils and funding was secured from DfID. USAID subsequently indicated that it could make US$500,000 available so it was possible to include a further 4 rural councils in the programme. The rural councils were selected on the basis of the severity of their situation according to the nutrition survey results (calculated by food economy zone) and the Food Economy reports[2]. A general ration distribution of 15,000MT of grain was also made between May and October.

[1] For full results see Collins, S., 2001, The dangers of rapid assessment. Field Exchange Issue 13. ENN
[2] Particular attention was paid to prioritising the prevention of distress migration.

Once funding was secured, SC UK implemented an outpatient therapeutic feeding programme (OTP) with a ready to use therapeutic food (RUTF[3]) which enrolled and treated 836 severely malnourished children and a targeted[4] supplementary feeding programme enrolling approximately 24,000 children and 23,000 pregnant and lactating women in 10 rural councils of North Darfur during the period August 11-December 12 2001.

Other emergency interventions included: DfID and ECHO funded SC-UK to drill/ rehabilitate 151 shallow wells or hand-pumps. The government of the Netherlands funded the provision of free basic drugs to dispensaries and clinics in 4 of the 22 rural councils. USAID funded a measles vaccination campaign.

Outpatient Therapeutic Programme design and content

Children were screened in the first instance using MUAC and by checking for nutritional oedema. Children 12-59 months with a MUAC <115mm and children 6-11 months with a MUAC < 110mm were measured immediately using weight for height. Children aged 6-11 months with MUAC 110-115mm and children aged 12-59 months with MUAC 115-119mm immediately received supplementary food and were measured using weight for height one week later[5].

Children <70% weight for height or with nutritional oedema were immediately seen by the medical team comprising a medial assistant and team nurse. Children with oedema, severe dehydration, no appetite and visibly not eating RUTF when offered, temperature >39 degrees, increased respiratory rate (> 35 if over 2 years, > 40 if 1 - 2 years or > 50 if less than 1 year) or any sign of illness were referred in the first instance to a hospital (four hospitals were being supported by GOAL to give therapeutic care). Where a child could not be taken to the hospital due to the distance, they were referred to a stabilisation centre (3 of these were set up in health centres located in areas least accessible to the hospitals).

Treatment in the stabilisation centre included: rehydration[6] where necessary, treatment with a systematic antibiotic (amoxicyllin) and fansidar, folic acid, vitamin A, measles vaccination, feeding with F75 by naso-gastric tube and daily examination and monitoring.

Children were discharged from the stabilisation centre to the OTP when appetite was shown to have returned by the successful eating of RUTF for more than one day. Children were referred to the hospital if they vomited more than 50% of the feed after 6 consecutive meals, had a body temperature >39C or had a high respiratory rate or failed to regain appetite after 5 days in the stabilisation centre.

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[3] Nutriset Plumpy Nut was used.

[4] Children were admitted according to MUAC criteria and not discharged from the programme. This allowed a greater number of children to benefit from the programme than would have been possible with standard weight for height entry and exit criteria. This was desirable given the limited available support to households.

[5] MUAC cut offs were calculated using sensitivity and specificity analysis of weight for height and MUAC data on a sample of 733 children at the first distribution's screening session

[6] Water, ORS and sugar were used (using the recommended recipe) for rehydration as CMV or Resomal were not available to the programme.

Children admitted into the OTP received a systematic antibiotic (amoxycillin), chloroquine (according to the Ministry of Health treatment guidelines), folic acid, vitamin A, measles vaccination and 14 packets of 0.92g and 500 kcal RUTF per week. Children in the OTP were visited daily by the Community Nutrition Worker (CNW) who checked the child for appetite (sachets of RUTF eaten the previous day), diarrhoea history, thirst, dehydration and the presence of a carer and watched the child consume RUTF. Children had a full examination weekly by the team nurse or medical assistant (health professional category just below a doctor in Sudan) and their weight for height was recalculated.

The CNW was also responsible for the identification of severely malnourished infants through community screening, instruction in the use of therapeutic foods through home visits, the identification (alongside the medical assistant and nurse) and referral to inpatient units of severely undernourished children who failed to thrive in the outpatient program due to anorexia or co-morbidity, hygiene promotion activities and the distribution of soap to mothers of severely undernourished children with skin diseases, the promotion of the use of ORS through home visits and to act as a 'contact point' between the community and other elements (e.g. the clinical team) of the outpatient therapeutic program.

Children were discharged from the OTP to the supplementary feeding programme when they had reached 75% weight for height for 4 consecutive weeks.

In total the programme had 100 distribution points and employed 290 field staff including medical assistants and nurses, CNWs, and Team leaders.

A note about data quality

A comprehensive monitoring system was put in place to monitor the programme outcomes as it was a new type of intervention for SCUK. The data system was specially designed for the programme but proved to be inadequate and would have to be substantially revised for any future programme. One of the reasons may have been that the programme had to start quickly because the rains were forecast which had the potential to severely hamper distributions. Specific problems encountered were inconsistencies between daily and weekly reporting forms, some children's outcomes not reported at the end of the programme due to the rush to close and the failure of the system to track children through OTP and SFP.

Outpatient Therapeutic Programme outcomes

Table 1. Key outcome indicators for quality of care for the 3 months of operations in the OTP

	Average percentage	range
Discharged to supplementary feeding programme	81.4	(48-100)
Defaulted	10.1	(0-36)
Died	2.9	(0-7.7)
Transferred (to TFC, hospital or dispensary)	5.6	(0-15.4)

Mortality:

A mortality rate of 2.9% is very low and well within Sphere standards. However, the mortality rate is difficult to interpret because children were discharged to supplementary feeding after reaching 75% weight for height and some of these children may have subsequently died. Using the Prudhon index the *expected* mortality was calculated based on i) the death rates achieved in conventional but well run TFCs using internationally recognised protocols, ii) the anthropometric / oedema profile of children admitted into the OTP, iii) the deaths which can be expected in the period from admission to discharge at 75% weight for height, and iv) using a correction factor to take in account the transfer of children (potentially the most sick) to other facilities[7]. The expected number of deaths was compared to the observed deaths in the OTP. Half (51%) of expected deaths of children without oedema (n=744) were actually observed while almost all (92%) those expected occurred for children with oedema (n=62). Rates did vary according to location (see ranges in Table 1).

Other indicators:

The average rate of *defaulting* was skewed by the high rate of defaulting in one location where the largest number of children were admitted (El Fasher town) and where up to 34% of children defaulted. This was mainly because the children were from pastoralist families who only stayed in the town for a few days at a time. 36% of children defaulted from another location (Tina) in the pastoral area where only 24 children were admitted. Discharge rates were therefore also low in these two centres. With the exception of these two locations, defaulting rates in the other 9 locations remained below 14%. *Readmission* rates were approximately 1.0% of total admissions.

Mean length of stay was estimated at 25 days for wasted children and 35 days for oedematous children. This data, once again has to be interpreted in the light of the discharge criteria of 75% weight for height compared to the usual 85% weight for height.

Mean weight gain was 6.6g/kg/day for wasted children and 1.8g/kg/day for oedematous children.

Children in the stabilisation centres:

Only 17 children were admitted to the stabilisation centres, three children in total died though two died after discharge to the OTP and are therefore included in the death rate in table 1.

[7] If transfer rates are not taken into account, mortality rates can appear very low if all complicated / high risk cases are transferred

Coverage:

Table 2: rough estimates of coverage by OTP location

Rural council	Maximum coverage of OTP (exc TFC) %	95% Confidence interval
Al sayah	56	23-156
El fasher rural	39	21-81
El fasher town	24	12-49
Karnoi	53	21-137
Korma	50	27-104
Malha	25	10-70
Mellit	58	24-162
Rohal	10	4-27
Tauwilla	30	16-62
Tina	20	8-52
Umborro	11	4-28
Total	32	15-71

Table 2 shows the range of estimated coverage rates achieved by rural council. The rates are comparable to rates achieved in well-run TFCs operating in high population densitites. More children were admitted in locations where prevalence of malnutrition was higher. Taking into account the children admitted into the hospital the presence of TFCs did not increase coverage substantially (35% (17-79)).

There are two possible reasons for the lower than expected coverage rates. First, part of the programme period overlapped with the planting season which affected the rate of admissions into the programme and second a miscalculation was made in setting the registration targets which may have affected the rate of case finding.

The estimates in Table 2 are problematic for several reasons:

1. *It was not possible to estimate coverage with an anthropometric survey during the* project period. The numerator is the total number of children admitted (minus readmissions and transfers) over the 3-month project period. Coverage should be estimated at a single point in time and could therefore be as little as a third of the estimated coverage in Table 2.
2. There are the usual problems in accurate estimates of population figures. These figures are based on 20% of the population being being under five years, whereas the Bureau of Statistics recommends this figure to by 16.6%. The data for the pastoralist areas could underestimate the real coverage due to overestimation of population in these areas. Both of these factors could mean that the coverage figures are underestimated.
3. The estimates of malnutrition were based on a survey conducted in April 2001 and compared to children admitted into the programme August – December 2001. Malnutrition could have increased in the run up to the harvest in October / November or, as in west Darfur, could have declined.

Table 3: acute malnutrition before and after the intervention

Food Economy Zone	April 2001		January 2002	
	Global acute *malnutrition* (WHZ) (CI)	Severe acute *malnutrition* (WHZ) (CI)	Global acute *malnutrition* (WHZ) (CI)	Severe acute *malnutrition* (WHZ) (CI)
Goz	31.3 (27.2-35.5)	3.0 (1.9-4.7)	8.7 (6.5-10.8)	0.3 (0-0.6)
Tombac	20.3 (17.1-23.4)	2.7 (1.5-3.9)	11.8 (9.0-14.7)	3.5 (1.5-5.5)
Pastoralist	26.1 (22.4-29.7)	1.7 (0.7-2.7)	18.5 (14.7-22.3)	2.2 (1.2-3.2)
Non-wadi	18.9 (15.6-22.3)	1.1 (0.7-3.2)	9.9 (7.2-12.5)	0.7 (0-1.3)

Table 4: Under five mortality rates (3 month[8] retrospective survey using previous birth technique)

Food Economy Zone	Rate per 10,000 per day
Goz	0.92 (0.4-1.44)
Tombac	3.78 (3.07-4.49)
Pastoralist	0.23 (0.02-0.43)
Non-wadi	0.65 (0.25-1.05)

Table 3 shows that rates of global acute malnutrition have declined significantly in all food economy zones since April 2001, though rates of severe malnutrition have only declined significantly in the Goz area. Rates of severe malnutrition remained high in January 2002 in the Tombac area and in contrast to all other areas (and the April survey), 96% of the severe malnutrition was oedematous. The Tombac area was also the only area where severe malnutrition measured by MUAC (<110mm) gave a higher prevalence than severe malnutrition measured by weight for height. The Tombac area is also the area with the highest under-five mortality rate. In all other zones the under-five mortality rates were acceptable. It is interesting to note that the decline in prevalence of global acute malnutrition was least dramatic in the pastoral food economy zone suggesting that people dependent on livestock for the livelihoods are the slowest to recover after a bad year.

Conclusions

It was hoped that outpatient therapeutic care would offer the following programmatic advantages:

- It would avoid having to set up many TFCs which would have been beyond the capacity of any operating agencies because the large area and scattered population would have required the construction, staffing, and equipping of dozens of TFCs in order to achieve acceptable levels of coverage and equity of provision. It would therefore allow a decentralised programme which maximised access, and therefore coverage, to be implemented.
- It would avoid having children concentrated in centres risking cross infection and being subjected to ill trained medical staff
- It would allow the community greater participation in the programme and reduce the cost to families of participation in an inpatient programme
- It may be cheaper than TFCs as the technical staff costs and physical infrastructure costs of centres would be reduced.

[8] average of 82 days for retrospective mortality survey conducted January 2002

In reality, the programme admitted 836 children which is probably several times more than a therapeutic feeding programme could have achieved within a 5-month period (from funding to closure) in North Darfur. Mortality rates were very low, probably due to a combination of not being presented with the risk of poor care and cross infection in a TFC and because rates of oedema and complicated malnutrition were low. The reduced costs to the community through a decentralised programme have not been evaluated but the overall programme costs (approximately £260 per child) do not vary substantially per beneficiary from costs per child in a TFC Coverage rates were not as high as hoped though they were of the order achieved in well run TFCs in areas of much higher population density. Defaulting rates were generally very low except in the pastoral areas.

The future replicability of this programme needs to be considered in the light of the fact that in N Darfur Save the Children has

i) a good knowledge of both the macro-economic and micro-economic (i.e. household food economies) context of the intervention setting
ii) a good knowledge of the geography of the intervention setting
iii) ready availability of qualified staff and other resources such as offices and vehicles
iv) good relations with the intervention population
v) good relations with local government officials at all levels
vi) good relations with the government health systems allowing local health staff (i.e. medical assistants and nurses) to be seconded to the program for both service delivery and training of community nutrition workers as well as the use of primary and secondary level health facilities
vii) strong leadership and good support from SC (UK) national and international offices
viii) the existence of a strong community ethic in the intervention population and
ix) the availability of a ready to use therapeutic food (RUTF) acceptable to the intervention population.

These factors undoubtedly contributed to the success of the OTP. However, it should also be pointed out that North Darfur does not provide an easy operating environment and the food security situation was severe. The success of the OTP programme suggests that agencies, with adequate technical support, should make efforts to explore and carefully analyse the options for programming which RUTF presents.

Future recommendations

The results of the evaluation from the programme in North Darfur give grounds for cautious optimism. The programme was implemented with strong technical support in the phases of design and early implementation, was thoroughly and independently evaluated and the results have been disseminated. We consider these to be essential components of any future work using RUTF or aiming to treat children with severe malnutrition outside of the TFC or hospital setting. There are also some priority areas for research and analysis in any future pilots of outpatient care:

1. More experience on the potential complementary functions of traditional TFCs, hospitals, stabilisation centre (as conceived in Darfur) and outpatient care. Appropriate protocols for each level need to be developed and models for systems of referral need to be piloted.
2. How the needs of children <6 months old and <4kg or with oedematous malnutrition can be addressed in a programme with an outpatient component.
3. More careful analysis of the varying weight gains which children achieve on RUTF is required to understand its suitability for different conditions.
4. The long term prognosis for children receiving outpatient care compared to those who are discharged from a TFC should be evaluated.
5. The extent of the reduced cost to communities of a decentralised outpatient programme compared to an inpatient programme should be examined.
6. Whether there is greater opportunity for improved psychosocial stimulation during therapy through an outpatient programme than an inpatient programme should be reviewed.
7. The degree of compliance with systematic antibiotic / micronutrient regimens that can be sustained in an outpatient programme should be examined
8. Priority should be given to the use of other suitable RUTFs such as BP100 and to the development of more scientifically evaluated products with a view to reducing prices. Currently the price of Nutriset Plumpy Nut is prohibitive for routine use.
9. Adequate monitoring systems based on those used for inpatient care should be established.

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