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Cost-Efficiency and Cost-Effectiveness Study of UNICEF “Cash Plus” Interventions in Lebanon and the Democratic Republic of Congo

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ACRONYMS

ARCC	Alternative Responses for Communities in Crisis
BCZ	Bureau Central de la Zone de Santé
CEA	Cost-effectiveness analysis
cRCT	Cluster randomised controlled trial
CT	Cash transfer
CTR	Cost transfer ratio
DPSC	Direct programme support cost
DRC	Democratic Republic of Congo
FCS	Food consumption score
FSP	Financial service provider
HACT	Humanitarian assistance cash transfer
HCT	Humanitarian cash transfer
IMAM	Integrated management of acute malnutrition
IPC	Indirect programme cost
MEHE	Ministry of Education and Higher Education
MUAC	Mid-upper arm circumference
NLG	No Lost Generation
NGO	Non-governmental organisation
OTP	Outpatient therapeutic programme
PC	Programme cost
RACE	Reaching All Children with Education
RUTF	Ready-to-use therapeutic food
SAM	Severe acute malnutrition
UNICEF	United Nations Children's Fund
WFP	World Food Programme
WHZ	Weight-for-height z-score

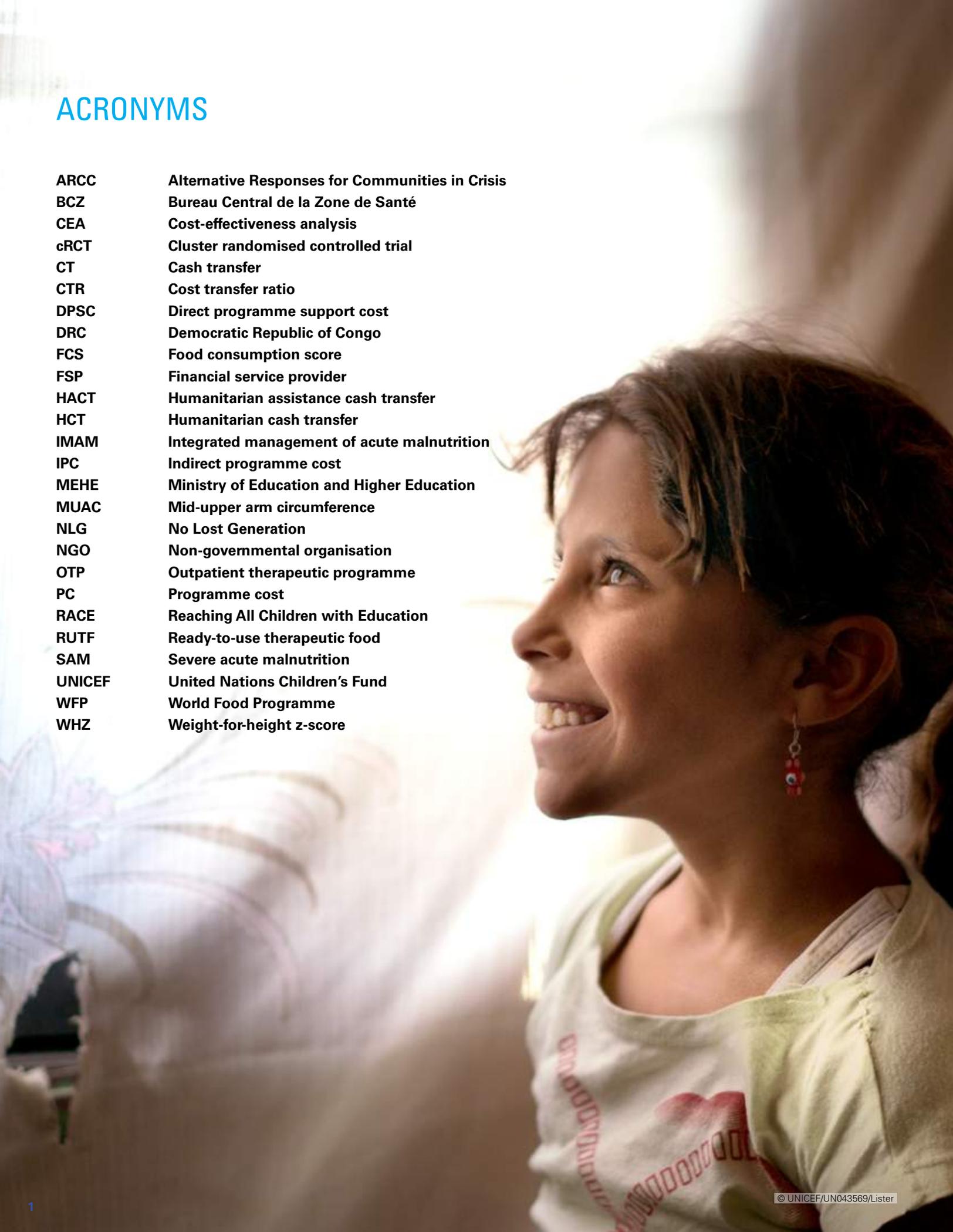


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Executive Summary

Background

As humanitarian assistance increasingly shifts towards cash-based approaches, there is a concurrent demand for greater evidence demonstrating the comparative advantage of the cash modality compared to more traditional in-kind assistance. Borrowing from fields such as health economics and decision science, studies on the relative cost-efficiency and cost-effectiveness of one intervention compared to another have been on the rise within the humanitarian community. Such methodological approaches of economic analyses can provide valuable information on the relationship between resource expenditure and programme results, leading to more evidenced-based decisions on resource allocation. Several challenges are in play, however, such as a general lack of consistent and transparent application of costing methods making comparisons unreliable. Misunderstanding of how to interpret results of cost, cost-efficiency and cost-effectiveness studies, including the tendency to inappropriately compare single stand-alone values stripped of critical contextual factors, diminishes the potential analytical power of such studies.

Towards a standard costing methodology

The United Nations Children's Fund (UNICEF) is taking steps towards the standardisation of collecting and analysing cost for use in economic evaluations of humanitarian cash transfers (HCTs) such as cost-effectiveness analysis. Two UNICEF "cash plus" programmes were selected as case studies from which to develop a common methodology towards costing. A mixed-methods approach was developed, relying predominantly

on existing retrospective accounting data, supplemented and cross-validated with data collected in document reviews and key informant interviews. Through the process of collecting and analysing cost data in these two case studies, recommendations for standard practice in costing methods emerged, for example, on how to treat jointly-shared resources such as support personnel. The cost-efficiency metrics used in both studies were similar – cost per beneficiary and cost transfer ratio (CTR) – since both studies were focused on the HCT component. The CTR is the programme implementation cost for every dollar delivered in cash to beneficiaries. The cost-effectiveness metrics were specific to each study since each programme was carried out in service of different objectives and therefore measured different outcomes.

Case study results

The two "cash plus" case studies were on the following programmes:

- Six cash transfers in the amount of \$40 monthly to 674 households with a child receiving treatment for severe acute malnutrition (SAM) in the central Democratic Republic of Congo (DRC).
- Eight cash transfers to 21,600 refugee households in Lebanon for each child registered in primary school education in the amount of \$20 monthly for children aged 5-9 and \$65 monthly for children aged 10-14 at registration.

In the DRC it was found that adding the cash transfer component cost approximately \$420 per child and the CTR was 0.95. The cash transfers had the effect of improving recovery rates, lowering

treatment default rates, lowering relapse rates, and improving the proportion of households with an “acceptable” food consumption score. Each of these results cost between \$1,400 and \$9,060 per case.

In Lebanon it was found that adding the cash transfers to the provision of primary schooling for refugee children cost \$210 per child and \$590 per child aged 10 and above. This difference in cost per child is entirely due to the difference in transfer value. The CTRs were 0.28 and 0.09 for the younger and older children, respectively. Children receiving the cash transfers attended more school on average than those who did not, and there were additional benefits to health and food security among the cash-receiving group of children. It cost \$12 per additional day of school attended by the younger children, and \$44 per additional day attended by the older children. An investment of \$100 led to an increase of over eight days of attendance among the younger children and more than two days among the older children. Improvements in health and food security were generated at a cost of between \$4,400 and \$6,900 per case.

Discussion

The CTR results found in these two studies are within the range of averages reported in other studies. The relatively high ratio in the DRC is a function of the small scale of the intervention, lower household total cash transfer amount, the low penetration of electronic financial infrastructure and the challenging and costly working conditions. Meanwhile, in Lebanon the cash transfer programme was implemented at a large scale, with a higher total household cash transfer amount, and

was delivered electronically, thereby leveraging economies of scale and automation.

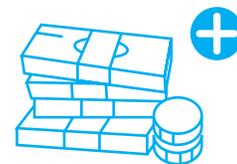
Due to the nature of the methodology, cost-effectiveness results must be presented as the ratio of total indivisible cost compared to one outcome at a time; cost-effectiveness analysis (CEA) cannot combine multiple outcomes into a single impact denominator. Programmes that transform inputs into changes in multiple outcomes, such as cash transfers, will therefore usually appear less cost-effective than those that have a narrower range of outcomes. Yet, cash transfers often confer a broad range of concurrent improvements in multiple facets of child and household wellbeing.

Limitations and recommendations

- Cost, cost-efficiency, and cost-effectiveness results must always be interpreted within the context in which the programme is being implemented and caution must be applied when making comparisons across contexts.
- Work towards greater standardisation and transparency in costing methods should continue, thereby improving the generalisability of results.
- Results from economic analyses are one of multiple factors to be considered when making decisions around resource allocation, especially in the humanitarian sphere. Equity in resource allocation, the unmet needs of underserved vulnerable populations, multiplier effects in the local economy, potential longer-term impacts, and avoidance of future costs are important considerations that are rarely included in such studies.



BACKGROUND



Recent trends in aid delivery have seen an increase in the combination of cash transfers to households alongside in-kind aid provision or service delivery, sometimes termed “*cash plus*” or “*cash+*”. This shift has been driven in part by the growing recognition that in order to achieve any lasting impact it may be necessary to simultaneously address both supply-side and demand-side barriers to the achievement of minimum standards of wellbeing. *Cash+* programmes may therefore be more effective and cost-effective over the longer term than standalone programmes that address just one type of barrier.

Amid an overall emphasis on improving aid effectiveness and efficiency, there is a growing demand for more evidence on the comparative effectiveness and cost-effectiveness of *cash+* interventions to achieve improvements in multiple aspects of human wellbeing. Emergent evidence has demonstrated that cash transfers are often more cost-efficient¹ compared to other aid modalities. However, there remains limited evidence on the comparative cost-effectiveness² of cash transfers, either as a standalone intervention or in combination with other programme components in a *cash+* intervention.

Yet, despite the burgeoning interest in cost-efficiency and cost-effectiveness of cash transfer programming, the evidence base remains fragmented and weak. UNICEF is taking measures to mainstream and scale up cash transfers as a preferred aid delivery modality where appropriate, with the aim of achieving better programme results through increased efficiency and effectiveness. UNICEF also recognises that analysis of the comparative cost-efficiency and cost-effectiveness of multiple intervention options is an important element in evidence-based decision-making for programme design and implementation.

To address this gap in knowledge, two cost-efficiency and cost-effectiveness case studies were carried out, one in the DRC and the other in Lebanon, to assess the incremental impact and incremental costs of adding a cash transfer component to existing supply-side programmes in nutrition and education. In the DRC,

six monthly cash transfers of \$40 each were provided to households with at least one child being treated for SAM on an outpatient basis. The objective of the addition of the cash transfers was to improve the treatment outcomes by addressing household financial constraints in food consumption and child caring practices.

In Lebanon, eight monthly cash transfers were provided to refugee households with children enrolled in school in the amount of either \$20 or \$65 per child, depending on the age of the child. The objective of the addition of the cash transfers was to improve school enrolment and attendance by providing household financial resources to compensate for the cost to travel to and from school as well as the potential opportunity cost of income foregone by children attending school, two important barriers to child school participation, especially among older children.

One of the possible applications of this analytical model is to provide end users with additional evidence needed to make decisions around the appropriateness of *cash+* programming compared to standalone service delivery in a case-by-case manner. The two case studies were conducted separately but they followed the same standard approach to data collection and analysis, while allowing for the flexibility that context-specific differences require.

The next section of this report describes the research methods used in both case studies. The subsequent two sections go on to present each of the case studies, including the background context and interventions, the analytical results and a discussion. The final section of the report offers broad observations on the results of the two studies and of the economic evaluation methodology itself and concludes with overarching recommendations.

1. Cost-efficiency is a measure of the outputs achieved by a given intervention compared to the resources used to implement it. For example, the cost to treat one child for severe acute malnutrition.

2. Cost-effectiveness is a measure of the outcomes achieved by a given intervention compared to the resources used to implement it. For example, the cost to cure one child of severe acute malnutrition.



Research Methods

Both case studies used a mixed methods approach to estimate the incremental cost and incremental effects of adding monthly household cash transfers to an existing supply-side service delivery programme. In the DRC, cash transfers were added to an integrated management of acute malnutrition (IMAM) programme. The cash transfer activities were entirely implemented by the non-governmental organisation (NGO) Save the Children, with UNICEF playing the role of donor. In Lebanon, cash transfers were added to an adjunct school programme for refugees. The cash transfer activities were implemented by the NGO Caritas Lebanon with oversight and management of the cash transfer mechanism and household follow ups conducted by UNICEF. Driving the analysis in each study were the following questions: 1) What was the incremental cost of the cash transfer component? 2) What was the cost-efficiency of the cash transfer component? 3) What was the cost-effectiveness of the cash transfer component? and 4) What were the main cost drivers?

Cost, cost-efficiency and cost-effectiveness were assessed retrospectively based on accounting records, key informant interviews with institutional staff, programme documents, and published impact study results. A provider perspective to costing rather than a societal perspective was taken, whereby only the financial costs appearing on accounting ledgers and budgets were included and opportunity costs were not assessed.

Cost data were extracted to MS Excel from UNICEF institutional accounting records and financial documents. Details of implementing partner costs were obtained from paper documents and entered manually into Excel. Preference was for partner payment liquidation documents; budget documents were used as complementary sources of information. Budgets, accounting records and programme documents were cross-checked against one another.

Interviews were conducted with UNICEF Programme and Finance personnel in order to better understand the costs in the accounting ledger and to assess what proportion of each of the cost centres could be attributed to the achievement of the outcomes measured by the impact evaluation. Due to implementing partner staff turnover, interviews with partner staff were not possible therefore partner cost data are based only on documentation provided by UNICEF.

Raw data on costs incurred by all parties were assembled in separate worksheets in Excel. Finance cost categories such as cash transfer³ (CT), programme cost (PC), direct programme support cost (DPSC), and indirect programme cost (IPC) are insufficiently disaggregated for the kind of analysis required for this economic evaluation. Therefore, costs from programme budgets were re-categorised using a preliminary semi-standardized cost centre structure (Table 1) to facilitate analysis and to improve the consistency of cost centres by reducing the variations in cost categorization across country offices and across programmes.

Table 1 Cost centres^a

Cost centre	Finance category	Types of costs
Programme activities ^b	CT, PC	Cash transfer, cash transfer fees, SMS fees, benefit card distribution, programme assessment & development, community mobilization and sensitization, coordination meetings, household follow up visits, call centre & complaints system, monitoring and evaluation data collection, stationery & supplies
Government partners	PC, DPSC	
Personnel	PC, DPSC	Programme staff, operations staff, management staff, external consultants, staff training
Operations	DPSC	Office space & utilities, bank fees, communications, supplies, small equipment, large equipment
Transportation	PC, DPSC	Staff, supplies
Overheads	IPC	

CT – cash transfers; DPSC – direct programme support cost; IPC – indirect programme cost; PC – programme cost; SMS – short message service.

a. Not all cost centres were used in the re-categorisation process in each case study.

b. All programme activities that directly contributed to the achievement of the measured impacts.

3. Direct cash transfer (DCT) refers to the transfer of funds to an implementing partner under the interagency humanitarian assistance cash transfer (HACT) scheme. In this case, however, cash transfer (CT) refers only to the cash transferred to beneficiaries, since DCT can include other categories of expenditure such as personnel and operations.

The costs presented are from the last calendar year of the programme implementation and were not adjusted for inflation since the programme activities did not span more than 12 months of implementation. All costs are in USD; no currency conversion was required since all costs were originally reported in USD.

Any equipment that cost more than US\$1,000 and could be used for more than one year was considered a capital cost. Capital costs were amortized at an assumed five years of usable life for items such as cars or furniture, and three years for computers and related technology equipment, and all capital costs were discounted at a rate of 3% as recommended by cost-effectiveness analysis guidelines (Tan-Torres Edejer *et al.* 2003, Crease and Parker 1994). Given the duration of the programme, one year's value of capital items was included in the total cost. Investment in programme infrastructure, such as the development of the programme management information system in Lebanon, was treated as a capital cost whereby the proportion of the cost that was included in the analysis was the equivalent of one year of an estimated three years of usable life.

Some costs in the accounting ledger were for resources that were shared across programme activities, not all of which contributed towards the achievement of the measured outcomes.⁴ These costs were therefore

prorated according to their estimated contribution. The proportion of each ledger entry to be allocated to the programme activities in this study was determined based on interviews with UNICEF staff throughout the data collection and analysis process. A high and low proportion were also estimated in order to determine the plausible minimum and maximum cost for each cost centre, reflecting the range in uncertainty in the base-case cost estimate (see Box 1).

Cost-efficiency is presented in terms of cost per beneficiary, implementation cost per beneficiary and cost transfer ratio (CTR) (Box 2). The cost per beneficiary is simply the total cost of the programme, including direct and indirect support costs, divided by the maximum number of beneficiaries.⁵ The operational cost per beneficiary is the total cost minus the transfer value divided by the maximum number of beneficiaries. The cost per beneficiary is strongly affected by the transfer value itself, while the operational cost per beneficiary is a more appropriate reflection of the operational efficiency without the confounding factor of the transfer value itself.

The CTR is an expression of the cost to deliver \$1 of assistance and is calculated by dividing the operational cost of implementing the cash programme by the value of cash transferred to beneficiaries.⁶ The closer this ratio is to zero, the more cost-efficient the programme is. The



Box 1: Cost uncertainty

No measurement is free of error, including cost data sourced from accounting records (Muennig 2008). Despite itemised data on actual expenditures, there are multiple possible sources of uncertainty around the amount and value of resources used to achieve programme activities and outcomes. The more detailed and disaggregated the budget and subsequent accounting ledgers are, the narrower the range of cost uncertainty. Ideally, the initial budget architecture clearly disaggregates expenses according to their contribution towards each programme component or objective, allowing the analyst to select only the relevant cost lines. More typically, however, this is not the case.

Possible sources of uncertainty include:

- When research activities are carried out alongside programme implementation, resource use for research or implementation activities can be difficult to disentangle.
- When the programme is implemented in more than one geographic area, and the study is limited to just one area.
- When the programme includes a complex suite of interventions designed to address multiple outcomes, and the study is focused on just one outcome.
- When personnel are responsible for multiple programmes and the relative demand on their time for the activities in the study varies from month to month.
- When multiple staff positions are aggregated into a single budget line but their time allocation to the activities of interest is not homogeneous.

4. For example, partner staff who were tasked with activities related to the operational research undertaken concurrent with the programme implementation, or administration staff who supported both the intervention activities and the research activities.

5. There are typically variations in the number of beneficiaries each month, with some beneficiaries dropping out and some beneficiaries being added throughout the implementation period.

6. Some analyses present the total cost transfer ratio (TCTR), which is the total cost to deliver the cash programme / value of transfer to beneficiaries. To make comparisons between a CTR and a TCTR, 1 must be added to the CTR or 1 deducted from the TCTR.

CTR is highly sensitive to the value of the cash transfer itself, as will be demonstrated in the CTR results of the two beneficiary populations receiving different cash transfer values in the Lebanon case study.



Box 2: Cost-efficiency metrics

Cost per beneficiary = total programme cost / total number of beneficiaries.

Operational cost per beneficiary = (total programme cost – value of cash transferred to beneficiaries) / total number of beneficiaries.

Total cost transfer ratio = total programme cost / value of cash transferred to beneficiaries.

Cost transfer ratio = (total programme cost – value of cash transferred to beneficiaries) / value of cash transferred to beneficiaries.

CEA is one method of economic evaluation⁷ that compares the incremental cost and incremental effect of an intervention compared to an alternative, often the current standard of practice or sometimes a “do nothing” scenario. Cost-effectiveness is then presented as the additional cost per additional unit of benefit, with the numerator as the mostly likely “base-case” cost estimate and the denominator as the impact expressed as a natural unit.⁸ Cost-effectiveness analysis is best used when there is only one impact of interest since it is not possible to aggregate multiple impacts into a single denominator, unless an aggregated impact index already exists. Cost-effectiveness can be estimated for multiple outcomes, nevertheless the cost per impact must be presented for each outcome separately. Each of these impacts is achieved concurrently as a result of the resources put into the intervention, yet the full value of the resources put into the intervention was required to achieve any one of the impacts individually.

Cost-effectiveness was estimated for this study using the results published from the two impact studies previously carried out on these interventions and is expressed as the cost per natural unit of outcome (e.g. cost per additional case of malnutrition cured, or cost per additional day of school attended). In each programme included in this study, the addition of cash transfers incrementally improved multiple outcomes compared to

the current standard of practice. As per standard CEA approach, the cost per impact is presented as the total programme cost divided by the impact on each outcome demonstrating a statistically significant difference between intervention and control, and therefore multiple cost-effectiveness results were estimated for each programme.

Study limitations

The main limitation of these case studies is that the cost data were collated and analysed two to four years after the implementation, which translated into higher data uncertainty than for contemporaneous cost data collection. Due to staff turnover, particularly in NGO partners, it was not possible to interview all the relevant personnel who had been involved in programme implementation. It was particularly challenging to disentangle the share of costs dedicated to research versus cash transfer activities that contributed to the achievement of programme outcomes. The same challenge was faced for the proration of joint costs such as management and operations personnel and general office management expenses.

While the costs presented here include partner indirect programme costs (IPC), often referred to as overheads, they do not include IPC charged by UNICEF, typically in the range of 7-8% of the total. Some budget and financial reconciliation documents explicitly included overhead costs whereas others did not, and no UNICEF overhead costs were included. Finally, since both programmes were directly linked to other supply-side programmes and used passive beneficiary identification from these programmes, a portion of the beneficiary identification cost was borne by the supply-side programmes and was not included in the full costing presented here.

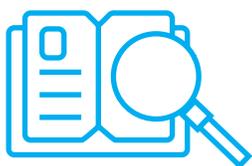
7. Others include cost-benefit analysis where the benefits of the intervention are monetised, cost-minimisation analysis where the comparison is between two interventions with the same expected level of impact, and cost-utility analysis which is a sub-type of cost-effectiveness analysis that uses a composite impact indicator, such as a disability-adjusted life year, as the denominator.

8. Examples of natural units are cases detected, cases averted, events (e.g. heart attacks), years of life gained, etc.





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Case Study 1

Nutrition Plus Cash in the Democratic Republic of Congo

Introduction

The DRC faces devastating multiple burdens of malnutrition including stunting and wasting, culminating in a complex and interconnected relationship between these forms of malnutrition. A national survey conducted in 2013-2014 noted that 8% of children under five suffer from acute malnutrition, of whom 3% suffer from SAM, putting children at the highest risk of dying (MPSMRM 2014). The estimated number of wasted children is high due to the emergence of new crises in the south-eastern part of the country. Vulnerability levels have also increased due to the worsening economic situation. Current standard practice in the DRC is to employ an IMAM approach and to identify, screen and treat acutely malnourished children without complications in an outpatient capacity by providing ready-to-use therapeutic food (RUTF). There has been a growing understanding

that for many households a lack of financial resources plays an important role in the nutrition status of children, and therefore treatment alone may be insufficient to achieve sustained recovery.

Up until 2008, humanitarian assistance in the DRC was almost exclusively in-kind aid, with unconditional cash transfers first being piloted by UNICEF in 2011 as part of the Alternative Responses for Communities in Crisis (ARCC) programme (Bailey 2017). Bailey goes on to explain that the use of cash-based transfers as an aid modality is growing, yet some important limitations on physical and financial infrastructure continue to constrain the expansion of cash-based responses, and some institutions and businesses will not work in some areas owing to logistical or security challenges.

Study design

In 2015, a cluster randomised controlled trial (cRCT) was conducted to assess the effect of adding a monthly cash transfer for six months to households with children admitted for nutrition treatment for SAM compared to the effect of treatment alone. An overview of the programme and the study is presented in Table 2 and further details can be found in the unpublished protocol of the trial and in published results (Grellety *et al.* 2017). The hypotheses of the trial were that the addition of the cash transfers would improve treatment outcomes, reduce the default rates, and reduce relapse rates compared to treatment alone. Among the effects measured were changes in anthropometry and epidemiology of the disease, including rates of recovery, default and relapse.

Households in the catchment area of Bipemba, Kasai-Oriental province were enrolled in the study upon the registration of a child with SAM in an outpatient therapeutic treatment programme (OTP). Children were treated according to the national protocol for IMAM and they were discharged from the nutrition treatment programme upon reaching full recovery from acute malnutrition, measured as weight-for-height z-score (WHZ) ≥ -1.5 or mid-upper arm circumference (MUAC) ≥ 125 mm for two consecutive treatment centre visits and absence of bilateral oedema for at least 14 days. RUTF was provided throughout the treatment to full recovery and children were not discharged and referred to a supplementary feeding programme upon transitioning from SAM to MAM.

Table 2 Overview of case study programme and impact study

Sector	Nutrition
Beneficiary population	Children with uncomplicated SAM aged 24-59 months admitted for treatment at an OTP in Bipemba, Mbuji-Mayi, Kasai-Oriental province
Programme duration Study duration	Aug 2015 – Jan 2016 Jul 2015 – Jan 2016
Programme components	1) Treatment of SAM with RUTF until full recovery 2) Unconditional cash transfer
Beneficiaries	Control: 747 children receiving acute malnutrition treatment only Intervention: 734 children in 674 households receiving acute malnutrition treatment and cash
Cash amount, frequency and duration	US\$40/month per household for six months
Transfer mechanism	Cash-in-hand provided to child's caretaker at the Save the Children office
Conditionality	No, and it was emphasized that cash could be used in any way the recipient saw fit
Impact study design	Cluster-randomized controlled trial
Baseline Endline	Jul 2015, at admission for SAM treatment Jan 2016, at six months from admission for SAM treatment
Partners	Save the Children, Programme National de Nutrition (Pronanut), Bureau Central de la Zone de Santé (BCZ) de Nzaba, Mpokolo, Bipemba

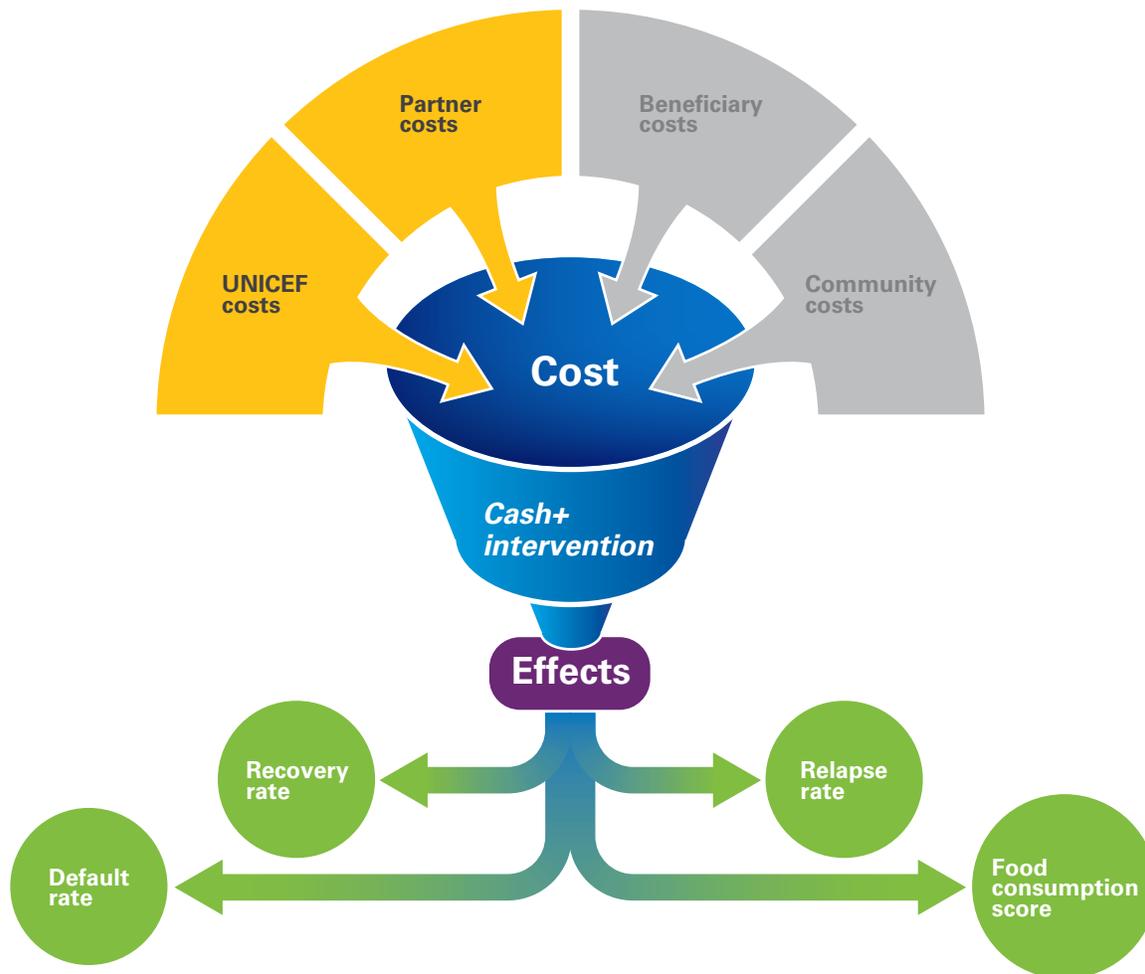
OTP – outpatient therapeutic programme; RUTF – ready-to-use therapeutic food; SAM – severe acute malnutrition.

With funds provided by UNICEF, unconditional cash transfer activities were implemented by the NGO Save the Children to households with a child with SAM as cash-in-hand in the amount of \$40 a month for six consecutive months starting at time of admission to the SAM treatment programme. Each household received only one monthly transfer of \$40 regardless of the number of children admitted to the nutrition treatment programme. For this reason, the number of child beneficiaries was higher than the number of household beneficiaries.

The present study focuses on assessing the cost of adding the cash transfer component to the SAM treatment programme and calculates cost-efficiency and cost-effectiveness metrics. This analysis includes resources used between July 2015 and February 2016, covering one month before and one month after the cash transfers were carried out.

The cost estimate includes only the estimated resources contributed by UNICEF and its partners to achieve the outcomes measured by the impact study (Figure 1). Therefore, the majority of the costs related to research for the impact study were not included nor were any implementing partner costs incurred during the pre-implementation period since the focus at that time was on setting up the cRCT. The cost and cost-efficiency analyses were conducted using data collected solely for the purposes of this study, while the published results from cRCT (Grellety *et al.* 2017) were used alongside the cost data to assess cost-effectiveness.

Figure 1 Schematic representation of the relationship between costs and effects in the DRC nutrition cash+ programme



Only UNICEF and partner costs were assessed in this analysis.

Results

Cost

The total value of the resources required to implement the cash transfer activities to the 734 children in 674 households was just over \$300,000 (Table 3). The cash transferred to beneficiaries made up the largest cost centre at 51% of the total expenses, followed by programme personnel at 21%, and operations at 10%.

The plausible range in resource usage required to achieve the results measured in the impact study is approximately +/- 20% of the base-case cost estimate. Further details on the assumptions underlying the estimated ranges are presented in Annex 1. The largest driver of cost variability was the uncertainty around staff time allocation, particularly of staff that supported both the research and the cash transfer activities. The programme was implemented approximately four years ago, and it was therefore not possible to collect reliable primary data on the time allocation of personnel. Instead, the proportion of staffing cost allocated to the cash transfer programme was based on plausible estimates.

Cost-efficiency

The average cost per beneficiary was \$422 per child and \$460 per household, of which approximately \$220 per beneficiary was the operational cost to deliver the programme (Table 4). Due to uncertainty inherent in all cost estimates, the range in total cost per child is between \$342-510 and per household is between \$372-556. Meanwhile the range in implementation cost per child is \$125-294 and per household is \$136-320.

The cost per child is lower than the cost per household because there were more total children enrolled in the programme than households because some households had more than one child in the SAM treatment programme, yet the cash transfer was provided per household not per child.

The cost transfer ratio was 0.95 meaning that it cost about \$1 in delivery costs to transfer \$1 of cash to a beneficiary. The cost to implement the programme may have been as low as \$0.58 for every dollar delivered to a beneficiary, or as high as \$1.35 per dollar delivered, based on the range of cost uncertainty.

Table 3 Cost analysis results

	Base-case cost estimate (US\$)	Proportion of total cost	Proportion of implementation cost
Programme Activities	169,304	55%	7%
<i>Cash transfers</i>	<i>159,094</i>	51%	
<i>Cash transfer fees</i>	<i>2,569</i>	1%	2%
<i>Other</i>	<i>7,640</i>	2%	5%
Government Partnerships	9,606	3%	6%
Personnel	81,396	26%	54%
<i>Personnel - Programme</i>	<i>63,720</i>	21%	42%
<i>Personnel - Operations</i>	<i>17,676</i>	6%	12%
Operations	30,760	10%	20%
Transportation	1,666	1%	1%
Overheads	17,236	6%	11%
<i>Implementing partner</i>	<i>17,236</i>	6%	11%
TOTAL	309,967		

Table 4 Cost-efficiency base-case analysis results

	Children (n=734)	Households (n=674)
Average cost / beneficiary	\$422 (342-510)	\$460 (372-556)
Average implementation cost / beneficiary	\$206 (125-294)	\$224 (136-320)
Cost transfer ratio	0.95 (0.58-1.35)	

Cost-effectiveness

The cost-effectiveness analysis used the incremental impact results of the cash transfer programme taken from the cRCT conducted by Grellety *et al.* (2017), all of which were statistically significant at the $p < 0.001$ value.

The number of additional cases was calculated by using the simple difference in rates cited in the published paper and scaling each impact to the cash intervention caseload of 734 children treated and 707 children included in the endline follow up who received the intervention (Table 5).

Table 5 Cost-effectiveness analysis results

Parameter	Result
Recovery rate ^{a,b}	8.0%
Additional cases recovered	58
Average cost per additional case of full recovery from SAM	\$5,300
Best-case and worst-case estimate ^c	\$4,290–6,400
Default rate ^a	-4.7%
Additional cases of default averted	34
Average cost per additional case of default averted	\$9,060
Best-case and worst-case estimate ^c	\$7,330–10,950
Relapse to SAM within six months from admission ^d	-7.7%
Additional cases of relapse averted	54
Average cost per additional case of relapse averted	\$5,700
Best-case and worst-case estimate ^c	\$4,630–6,910
Relapse to MAM within six months from admission ^d	-31.4%
Additional cases of relapse averted	222
Average cost per additional case of relapse averted	\$1,400
Best-case and worst-case estimate ^c	\$1,130–1,690
Food consumption score (FCS) ^{d,e}	25.3%
Additional cases of households with an “acceptable” FCS	183
Average cost per additional household with an “acceptable” FCS	\$1,690
Best-case and worst-case estimate ^c	\$1,370–2,050

MAM – moderate acute malnutrition; MUAC – mid-upper arm circumference; SAM – severe acute malnutrition.

a. Simple difference between control and intervention measured at discharge from treatment (Grellety *et al.* 2017).

b. To full recovery, MUAC ≥ 125mm and free from oedema for two consecutive clinic visits.

c. Best- and worst-case cost estimates based on uncertainty in cost alone; uncertainty in effectiveness not included.

d. Simple difference between control and intervention measured at endline (Grellety *et al.* 2017).

e. Food consumption score aggregates weighted dietary diversity and frequency into a single index (WFP 2008). In the Grellety *et al.* (2017) study a score > 42 was considered an “acceptable” diet.

Among the cash-receiving group an additional 58 children were discharged as recovered and 34 fewer children defaulted from treatment, compared to the group receiving only SAM treatment to full recovery. These results were achieved at an incremental cost of approximately \$5,000 per additional child recovered and \$9000 per additional child completing treatment.

Measured six months from admission to the SAM treatment programme, the cash-receiving group saw 54 fewer children relapsing to SAM and 222 fewer children relapsing to MAM compared to the treatment-only group. These results were achieved at an incremental cost of \$5,700 per case of SAM averted and \$1,400 per case of MAM averted.

The lower relapse rates among the cash-receiving group would have the knock-on effect of reducing the number of children requiring retreatment after initial discharge, thereby inducing cost-savings in the IMAM programme due to a lower total annual caseload. Results of modelling show that out of an initial caseload of 734 cases, 62 cases of re-treatment for SAM could potentially be averted as a result of the addition of the cash transfer component (Table 6). These results assume: 1) the

same incremental rates of recovery and relapse for each round of re-treatment; 2) every case of relapse seeks re-treatment; and 3) re-treatment is triggered only upon relapse to SAM. With an estimated cost of \$300 per child for SAM treatment, adding cash transfers to treatment would result in a saving of over \$18,000, or approximately 6% of the cost of the cash transfer programme itself.

Although in this context children were not (re)treated until they reach SAM status, the potential cost-savings of averting re-treatment of all relapsed cases was modelled. Making similar assumptions to those made in the above SAM estimates, an estimated 419 cases of relapse to MAM would be averted by the addition of cash transfers among an initial caseload of 734 children. If MAM cases were treated in this context at an approximate cost of \$40 per case,⁹ this would translate into a cost-saving of just under \$17,000. If wasting cases in children were treated, the total potential cost-savings of averting re-treatment through improvements in relapse rates by adding cash transfers would be approximately \$35,000, or about 11% of the cost of the cash transfer programme itself.

Table 6 Cost modelling analysis

Retreat- ment round	Number of children treated			SAM treatment cost averted ^a	Number of children treated			MAM treatment cost averted ^b
	SAM + cash	SAM only (scaled)	Difference		MAM + cash	MAM only (scaled)	Difference	
Round 1	24	78	54	\$16,260	91	292	201	\$8,040
Round 2	1	8	7	\$2,057	12	129	117	\$4,699
Round 3	-	1	1	\$216	2	57	56	\$2,226
Round 4	-	-	-	\$22	-	25	25	\$1,004
Round 5	-	-	-	\$2	-	11	11	\$447
Round 6	-	-	-	-	-	5	5	\$198
Round 7	-	-	-	-	-	2	2	\$88
Round 8	-	-	-	-	-	1	1	\$39
Round 9	-	-	-	-	-	-	-	\$17
Total	25	87	62	\$18,557	104	523	419	\$16,756

SAM – severe acute malnutrition; MAM – moderate acute malnutrition.

a. The assumed cost to treat a case of SAM was US\$300.

b. The assumed cost to treat a case of MAM was US\$40.

9. Isanaka *et al.* 2019 estimated a treatment cost of US\$27.76-38.10 per case of MAM in Mali (in 2015 US dollars); no published estimates were available for the DRC.

Discussion

Based on 734 children receiving treatment, the effect of adding cash transfers to a standard SAM treatment programme was that 58 more children recovered from SAM, 34 fewer cases defaulted from treatment, 276 fewer cases relapsed, and 183 more households improved their food consumption to an acceptable level. These results were collectively achieved through an investment of nearly \$310,000. When considering the potential \$18,500 cost-savings as a result of reduced re-treatment costs, the effective cost of the cash transfer component was \$291,400. The effect of reducing relapse rates, and therefore re-treatment costs, is particularly important in the context of high prevalence rates of acute malnutrition or during episodic or seasonal spikes in incidence.

Placing the cost-effectiveness analysis results within a global context is difficult. Beyond the Grellety *et al.* (2017) study, only a handful of published studies have done a comparative analysis of the impact of cash transfers on acute malnutrition outcomes (c.f. Langendorf *et al.* 2014, Hougbe *et al.* 2017, Fenn *et al.* 2017, Sibson *et al.* 2018, Grijalva-Eternod *et al.* 2018). However, only the Langendorf *et al.* (2014) and Fenn *et al.* (2017) studies found statistically significant results on nutrition outcomes, and of these only the latter included a robust cost analysis (Trenouth *et al.* 2018).

The Langendorf *et al.* (2014) study in Niger found lower hazard ratios of SAM, MAM and mortality among those whose households received a combination of cash transfers and supplementary food compared to interventions providing either cash or supplementary food alone. While this study included some estimates of costs per child per month, there is insufficient detail in the costing methodology for reliable comparisons and therefore should only be used to compare the relative costs of the study arms within the study itself.

The Fenn *et al.* (2017) study in Pakistan found an improvement in mean WHZ and lower odds ratio of being wasted among those who, in addition to SAM treatment, received \$28 per month for six months.¹⁰ An economic evaluation conducted alongside the Fenn study found that the monthly provision of \$28 to a household averted child wasting at a cost of \$4,900 per case, with the best- and worst-case scenarios at approximately

\$3,000 and \$28,000 per case averted, respectively (Trenouth *et al.* 2017). The programme in Pakistan, however, was designed as a prevention programme unlike the present study which was a treatment programme thereby making direct comparison of the cost-effectiveness results tenuous.

There do not appear to be any studies reporting on the cost-effectiveness of adding cash transfers on default or relapse rates to which we can compare the results from this study. And while one study in Yemen (Schwab 2013) estimated the cost to improve the food consumption score (FCS) and other food security indicators by 15%, this study was designed to compare aid delivery in the form of cash or food aid and is therefore also not comparable to the results presented here.

On the other hand, data on cost-efficiency metrics are more readily available in the literature. This study estimated that it cost approximately \$1 in implementation costs to transfer \$1 to a beneficiary household, which is well within the range of results reported in other cash transfer studies (Maunder *et al.* 2015). Maunder and colleagues disaggregated CTRs by country of programme implementation, and the average among nine cash transfer programmes in the DRC was 3.55, well above the next highest countries at 1.22 (the Philippines) and 1.07 (Cote d'Ivoire), suggesting the challenges of cost-efficient implementation in the DRC. Studies in Pakistan and Burkina Faso on acute malnutrition treatment plus cash transfers estimated a cost transfer ratio for the cash component in the range of 0.62-1.20 (Trenouth *et al.* 2017, Puett *et al.* 2018).

The CTR results of this study, while at the high end compared to all types, scales, and modalities of cash transfer programmes globally, are relatively low when compared to other cash transfer programmes in the DRC. It therefore appears particularly challenging to implement cash transfer projects efficiently in this context. The typically poor cost transfer ratio averages reported for cash transfer programmes in the DRC is often explained by typically small-scale operations, poor physical access, and low penetration of financial infrastructure (Maunder *et al.* 2015, O'Brien 2014), issues that likely also influenced the CTR found in this study.

10. Households were selected based on poverty ranking and not on the presence of an acutely malnourished child in the household so many households that received the transfer did not have acutely malnourished children.

The main cost driver in this programme, beyond the value of the cash transfer itself, is that of programme staff of the implementing partner at field level, which is typical of most similar programmes. The process of referral from the OTP to Save the Children was carried out by Save the Children staff physically present at the treatment sites. Furthermore, it is likely that the manual process of providing cash-in-hand to 674 households each month required significant human resources to manage, especially compared to the personnel requirements of an electronic transfer mechanism. Assuming an optimistic minimum of 10 minutes per transaction, that would require over 100 work hours each month, or nearly one full-time staff member just to provide the cash. On the other hand, since beneficiaries visited the distribution office to collect the transfer and no mobile distribution activities were undertaken, the costs would have been significantly less than for such a village-to-village distribution mechanism. Given that this was a pilot programme designed to be able to provide reliable data for the impact study, it may have been a prudent choice to implement the distributions manually rather than invest in the infrastructure to distribute electronically, if such a transfer mechanism were even available or appropriate in this context.

As a pilot programme with a relatively small caseload, this cash transfer intervention was unable to capitalize on economies of scale seen in larger and more established

programmes. Furthermore, the programme required high involvement of personnel to appropriately refer children from the SAM treatment programme to the cash transfer programme. Finally, and perhaps most importantly, the relative remoteness of the location where the programme was implemented and the associated lack of advanced financial infrastructure that would facilitate more cost-efficient cash transfer mechanisms also contributed to the proportionately high cost to implement, a situation that is unlikely to change in the near future.

It is, however, noteworthy that in this context the addition of cash transfers to a SAM treatment programme had the effect of improving the immediate impacts of the nutrition programme, along with improving the sustainability of these impacts. Further evidence on the potential of cash transfers to improve and sustain the beneficial impact of nutrition treatment programmes should be established; variations in transfer amount, duration and timing could be explored. More robust evidence is needed on the longer-term sustainability of treatment outcomes, including the potential cost-savings by averting relapse and subsequent re-treatment. Finally, further conceptual work in cost-effectiveness analysis should be done to integrate what is already known about the long-term cost of inaction and the burden of malnutrition with the immediate-term financial cost of intervention.





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Case Study 2

Education Plus Cash in Lebanon

Introduction

The conflict in Syria, ongoing since 2011, has precipitated the influx of approximately 1 million registered refugees into Lebanon. In December 2016, it was estimated that just 50% of school-age Syrian refugee children were attending school (No Lost Generation 2018). Recognising the critical importance of continuing education to avoid a “lost generation” of refugee children, the Lebanese Government made a commitment to facilitate access to formal education for vulnerable children as part of their Reaching All Children with Education (RACE) programme (MEHE 2016). The Ministry of Education and Higher Education (MEHE) initiated a so-called “second shift” school programme, whereby existing schools provide

schooling to refugee children in the late afternoons when schools would have otherwise been closed.

While the opening of the second shift schools improved physical access to schooling, economic access remains a challenge for many refugee families despite subsidized or free enrolment and education supplies. Many refugee households have limited livelihood options and rely on the cumulative income of all household members, including that of school-aged children. The No Lost Generation (NLG), or *Min Ila* programme as it is known locally, was initiated in the 2016-17 school year with the objective of reducing financial barriers to children’s school attendance (de Hoop *et al.* 2018).

Study design

In 2016, an impact evaluation was initiated to assess the effects of Min Ila, a pilot programme that provided a monthly cash transfer for eight months to households with children enrolled in second shift schools, the results of which have been published elsewhere (de Hoop *et al.* 2018).

The Min Ila programme provided households with eight monthly transfers of \$20 for each child aged 5-9 years enrolled in second shift schools and \$65 for each enrolled child aged 10-14 years (Table 7). The rationale behind

the larger transfer to older children was to offset the greater opportunity cost of labour among children in this age group. While attendance was monitored, it was not a condition for continuation of the monthly transfers. Alongside the cash transfers, the Min Ila programme included a systematic household follow up mechanism, triggered when an enrolled child was frequently absent from school, to encourage attendance.

Table 7 Overview of case study programme and study

Sector	“Second shift” primary school + Min Ila cash transfer
Beneficiary population	Blanket coverage of Syrian refugees aged 5-14 years enrolled in “second-shift” schooling in the governorates of Mount Lebanon and Akkar
Programme duration Study duration	Oct 2016 – May 2017 Aug 2016 – Dec 2017
Programme components	1) Primary school for refugee children 2) Unconditional cash transfer and household follow up for school absentees
Beneficiaries^a	8,707 - 25,882 children each month aged 5-9 5,388 - 20,449 children each month aged 10-14
Cash amount, frequency and duration	US\$20/month per enrolled child aged 5-9 for 8 months US\$65/month per enrolled child aged 10-14 for 8 months
Transfer mechanism	Prepaid electronic card, cash withdrawal at bank machine; provided to the household
Conditionality	No, but cash transfers are labelled for child education and school attendance is encouraged and monitored
Impact study design	Non-experimental longitudinal study; geographical regression discontinuity design
Baseline Midline Endline	Sep-Oct 2016 Feb-Mar 2017 Nov-Dec 2017 (new school year)
Partners	WFP, Caritas Lebanon, MEHE

MEHE - Ministry of Education and Higher Education; WFP – World Food Programme.

a. The variation in the number of beneficiaries each month is a result of increasing numbers of children that register to attend school as the school year progresses. Approximately 9,000 children aged 5-9 and 5,000 children aged 10-14 were enrolled in October 2017 and eventually approximately 26,000 children aged 5-9 and 20,000 children aged 10-14 were enrolled by May 2017.

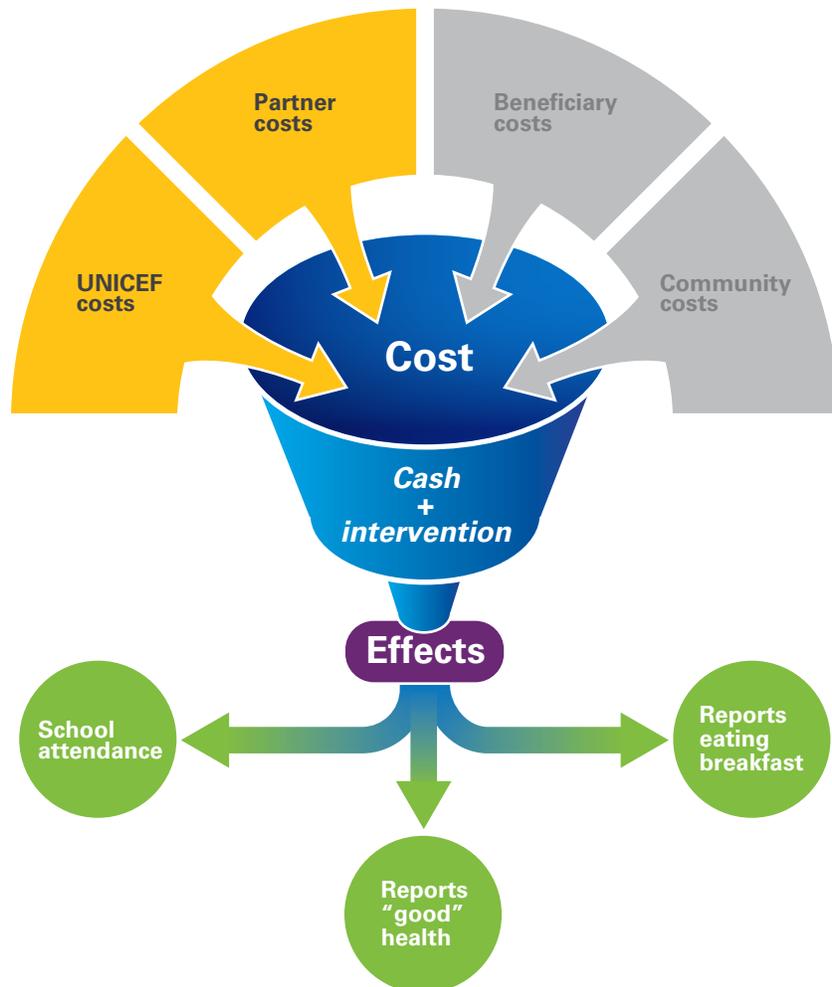
The present study focuses on assessing the cost of adding the cash transfer component to the existing second shift schooling and calculates cost-efficiency and cost-effectiveness metrics. This analysis includes resources used between June 2016 – December 2017 and one month of programme staff implementation costs before and after the cash distribution period.

The cost estimate includes only the estimated resources contributed by UNICEF and its partners to achieve the outcomes measured by the impact study (Figure 2). The cost and cost-efficiency analyses were conducted using data collected solely for the purposes of this study, while the published results from impact evaluation (de Hoop *et al.*, 2017) were used alongside the cost data to assess cost-effectiveness.



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Figure 2 Schematic representation of the relationship between costs and effects in the Lebanon education cash+ programme



Only UNICEF and partner costs were assessed in this analysis.

Results

Cost

The total value of the resources required to implement the cash transfer activities to 47,153 children in 21,607 households was just over \$18M. Nearly \$15.8M, or 88% of the total, was the value of the cash transferred directly to beneficiaries (Table 8). Programme personnel was the second highest cost centre at 42% of operational cost, followed by transportation for personnel at 24%, and the bank card monthly maintenance and transfer fees charged by the financial service provider (FSP) at 19%.

Programme personnel cost was roughly equal between the cash transfer activities and the household visit activities but were incurred at different stages of the Min Ila programme implementation period. More personnel time was required for the cash transfer activities, specifically the child registration, in the early months of implementation, whereas personnel were needed for the household visits starting in late 2016 through to the end of the programme.

It is estimated that the plausible range in total resource requirements was +/-2% of total cost and +16% to -12% of operational cost. Further details on the assumptions underlying the estimated cost ranges are in Annexes 2a and 2b.

Table 8 Cost analysis results	Base-case cost estimate	Proportion of total cost	Proportion of implementation cost
Cash programme activities	\$16,980,649	94%	54%
<i>Card distribution</i>	\$13,204	0%	1%
<i>Cash transfers</i>	\$15,782,854	88%	-
<i>FSP service fee</i>	\$415,433	2%	19%
<i>SMS fees</i>	\$26,464	0%	1%
<i>Personnel - Programme</i>	\$417,986	2%	19%
<i>Personnel - Operations</i>	\$62,910	0%	3%
<i>Personnel transport</i>	\$261,798	1%	12%
Household visit programme activities	\$844,123	5%	38%
<i>Personnel - Programme</i>	\$519,415	3%	23%
<i>Personnel - Operations</i>	\$62,910	0%	3%
<i>Personnel transport</i>	\$261,798	1%	12%
Shared general programme activities	\$80,515	0%	4%
<i>Programme development</i>	\$16,208	0%	1%
<i>Call centre operations</i>	\$9,868	0%	0%
<i>Personnel - Programme</i>	\$28,857	0%	1%
<i>Training</i>	\$17,974	0%	1%
<i>Other</i>	\$7,609	0%	0%
Operations	\$106,106	1%	5%
<i>Office management</i>	\$105,076	1%	5%
<i>Personnel transport</i>	\$1,031	0%	0%
Overheads	-	0%	0%
<i>Implementing partner ^a</i>	-	0%	0%
TOTAL	\$18,011,393		

a. No overheads were reported by the implementing partner.

Cost-efficiency

The transfer amounts differed according to the age of the child, with children aged 5-9 receiving \$20 per month and children 10 years or older receiving \$65 per month. Therefore, the cost-efficiency metrics were calculated separately for each age group (Table 9). The full programme cost an average of \$213 per child aged 5-9 and \$587 per child aged 10+. Best- and worst-case estimates are \$208-\$221 per younger child and \$581-\$595 per older child, respectively.

Approximately \$47 of the cost per child regardless of age was for implementation costs (i.e. the full cost minus the value of the transfer), ranging from \$42-\$55 per child. The cash transfer activities comprised 54% of the \$47 in implementation cost, while the household visits constituted 38%, with the balance of 9% shared across general programme activities and operations.

It cost \$0.09 to deliver \$1 of cash to households with a registered child aged 10 or older, while it cost more than three times as much to deliver \$1 of cash to a household with a registered child aged 5-9. This difference is only due to the difference in transfer value as implementation was identical between the two groups. This calculation only includes the cost to implement the cash transfer activities along with the relevant operations cost and excludes the estimated cost for the household visit component of the programme. The CTRs range from between 0.25-0.33 for younger children and between 0.08-0.10 for older children, influenced primarily by the uncertainty in the programme resource allocation between the cash transfer activities and the household visit activities.

Table 9 Cost-efficiency base-case analysis results

	Children 5-9 (n=25,882)	Children 10+ (n=21,271)
Average cost / beneficiary	\$213 (208-221)	\$587 (581-595)
Average implementation cost / beneficiary	\$47 (42-55)	\$47 (42-55)
Cost transfer ratio, cash transfer activities only	0.28 (0.25-0.33)	0.09 (0.08-0.10)



Cost-effectiveness

The impact data used for the cost-effectiveness analysis was taken from the report from the longitudinal study that presented analysis from the midline data collected in early 2017 (de Hoop *et al.*, 2017) and endline data collected in late 2017 (de Hoop *et al.*, 2018). The cost-effectiveness analysis used the difference in days of school attendance between the treatment group receiving the cash transfers and the control group that did not receive the transfers, which were statistically significant at the $p < 0.01$ value (Table 10). No other results from the longitudinal study could be used to calculate

cost-effectiveness measures, either because the results were not statistically significant, or the impacts could not be used as a cost-effectiveness denominator, such as qualitative measures.

The impact study found that the addition of the cash transfer programme achieved an increase of 0.7 days of school per five-day week among younger children and an increase of 0.5 days among older children. Assuming a school year of 26 weeks, an additional 18 days and 13 days of school per year was achieved through the addition of the cash transfers for the younger and older groups respectively.

Table 10 Cost-effectiveness analysis results

Children 5-9 years old	School attendance	11.7%
	Average additional days of attendance per year	18
	Average cost per additional day of attendance	\$11.93
	Best-case and worst-case estimate ^a	\$11.62–12.39
	Average additional days of school per \$100 spent	8.4
	Best-case and worst-case estimate ^a	8.6-8.1
	Health ^b	10%
	Number of additional children reportedly in good health ^c	2,588
	Average cost per additional child reporting good health	\$6,938
	Best-case and worst-case estimate ^a	\$6,836–7,086
Children 10+ years old	School attendance	10.2%
	Average additional days of attendance per year	13
	Average cost per additional day of attendance	\$44.10
	Best-case and worst-case estimate ^a	\$43.68–44.71
	Average additional days of school per \$100 spent	2.3
	Best-case and worst-case estimate ^a	2.3–2.2
	Food security ^d	19%
	Number of additional children who ate breakfast the day before	4,041
	Average cost per additional child eating breakfast	\$4,443
	Best-case and worst-case estimate ^a	\$4,378–4,538

a. Best- and worst-case cost estimates based on uncertainty in cost alone; uncertainty in effectiveness not included.

b. The health results for children aged 10+ were not statistically significant.

c. "Good health" was not defined in the impact study.

d. Questions on eating breakfast for children aged 5-9 years old were not included in the caregiver survey.

This impact was achieved at an estimated cost of \$12 and \$44 per additional day of school attended by the younger and older age groups respectively. The range in estimates in the best-case scenario and worst-case scenario is quite narrow and is based on the uncertainty in the cost only and not on uncertainty in the outcome results from the impact study.

In comparing the baseline and endline survey results, it was also found that an additional 10% of children aged 5-9 in the cash-receiving group were reportedly in good health compared to the control group. This percent increase translates into an additional 2,588 children were in good health as a result of the cash transfers, at a cost of \$6,938 per additional child. The impact on health in the older cohort of children was not statistically significant.

A similar comparison of baseline and endline survey results demonstrated an additional 19% of children aged 10+ in the cash-receiving group compared to the control group self-reported that they ate breakfast the day before the survey was taken. An additional 4,041 children reportedly ate breakfast as a result of the cash transfers at a cost of \$4,443 per child. The question of breakfast consumption was not asked of the younger cohort.

Without a longitudinal survey on health and food security, it is difficult to reliably estimate the cumulative number of additional days of good health among children aged 5-9 or the cumulative number of breakfasts eaten by children aged 10+. However, if we optimistically assume that the addition of the cash transfers had the same incremental positive effect every day for one year, then that would have translated into an additional 945,000 days of good health and 1.5 million additional days of breakfast eaten. This would have cost \$6 per additional day of good health and \$8 per additional breakfast.

Discussion

This programme reached more than 47,000 children and provided nearly \$16m to over 21,000 refugee households, averaging \$762 per household. The effect of providing a monthly transfer during the school year to households with children aged 5-9 years who were registered in a second shift school was an average increase of nearly four additional weeks of school per year among the children whose households received the transfer, at an annual cost of \$213 per child and \$12 per additional day of school attended. Among children aged 10-14 at the time of school registration whose households received the transfer, the average increase in school attendance was approximately three additional weeks of school attendance per year at an annual cost of \$587 per child and \$44 per additional day of school attended. Meanwhile, the cost per child for one year of schooling in the “second shift” system is \$600 (MEHE 2014) and the average cost per child for the provision of one school year of bus service was \$320 (UNICEF personal communication).

The cost-effectiveness analysis shows that the cash transfer programme achieved an additional 8.4 days among the younger cohort and 2.3 days among the older cohort per \$100 spent. The difference in these results is due to both a lower impact on school attendance among the older children coupled with the higher value of cash transferred to the households with older children, demonstrating that this programme was more cost-effective among the younger cohort. In addition to the improvement in school attendance, one of the main objectives of the cash transfer programme, improvements were also attained in child health and food security among younger and older children respectively. A meta-analysis on the impact of various interventions on school enrolment and attendance has been conducted in a review of 58 high quality randomized evaluations in



low- and middle-income countries (J-PAL 2017). Of the programmes included, those that reduced travel time to school and those that provided scholarships, bursaries, and other household cash transfers demonstrated the largest incremental impact on school participation compared to a control group. However, the review went on to show that the health-related interventions were the most cost-effective at increasing school attendance, driven by the low cost of the assessed health interventions. The authors suggested that cash transfer programmes, while effective, were also costly and therefore not as cost-effective as some other programmes.

With an estimated cost transfer ratio of either 0.09 or 0.28 for the older and younger groups respectively, this programme is highly cost-efficient vis-à-vis cash transfer programmes globally. A meta-analysis of 82 cash transfer interventions found that the average CTR was 0.93, with an interquartile range of 0.28 and 0.95 (Mauder *et al.* 2015). The Min Ila programme was more than twice as cost-effective as the global average, yet it was only slightly less cost-effective than the CTR of 0.10 for Syrian crisis responses (n=6) reported in the meta-analysis. Nonetheless, the cost-efficiency results of this study compare favourably against the disaggregated results from the Mauder *et al.* review that estimated a CTR of 0.46 in programmes with 10-50,000 beneficiaries and 0.15 in refugee response programmes.

The delivery mechanism and delivery cost per unit was identical for both age groups; however, since CTRs are highly sensitive to the transfer value, a programme with

a high transfer value will always have a lower CTR than the same programme implemented with a lower transfer value. While CTRs are currently the most common metric for gauging cash transfer efficiency, this difference in CTR within the same programme demonstrates why caution should be exercised when drawing conclusions about cost-efficiency based only on CTRs, especially when attempting to compare across programmes.

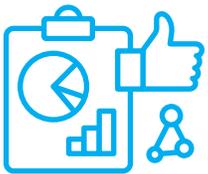
The cost per beneficiary of the older cohort is notably much higher than that of the younger cohort because of the differing transfer values, totalling \$160 for children 5-9 and \$520 for children 10 and older. Meanwhile, the higher cost among the older children was not commensurate with a proportionately larger impact on school attendance compared to that found among the younger children. This may suggest that the additional cash provided to the older cohort was insufficient to substantially offset other factors leading to truancy among older children.

Future research could qualitatively explore the reasons for school absence among children in the older age bracket to explore if the transfer value is the pivotal factor in decisions to attend class or if other issues may be more relevant. Other future studies could test the level of impact on school attendance with variable cash transfer amounts, disaggregated by age, including a more gradual increase in transfer amount with age.





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General Summary and Recommendations

While cost-effectiveness analysis is inherently comparative and there is often a desire to contrast results from other studies, it is best used to compare competing alternatives to address a problem within a population with the same characteristics rather than attempting global comparisons. The external validity of cost-effectiveness results will improve as a wider and more robust evidence base is built up from which meta-analyses can be done.

The two case studies presented here used the same retrospective mixed-methods approach to collecting and analysing the institutional cost data of complementary cash transfer activities added on to ongoing supply-side programmes. Incremental cost-efficiency and cost-effectiveness of two *cash+* interventions compared to current practice in the sectors of nutrition and education were assessed using the primary data collected for this study combined with results from previously published impact studies. The generalisability of the results of the two case studies, summarised in Table 11, is limited and

should be interpreted within the specific characteristics of the programmes and contexts in which they were implemented.

In the DRC, the cash transfers were complementary to a standard SAM treatment programme in a stable but critical situation of acute malnutrition in the centre of the country. The physical and financial infrastructure in the DRC is generally weak, and particularly so in the heart of the country, where this programme was implemented. Operating costs are high and implementing agencies face important implementation challenges as a result of insecurity and poor transportation networks. As a result of the poor physical and financial infrastructure, as well as the poor security situation, it was not feasible to set up an electronic transfer mechanism for this pilot cash transfer programme. This meant that monthly transfers were done manually and required more staff time to implement than would be necessary for electronic transfers.

Table 11 Overview of the cost-efficiency and cost-effectiveness results

	DRC – nutrition + cash	Lebanon – education + cash
Scale	734 children 674 households	47,153 children 21,607 households
Cost		
Total cost	\$310,000	\$18m
Cost-efficiency		
Average cost per beneficiary	\$422/child (\$342-\$510) \$460/household (\$372-\$556)	\$213/child aged 5-9 (\$208-\$221) \$587/child aged 10+ (\$580-\$595)
Average implementation cost per beneficiary	\$206/child (\$125-\$294) \$224/household (\$136-320)	\$47/child aged 5-9 (\$42-\$55) \$47/child aged 10+ (\$42-\$55)
Cost transfer ratio	0.95 (0.58-1.35)	0.30, child aged 5-9 (\$0.25-0.37) 0.11, child aged 10+ (\$0.09-0.14)
Cost-effectiveness		
Cost per case SAM recovered	\$5,300 (\$4,300-\$6,400)	
Cost per case of default averted	\$9,100 (\$7,300-\$11,000)	
Cost per case of SAM relapse averted	\$5,700 (\$4,600-\$6,900)	
Cost per case of MAM relapse averted	\$1,400 (\$1,100-\$1,700)	
Cost per household with an “acceptable” FCS	\$1,700 (\$1,400-2,000)	
Cost per additional day of school		\$12, child aged 5-9 (\$12-\$12) \$44, child aged 10+ (\$44-\$45)
Additional days of school per \$100 spent		8.4, child aged 5-9 (8.1-8.6) 2.3, child aged 10+ (2.2-2.3)
Cost per additional child in good health		\$6,900, child aged 5-9 (\$6,800-\$7,000)
Cost per additional child eating breakfast		\$4,400, child aged 10+ (\$4,400-\$4,500)

DRC – Democratic Republic of Congo; FCS – food consumption score; MAM – moderate acute malnutrition; SAM – severe acute malnutrition

In Lebanon, on the other hand, the cash transfers were supplementary to the provision of primary schooling to refugee children in a relatively urbanised or semi-rural context. Physical and financial infrastructure is reasonably robust and private sector actors such as banks and transit service providers operate well with high geographical penetration. At the time of implementation, Lebanon was not facing imminent challenges to safety and security that would have increased operational costs or posed risks to beneficiaries receiving cash transfers.

Beyond the external context, one of the most striking differences between the two programmes was the

scale at which they were implemented. At nearly 50,000 children in more than 20,000 households, the Lebanon programme served more beneficiaries than the DRC programme by a factor of 32. Another notable difference was the inclusion of household follow up visits in the Lebanon programme, which amounted to a substantial proportion (42%) of the Min Ila implementation cost. Finally, another important difference between the programmes was the transfer value, with households in the DRC receiving approximately \$60 a month for six months while in Lebanon it ranged from \$20-65 per month for eight months.

Cost-efficiency

Both programmes in this study are well within the range of CTRs reported in the literature, from as low as 0.02 to as high as 11.11, with most programmes falling between 0.28 and 0.95 (Mauder *et al.* 2015). In a meta-analysis of 83 studies Mauder *et al.* demonstrated that programmes with low caseloads, under 10,000, averaged a CTR of 1.72 while those above 50,000 averaged between 0.28 and 0.46. The CTRs found in this study appear to confirm the observations of Mauder *et al.* on the relationship between scale and CTR.

Published CTR results are notably heterogenous and depend on the approach taken in the cost analysis as well as context-specific variables including scale, complexity, and perhaps most importantly, transfer value. The high variability should be taken into consideration when interpreting CTRs and especially when relying on them to make programming decisions. A very high CTR might suggest that the intended programme design is not the most appropriate given the context, while a very low CTR could signal that not all costs were included in the analysis of the total expenditure; in both cases seemingly anomalous CTRs should not lead to an automatic rejection of a programme but rather should signal the need for further deliberation to understand the reasons behind seemingly extreme CTR estimates.

Comparatively “high” operational costs, and consequently lower cost-efficiency, should not automatically lead to the rejection of a programme especially when a “costly” programme demonstrates higher cost-effectiveness compared to an alternative course of action or when the programme aims to address issues of inequitable access to resources and services. Pressures to unreasonably reduce costs may ultimately inhibit effectiveness and cost-effectiveness of a programme, or it may simply shift costs to beneficiaries. Contextual reasons leading to high operational costs such as poor transportation infrastructure or a precarious security environment are likely contributing factors leading to the problem being addressed by the programme in the first place. Moreover, offsetting operational costs to beneficiaries will reduce the transformative power of the cash transfer by effectively reducing the dose.

Cost-effectiveness

The results of these studies demonstrate that the relationship between cost-efficiency and cost-effectiveness is not direct. A programme can be more cost-efficient yet less cost-effective than its alternative because of a low incremental impact on the measured outcomes. This is often seen in interventions that treat diseases of a relatively low prevalence, for example, where the incremental impact is small in terms of the number of cases cured or prevented. The possible reasons for this are manifold. First, the selected resource, cash or otherwise, may not be the best tool to address the problem at hand and other problem pathways may have a greater importance in influencing outcomes. Second, the selected resource may not have been provided in a high enough dose to effect change. Third, the quality of programme implementation may have been inadequate to be effective. Finally, and particularly relevant in the case of cash since the resource can be used by the recipient to meet any of their needs, its effect on any one aspect of wellbeing captures only a partial view of its total impact. Each of these issues can reduce the magnitude of the effectiveness and cost-effectiveness of a programme, independent of its degree of cost-efficiency.

A limitation of cost-effectiveness analysis as a methodology for assessing value for money of an intervention is that it is unable to combine the incremental impact on multiple disparate outcomes into a single effectiveness denominator yet the cost to achieve any one of the outcomes is indivisible. As an analogy, the water (input) required to make a plant grow (outcome) cannot be divided to estimate the number of water molecules required to grow just one branch. The whole plant either thrives or wilts based on the total resources provided to it – multiple branches grow, or no branches grow.

While this may not be an important limitation for programmes with a narrow range of potential outcomes of interest, as a fungible resource, cash transfers often impact a wide range of outcomes. This has the effect of diluting the impact on any individual outcome depending on the characteristics of the household and their decisions on how to allocate the resource. Furthermore, some of the individual outcomes that may be improved might not be measured by the impact study and are therefore invisible benefits. Relatedly, the time horizon

for many costing studies other than those in the health sphere is limited to the implementation period. These studies therefore do not account for future costs incurred or averted due to the action or due to inaction. Costs of inaction such as the suppression of earning potential or deleterious effects of ill health could be significant but are typically external to the cost analysis of an intervention.

Additionally, the cash injection of nearly \$16m into the local economy, as in the case of Lebanon, will stimulate what is known as “market multiplier effects”; yet the wider benefits that accrue to the local community are not captured in a CEA. Finally, cost-effectiveness analysis also does not typically include the broader costs of inaction, typically because of the complexity and uncertainty in accurately measuring such costs.

Notably, the question of equity does not factor into such analyses, yet it remains an important consideration, particularly in the humanitarian sphere. Moreover, interventions that increase equitable access to resources and services are likely to be less cost-efficient than those implemented with easy-to-reach beneficiaries, for example. Questions of sustainability and affordability are also not addressed in cost-efficiency and cost-effectiveness analysis, both of which are important considerations when determining resource allocation. Furthermore, the human, social, and financial costs of inaction are usually not included in the comparison of alternative courses of action. For example, the deleterious health effects of multiple cycles of recovery and relapse from acute malnutrition, or the benefits of preventing such a vicious circle, are rarely, if ever, included in a CEA. Likewise, the long-term, and possibly irreversible, negative impacts on income generation potential as a result of a sustained absence from school are not factored in when estimating the relative cost-effectiveness of multiple programme options.

The future of economic evaluations

The results of these two studies demonstrate the tensions among different metrics of cost-efficiency, highlighting the advantages and disadvantages of each. This study has provided data on the cost per beneficiary, implementation cost per beneficiary, and cost transfer ratio.

Cost per beneficiary is a common and easy to understand metric, however, it is strongly influenced by the value of the resource being provided which itself is led by a combination of assessed need, consumption gaps, and coordination with other aid programmes. Implementation cost per beneficiary is a better measure of operational efficiency but is uncommonly cited in the literature. Cost transfer ratio, the measure of the implementation cost to deliver \$1 to a beneficiary, is also affected strongly by the transfer value. A programme with a high transfer value will always have a lower CTR than an equally efficient one with a low transfer value, meaning that a low CTR does not necessarily reflect relative differences in operational efficiency.

The cost per beneficiary may best be suited to assessing sustainability and affordability of a programme, implementation cost per beneficiary may best be suited to assessing operational efficiency, while the CTR may be best suited to assessing the situational appropriateness of a chosen transfer modality or mechanism.

Regarding effectiveness, these two studies demonstrate how cash transfer programmes impact a wide range of aspects of wellbeing, from improved health outcomes to better food security to greater participation in school. Cash transfers are unlike many programmes for which economic evaluations are typically done, such as vaccination campaigns, in that the pathways of change are manifold and only a select few outcomes are feasibly measured in a given study. While a cash transfer may impact on multiple outcomes, if the impact is not measured quantitatively it doesn't “count” vis-à-vis an economic analysis and we therefore have an incomplete picture of the full range of accrued benefits resulting from an intervention. Independent from actual differences in the proficiency with which an intervention turned resources into outcomes, the selection of the outcomes to be measured and the units in which the impacts are presented can shape the face-value cost-effectiveness of an intervention.

While there is a longer history of cost-efficiency analysis, cost-effectiveness analysis has only relatively recently been applied in the humanitarian sphere and to cash transfer programming in particular. As such, the knowledge base remains thin, especially on cost-effectiveness, despite the growing demand for more generalisable evidence on value for money spanning different contexts and programmes. Herein lies an inherent tension. The CEA methodology is best suited to evaluating the comparative advantage of two or more alternative interventions to a problem in the same context with a population with very similar characteristics; it is not well suited to generating widely generalisable conclusions.¹² The challenges of comparing costs across programmes are amplified when comparing impacts as well; the same caveats apply as when comparing impact studies of different programmes.

Even among the relatively few published robust and transparent studies, there are mixed results on the effectiveness and cost-effectiveness of cash transfer programmes (Ruel and Alderman 2013, Manley 2012). Possible reasons for this are variations in the appropriateness of programme design and the quality of programme implementation, differences in selected measurements of effectiveness, and the complexity in causality and attribution (Holmes and Bhuvanendrah 2013).

Yet, analysis of cost, cost-efficiency, and cost-effectiveness can provide important insights into appropriate resource allocation, but the dangers of reductive interpretation based on a single cost-efficiency or cost-effectiveness value should be avoided (Puett 2019). In the same way that RCT results must be accompanied by a description of the characteristics of the study population, economic evaluations must be accompanied by a description of programme characteristics such as scale, coverage, emergency type, and geographic context. Comparisons are best made among programmes of similar characteristics; the more heterogeneous the programmes, the less reliable the comparison. Furthermore, the results of cost-efficiency and cost-effectiveness studies should be only one among many factors considered when assessing the value of an intervention. Other considerations should include equity in resource allocation, the needs of under-served vulnerable populations, multiplier effects in the local economy, potential longer-term impacts, the avoidance

of future human, social and financial costs, resource availability and sustainability, among others.

The full potential of economic evaluations of humanitarian interventions, including cash transfer programming, has yet to be realised. Cost analysis should be held to the same standards and expectations as impact studies in terms of adherence to a detailed protocol, reliability, validity and replicability. Carrying out additional economic evaluations using more consistent and standardised methods for collecting, adjusting, and analysing cost data would expand the knowledge base of the value-for-money of cash transfer programming and thereby facilitate evidence-based decisions on future resource allocation.

Recommendations

Specific recommendations:

- Conduct further studies on the potential of cash transfers to improve and sustain the impact of nutrition treatment programmes; variations in transfer amount, duration and timing could be explored.
- Facilitate more studies to build evidence on the potential future cost-savings by averting SAM and/or MAM relapse; consider integrating longer term costs such as those related to the burden of malnutrition.
- Carry out qualitative research directly with children on the reasons for truancy from school; as a child ages, a lack of financial resources may not be as important as other factors in the daily decision to attend school.
- Test the effect of varying the transfer value on school participation among different ages of children.

General recommendations:

- Recognize the limitations of cost-effectiveness analysis as a methodology, especially when related to cash transfer programming as an aid delivery modality. First, despite the strong likelihood that a cash transfer programme would have beneficial effects on multiple outcomes concurrently, the CEA methodology can only treat one outcome at a time, and therefore can only present the cost per unit of effectiveness for each outcome separately while the cost is indivisible. Second, CEAs do not include market multiplier effects of injecting cash into a local economy. Third, questions of equity, an important principle in humanitarian action, are not addressed in a CEA. Finally, the human, social and financial costs of inaction typically fall outside the scope of most CEAs.

12. Furthermore, wide variation in, or lack of processual information on, cost collection methods and analysis further limit the external validity of many reported cost results.

- Continue to build up the evidence base on cost, cost-efficiency and cost-effectiveness of cash transfer programming, both as standalone interventions and as *cash+* interventions, yet keep in mind the limits of the methodology in terms of comparability and generalisability. The greater the evidence base, the more reliable comparison will become, yet issues of programmatic and contextual differences should always be considered.
- Move towards greater standardisation of costing methods. The more consistent the methods are in collecting, collating and adjusting the cost data, the more reliable the comparison will be.
- Be wary of reductive interpretation of a single cost, cost-efficiency or cost-effectiveness result. An “expensive” programme can be very cost-efficient if it reaches a large number of people and cost-effective if it achieves a large impact. A programme that is operationally inefficient but delivers a large cash transfer to each beneficiary may have a very low CTR. A highly cost-efficient programme is not necessarily cost-effective if it does not achieve a large impact compared to standard practice.
- Concerns about cost, cost-efficiency or cost-effectiveness estimates should trigger discussion but be wary of comparing values across programmes or contexts. Comparisons are best done between similar programmes, implemented in similar contexts, at a similar scale, and among a similar population group.



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Annexes

There is some degree of error in every data measurement, including cost data. The error may be random error which can be reduced by increasing the size of a statistical sample, or the error can be non-random, introduced by an inherent or systematic bias. There is more uncertainty around the cost estimates of some cost centres, such as the proportion of time the Save the Children Programme Directors dedicated towards

achieving the cash transfer activities versus the time they spent supporting the research activities. This was estimated at 50% for the base-case, with 25% for the low estimate and 75% as the high estimate. On the other hand, there is no uncertainty around the value of the cash that was transferred to beneficiaries that contributed towards the achievement of the programme outcomes measured in the impact study.

Annex 1 Cost estimate variation, base-case estimate, minimum estimate and maximum estimate – DRC

	UNICEF			Save the Children		
	Base-case	Min	Max	Base-case	Min	Max
Programme activities						
Cash value				100%	100%	100%
Cash transfer fees				50%	25%	75%
Outreach				50%	25%	75%
Data collection				5%	0%	10%
Control group incentives				0%	0%	0%
Government partners						
Pronanut	100%	20%	100%	100%	50%	100%
BCZ				100%	50%	100%
UNTA				100%	50%	100%
Personnel						
Programme						
Consultants – Bagula & Biruru	5%	0%	10%			
École de Santé Publique	5%	0%	10%			
Not specified	5%	0%	10%			
Consultant - Grellety	0%	0%	5%			
Cash transfer staff				100%	75%	100%
Manager MEAL				50%	25%	75%
Advisors				50%	25%	75%
Directors				50%	25%	75%
Community mobilizers				5%	0%	10%
Data collection & analysis				5%	0%	10%
National consultant				5%	0%	10%
Study coordinator				0%	0%	0%
Support						
Finance Officer				100%	75%	100%
IT Assistant				50%	25%	75%
Field Manager				50%	25%	75%
Directors				50%	25%	75%
Driver				50%	25%	75%
Programme Officer				50%	25%	75%
Training				5%	0%	10%
Operations						
Office space & utilities	50%	20%	70%	50%	25%	75%
Bank fees	50%	20%	70%			
Communications	50%	20%	70%	50%	25%	75%
Supplies	50%	20%	70%			
Small equipment	50%	20%	70%			
Large equipment	50%	20%	70%	50%	25%	75%
Transportation						
Staff	30%	20%	50%	30%	20%	50%
Overheads						
				50%	25%	75%

Annex 2a Cost estimate variation, base-case estimate, minimum estimate and maximum estimate – Lebanon

	UNICEF			Caritas			WFP		
	Base-case	Min	Max	Base-case	Min	Max	Base-case	Min	Max
Programme									
Cash value	100%	100%	100%				100%	100%	100%
Cash transfer fees	100%	100%	100%				100%	100%	100%
SMS	100%	100%	100%						
Card distribution							6%	4%	7%
Call centre				100%	90%	110%			
Stationery & supplies				100%	90%	110%			
Coordination meetings				100%	90%	110%			
Personnel									
Programme									
Field Officers	31%	20%	50%						
Programme Assistants	31%	20%	50%						
Consultant (development)	35%	32%	39%						
Enumerator staff				100%	90%	110%			
Household visit staff				100%	90%	110%			
Other programme staff	31%	20%	50%	100%	90%	110%			
Operations									
Operational Programme Officer	100%	100%	100%						
IT external consultant	35%	32%	39%						
Other operations staff	31%	20%	50%	100%	90%	110%			
Training	100%	100%	100%	100%	90%	110%			
Operations									
Office space & utilities				100%	90%	110%			
Bank fees									
Communications	31%	20%	50%	100%	90%	110%			
Supplies	100%	90%	110%						
Small equipment	100%	90%	110%	100%	90%	110%			
Large equipment	35%	32%	39%	100%	90%	110%			
Transportation									
Staff	31%	20%	50%	100%	90%	110%			
Overheads									
	0%	0%	0%	0%	0%	0%	0%	0%	0%

Annex 2b Cost estimate variation, cash activities versus household visit activities – Lebanon

	Caritas	
	Cash	Household visits
Programme		
Call centre	50%	50%
Coordination meetings	50%	50%
Other	50%	50%
Personnel		
Programme		
Enumerator staff	100%	0%
Household visit staff	0%	100%
Other programme staff	50%	50%
Operations		
Other operations staff	50%	50%
Training	50%	50%
Operations		
Office space & utilities	50%	50%
Communications - Enumerators	100%	0%
Communications - Field centres	0%	100%
Small equipment	50%	50%
Large equipment	50%	50%
Large equipment	50%	20%
Transportation		
Staff	50%	50%





