Chapter 16

Measuring the Impact of Targeted Food Assistance on HIV/AIDS-Related Beneficiary Groups: Monitoring and Evaluation Indicators

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Background, Objectives, and Methodology

In October 2005, the Consortium for the Southern Africa Food Security Emergency (C-SAFE) transitioned to its final year of a regional "developmental relief" program. Yet, members continued to collaborate on this specific learning activity given their common objectives of improving monitoring and evaluation (M&E) for HIV/AIDS-related beneficiary groups. C-SAFE's strategic objectives included (1) improving and maintaining nutritional status, (2) protecting productive assets, and (3) improving community resilience to food security shocks.

As part of its targeted food aid (TFA)[1] program, C-SAFE provides food assistance to four HIV/AIDS-related beneficiary groups. The chronically ill (CI) is used by all three members as a proxy for HIV/AIDS,[2] and several of C-SAFE's members link TFA to medically oriented interventions such as Prevention of Mother to Child Transmission (PMTCT), Tuberculosis-Directly Observed Therapy, and Antiretroviral Therapy (ART).[3] Throughout implementation, the issue of how to measure impact of food aid on individuals receiving ART or tuberculosis (TB) drugs, mothers and infants enrolled in PMTCT programs, and the chronically ill has been discussed and debated. Although C-SAFE regularly monitors household food security using various tools, and in some programs measures nutritional status of children under 5; measuring the impact of food on these four HIV/AIDS-related groups remains a challenge.

For individuals receiving ART or TB drugs, and those in PMTCT programs, C-SAFE members monitor whether food was received but generally do not gather additional information. Many clients are being weighed regularly by health-service providers, and a range of other indicators are being used to monitor progress, though C-SAFE staff have not generally taken advantage of this information or systematically applied other (livelihoods or nutrition) indicators to measure whether there is demonstrable change as a result of food aid. The most common measure of "success" has been program uptake and treatment adherence. Monitoring of the chronically ill is similar, with limited or no data gathered to demonstrate the impact of food aid.

As C-SAFE members and others expand their involvement in such programming, it is important to build an evidence-based understanding of the attribution of food aid to the quality of life and physical status of these beneficiaries, not only to better justify the provision of such assistance but also to improve the design and implementation of targeted food assistance programs to beneficiaries.

To assist consortium members, a study was commissioned by C-SAFE Learning Spaces[4] in November 2004. A review of the literature was completed in December 2004, and field research in Malawi, Zambia, and Zimbabwe in February 2005. The researchers summarized current knowledge and practices and offered advice about appropriate, practical methods for monitoring the impact of targeted food assistance on HIV/AIDS related beneficiary groups.

Objectives

The aim of this research was to investigate current practices for measuring the impact of TFA on four HIV/AIDS-related beneficiary groups: (1) the chronically ill (CI); (2) women and infants engaged in PMTCT programs; (3) individuals on ART; and (4) individuals on TB treatment. This was done through a review of the literature followed by interviews and observational visits to HIV/AIDS-related food aid programs in Malawi, Zimbabwe, and Zambia. Recommendations for measuring the impact of TFA are provided based on the literature review and fieldwork.

Methodology

The literature review included a search of academic and relief and development agency databases. When saturation of the literature was achieved, papers were scrutinized for information on nutritional status and the impact of TFA in the context of HIV and AIDS. Because the literature is limited, a wider review was done, including disease progression, nutrition, treatment impact, and psychosocial issues. Because of the lack of available papers in peer-reviewed journals, the "gray" literature was also reviewed.

Information was also gathered through key informant interviews, group discussions, observational visits, and collection of current monitoring and evaluation tools. In each study country, a local representative identified appropriate field sites and stakeholders. For each intervention type, analysis focused on objectives, strengths and weaknesses of current practices, gaps, and recommendations for integrating impact measurements into future activities. A total of 66 individuals from 29 different agencies were interviewed across the three countries.

For further details on persons and organizations interviewed, recommended indicators, and tools for consideration, please refer to the full paper with annexes at www.c-safe.org.

Results

Review of the Literature

This work highlights the paucity of studies addressing TFA to people living with HIV/AIDS (PLWHAs) and almost complete lack of documentation on measuring impact of food aid on PLWHA. Practical tools to assess TFA's impact on households and nutritional outcomes for PLWHA are not widely available.

The literature review began with AEGIS.COM news briefs from June 2002. Common themes included food relief (supplements) as long-term care or recovery, the concept of a "new variant famine," chronic illnesses' negative impact on household food security, the unmet needs of orphans and vulnerable children (OVC), multiple targets and entry points, denial and stigma, and gender inequity (women as caregivers, girls leaving school to care, etc.).

Although many organizations advocate for incorporating food aid into HIV/AIDS programming, there is a serious lack of empirical evidence on how best to evaluate the impact of programs on participants who are HIV positive or living with AIDS (IFAD 2001; FAO 2003; USAID PVO Steering Committee 2003; Canahuati 2004; FANTA 2004a,b). Despite the lack of experience in how to evaluate the impact of TFA on HIV/AIDS participants, this review has identified a number of starting points and potential indicators to pilot for use in measuring impact changes from TFA programs. Findings geared to individual and household levels are outlined below.

Assessing Individual Impacts

Nutritional status. Anthropometric measures are important assessments and one of the few quantitative measurements that are practical for field measurement. The literature provides guidance on how to use anthropometric indicators to measure

program impact. Miller (2003) suggests that nutritional status can be assessed through vigilant weight monitoring and that disease progression can be monitored through serial measurements of mid–upper arm circumference (MUAC), triceps skin folds, and other anthropometry (FANTA 2000). These recommendations are supported by the Highly Active Antiretroviral Therapy (HAART) and HARVEST program in Kenya, which monitors weight in an effort to link food security with ART outcomes (FANTA 2004a).

In the few research studies measuring the impact of food aid on PLWHA, body mass index (BMI),[5] MUAC, and weight measurements were the most common indicators, though head circumference, weight for height, bioelectrical impedance analysis (BIA), body circumferences, and skin-fold measurements were also used to measure nutritional impacts of TFA programs (Swanson 1998; Maina et al. 2005; Ochieng Owingo 2005; Torreblanca and Kim 2005). Organizations are experimenting with handgrip strength as an easily administered proxy for nutritional status using mechanical handgrip dynamometers. Used primarily with elderly populations, handgrip has been positively correlated to BMI, MUAC, and arm muscle area (Chilima and Ismail 2001).

HIV/AIDS brings problems in interpretation of anthropometric measurements that compromise their value as indicators of TFA impact. Even in ideal conditions where HIV-positive children receive over the recommended daily allowance (RDA) of calories and protein, inferior growth may be seen, and HIV-positive adults with no enteric pathogens have shown diminished skin-fold thickness and lower weight than HIV-negative adults despite equal food intake (Miller 2003). Nutritional status and growth may be impaired because of malabsorption and a metabolism that can exceed one's ability (or appetite) to consume, so although the food aid may be enhancing the food security of the family and even helping the PLWHA nutritionally, the BMI or MUAC measurements would not reflect this. Therefore, it is difficult to interpret anthropometric measurement trajectories because the impact of TFA may be reduced weight loss versus weight gain as is normally anticipated.

Anthropometric indicators also show change subsequent to other subclinical health measures, so by the time there are measurable changes, other important health changes have already occurred, and the impact of food aid may not be detectable. In relation to MUAC, lipodystrophy may make that measurement unreliable for PLWHA who are on certain forms of ART.

The literature therefore shows that anthropometric measurements are useful components but alone would not provide the level of understanding needed to assess a TFA program's impact and could be misleading. What are required are program indicators that are sensitive to a variety of HIV/AIDS effects (FAO/WHO 2003).

Strength and stamina. The return of strength and ability to be productive are possible indicators of TFA impact (WFP 2004). Yet, it would be important to control for the availability and use of medical treatment. A handgrip dynamometer could be used to measure changes in strength as a result of TFA programs, though little has been published to test this instrument with PLWHA.

Diarrhea prevalence. Diarrhea prevalence in young children (under 24 months of age) is another possible proxy measure of health and improved food security (Swindale 2004). Another study supports a significant association between malnutrition and diarrhea incidence (Measurement Excellence and Training Resource Information Center 2005).

Treatment uptake and efficacy. For individuals on TB treatment or ART, a commonly mentioned impact of TFA programs was an increase in treatment uptake and a decrease in default rates.

Treatment completion (tuberculosis) and treatment adherence. For PLWHA on TB treatment or ART, a commonly mentioned impact of TFA programs was an increase in treatment acceptability and ease of adherence with drug regimens. One study has shown that among a small sample of treatment interrupters, lack of money for food is seen as a barrier to treatment adherence (Rowe et al. 2005). Despite this, further studies are needed to better understand and document the impact of food security on TB treatment completion and adherence to HAART.

Quality of life. Current literature abounds with studies on quality of life (QOL) among PLWHA. Interviews with health workers and TFA field staff support exploring the use of QOL tools. QOL is a multifaceted concept that considers the impact of impairments, function, perceptions, and social opportunities (Robinson 2004). Numerous studies have been done using QOL measures with HIV-positive persons (Jacobson, Wu, Feinberg, and Outcomes Committee 2003; Mast et al. 2004; Preau et al. 2004), and a number of tools exist (Ferrans and Powers 1992; Wu et al. 1997; Webster, Cella, and Yost 2003; RAND Health 2004). However, there is nothing published that looks directly at the impact of food assistance on QOL for PLWHA. One unpublished pilot study has been done in South Africa on QOL and food, and another has looked at ART-related nutritional problems and QOL (Fields-Gardner and Keithley 2001). QOL measures offer a richer assessment of the impact of TFA, including physical, social, and psychological components. These benefits will need to be weighed against time needed to complete QOL assessments and translation and training requirements.

Other scales [Karnofsky and Disease Stage Scale, the WHO/Zubrod or Eastern Cooperative Oncology Group (ECOG) Scale] that were originally developed to measure physical functioning levels for patients with cancer (Karnofsky and Burchenal 1949; Oken et al. 1982; Lanksy et al. 1987) are now used to assess health and physical ability of PLWHA. These scales focus on physical functioning. There is a scale used in medical oncology for children that is based more on observation, called the Lansky scale, but it does not appear in research conducted in the developing world context related to HIV/AIDS (Oken et al. 1982). The World Health Organization (WHO) recommends Karnofsky as a tool to monitor clinical status for patients on antiretroviral (ARV) treatment (WHO 2002). Finally, strength and stamina issues are often incorporated into QOL indices.

Assessing Household Impact

It is acknowledged that food aid impacts all household members as the individual and household are intrinsically linked. Therefore, food aid programs usually measure household-level impact. However, a demonstrated impact at the household level does not necessarily imply that there is also impact for the targeted individual.

The link between HIV/AIDS and household food insecurity has been documented.[6] Therefore, although there are no tested examples presented in the literature, the level of household food insecurity is a potential indicator to use to measure the impact of food aid on PLWHA. In addition to using individual level measurements (e.g., BMI) of all household members to measure household impact, a composite measure of household food insecurity level has been used to measure impact of food aid. Known household responses that could be used include sale of assets (productive and nonproductive), dietary changes, hiring in and out of household labor, and withdrawal of children from school (FANTA 2000). Swindale has identified multiple household indicators to measure food insecurity, such as dietary diversity, asset retention, as well as anthropometry, demographics, and diarrhea prevalence in young children (Swindale 2004).

Another distinction that could be made involves categorizing households based on the type of impact of AIDS, such as chronic illness, death, or support of orphans. This could be broken down into impacts on human, financial, social, physical, and natural capital (O'Donnell 2004). Indicators already included in many data collection tools measuring food security include number of meals eaten per day, quantity or number of foods eaten in the past 24 hours, dietary diversity indices, consumption of luxury items, amount of land planted, and expenditure on food. Examples of indices, which may be useful, are the Experiential Household Food Insecurity Scale (EHFIS), Household Dietary Diversity, Household Asset Index (Canahuati 2004), and Coping Strategy Index (Maxwell et al. 2003).

An issue to consider when assessing impact is the bidirectional nature of chronic illness and food security. Chronic ill health may serve as a cause of food insecurity as well as a consequence of food insecurity (WFP 2003). HIV disease is related to food security at the individual, household, and community levels. For example, during times of food insecurity individuals may skip meals, which potentially could exacerbate chronic illness. In turn, subsequent infection and illness reduce an individual's ability to improve his or her household food security.

Results of Field Research

Current Practices and Impressions of Impact Measurement

As in the literature review, the primary finding from the field was that indicators to measure the direct impact of food aid on PLWHA are not prevalent. Although C-SAFE partners have a great deal of experience monitoring receipt of food aid and food security status of targeted households, most do not have systems to measure the impact of food aid on PLWHA.

Although anthropometric, clinical, and performance measures are collected at the clinic level, they do not inform food programming, and often information is collected only on a qualitative or anecdotal basis. C-SAFE partners are collecting fairly extensive information on household coping strategies, assets, use of food aid, and vulnerability levels. However, this information generally is not analyzed in a manner that is able to tease out the direct impact of food aid on particular subgroups of beneficiaries. In general, C-SAFE programs are not analyzing individual health outcomes, survival, QOL, or nutritional status but focus on the household level. Anecdotal information exists in relation to the impact of food aid on the individual and household, but neither agencies nor health facilities have systems of sufficient rigor or regularity to support reported observations. This is not necessarily a result of the lack of capacity or interest, as staff stated they wanted to learn more about the impact of food aid on CI beneficiaries, but C-SAFE was neither mandated nor funded to collect this level of data, so M&E frameworks were not designed to do so.

Although no quantitative data exist to demonstrate the impact of food aid on PLWHA in C-SAFE programs, almost all beneficiaries and stakeholders gave anecdotal evidence of positive impacts of food aid: weight, improved health, and food consumption. After receiving food, beneficiaries experienced improved body weight, strength, ability to work, and overall well-being. For example, a Malawian woman with Kaposi's sarcoma reported:

> It was good to receive [the food aid]. I ate three meals a day compared to once a day before. [Before], I was dependent on visitors to bring food. I

> could not have employed someone to do the gardening. [With food aid], I had money to spare for other things, to buy fish, eggs, vegetables, and relishes. I was able to plant beans and maize.

Another couple on ART explained:

> Before food aid I had many challenges. I was sick, had stomach aches, heart palpitations, headaches, and pneumonia. I started on ARVs and then got C-SAFE food. With drugs and food my physical problems decreased, I had less diarrhea, I gained a lot of energy and could move around and get involved. I had enough strength to mold bricks and construct a house. I could increase the gardening. [Since the food has been stopped,] I have an increased problem taking the medications, and my weight has decreased.

Before food support the wife's reported weight was around 40 kilograms; with the ART and food support, she went to 61 kilograms. She is still on ART, but with no food support, she now weighs 47 kilograms.

Clinicians reiterated impact of food aid on health, treatment adherence, and nutritional status. In Zimbabwe, a hospital matron commented on HIV-positive support members (none of whom are on ART) who received TFA with corn soy blend:

> I could see improvement in their general disposition and less complaints about their conditions. I also noticed people gaining weight. Now, at TB days each month, weight has dropped, and there are less people attending [since food aid stopped in October].

Although BMI was consistently proposed as an impact measure, interviewees raised concerns regarding capacity and equipment to accurately collect BMI. The quality of weight scales and height measurement were questioned. Indicators tracking health status, program uptake, drug efficacy, and strength or stamina were also commonly mentioned alongside household food security measures. When queried about QOL issues such as mental health and ability to conduct daily activities, interviewees felt that these were things that food aid does impact but that are not normally tracked. None mentioned handgrip strength, BIA, head circumference, or skin-fold measurements.

The work involved in collecting additional impact information would not be extensive because much is already being collected or partially collected. Clinics routinely collect weight, symptoms, visit frequency, treatment regimes, clinical outcomes, and information that could be adapted to performance indicators such as the Karnofsky and ECOG. Yet, it did not appear that this information is retrieved

or used by TFA programs. Although cooperation between medical services and NGOs exist (such as clinics providing beneficiary lists to NGOs), linkages between monitoring and evaluation systems and data sharing are few. Both value integrating their information and expertise, but little partnership currently exists.

Field Practices and Proposed Indicators by Program

Targeted food assistance to tuberculosis programs. Interviewees proposed the following indicators: mortality, adherence and default rates, weight, BMI, morbidity, stamina, and length of hospital stay. Unlike the other groups, research has been conducted on the impact of food aid on TB programs. According to the head of the Malawi TB program, food aid is a priority in treatment and reducing mortality. Although more than half of TB patients on admission were found malnourished, with food support there was a dramatic reduction in early mortality (Zachariah et al. 2002). Using food as an incentive for adherence was also mentioned, and WFP (Zimbabwe) is looking at adherence to TB treatment as an effect of food aid.

Most interviewees expected food aid to increase weight gain, reduce symptoms, and enhance productive capacity. Others mentioned that although TB patients may complete the treatment, many of them remain malnourished; thus, without food assistance they are too weak to farm or actively return to daily activities. Another potential indicator mentioned was decreased hospital stay. The TB program at Chikankata Hospital (Zambia) found that malnutrition on admission significantly increases the length of stay for TB patients, and staff anticipates that food support would contribute to recovery.

Targeted food assistance to ART programs. Interviewees mentioned the following indicators to measure the impact of food aid on ART recipients: mortality/prolonged survival, drug adherence and efficacy, weight/BMI, morbidity/symptoms (e.g., diarrhea), productivity, quality of life (QOL).

The relationship between nutritional status (usually measured through BMI) and survival was also mentioned. Research in Malawi showed that a BMI less than 16 was predictive of high mortality (50 percent of patients died within 6 months of going on ART) when coexisting with anemia, poor functionality, and CD4 below 50.[7] It was implied that nutritional status could be enhanced through food aid; thus, when it is coupled with ART a positive synergy could result.

Using food aid as an incentive for adherence was frequently mentioned. Field staff reported communities asking "how are we to take these drugs if we have nothing in our stomachs?" implying that without food, they could not take the prescribed drugs because the drugs would not work or they would get sick. When the issue was proposed to medical professionals and beneficiaries, though, their opinion was that

generally people are so grateful to be on ARVs and feel the benefits are so substantial that adherence is already high. The head of HIV/AIDS (Malawi–Ministry of Health) said that from crude adherence monitoring (measuring the number of pills left in bottles brought back each month by patients), default rates in government-sponsored ART programs is less than 5 percent.

Several interviewees predicted an enhanced efficacy of ARV drugs with the availability of food. Again, most clinical practitioners did not support this suggestion but were also unaware of research to refute it. Some doctors explained that the ARVs were deliberately chosen because they do not need to be taken with food and should not be affected by the food security status of the patient. Several practitioners mentioned that even for severely malnourished patients, the recommendation is not to wait for weight gain but to concurrently treat malnutrition while giving ART because experience has shown that the drugs are still effective even when the patient is malnourished.

Weight gain measured through BMI was commonly suggested as something that should be measured to show the impact of food aid on ART program participants and would not be burdensome. Because ART drugs are dosed by weight, patients are weighed regularly and recorded on master cards. National guidance in Malawi calls for BMI to be measured on ART patients to enable referral to feeding programs (for BMI less than 16, patients are referred to therapeutic feeding; for BMI 16–18.5, to a supplemental feeding program, though these referral options may not reliably exist).

Symptoms, productive capacity levels, and QOL scales were posed as additional indicators to demonstrate the impact of food support. Interviewees felt that many PLWHA live in such food-insecure situations that although ART is a key intervention, nutritional support is also needed to fully benefit from improved $CD4^+$ counts. ART protocols consistently identify "good nutrition" as an integral part of a comprehensive care package. In order to provide self-care, resume productive activities, and reduce reliance on caregivers, improved nutrition is required. Symptoms, especially diarrhea, were predicted by interviewees to decline with the addition of food aid to the ART regime. Finally, when probed, most interviewees felt that QOL indicators that included daily activities, mental outlook, and productive capacity would also be well received and informative.

Targeted Food Assistance to the Chronically Ill

Potential indicators for measuring the impact of food aid on the chronically ill were: weight change/BMI, symptoms (e.g., diarrhea), productivity, quality of life, household assets, coping strategies, attendance/school performance, and need for caregivers.

Weight change was the primary indicator that stakeholders proposed for measuring impact in this group. Chronically ill beneficiaries reported impacts such as; "giving strength" and "(I have) gained weight, my skin is healthier, (I have) strength to walk." Issues related to collecting weight and BMI data were similar to those mentioned previously. If patients are well enough to get to a health center, weight will be recorded on the patient retained clinic card, but for homebound patients, there may be access, equipment, and data collection constraints.

Symptom reduction, particularly diarrhea, was also cited as something field workers felt would result from food aid. Not everyone agreed, however, as some medical practitioners felt the reduction in symptoms was more likely the result of treatment than food.

As mentioned under other programs, QOL was mentioned as important indicators of impact. It was predicted that with food aid, PLWHA would be able to get out of bed, take care of themselves, and get involved in household and farming activity. Individuals mentioned that the ability to buy sugar, soap, and other basic household goods also enhanced daily life and improved the mental health of recipients. The assurance of continued food assistance also reportedly reduced targeted beneficiaries' worry and stress within the household.

In addition to individual impacts, household impacts were identified; with food aid, caregivers were not needed as much and were able to return to work, reducing the sale of assets and increasing household production/income. Food security and coping strategy indicators were also recommended, as were increased attendance and performance at school due to improved ability of the household to pay for school fees, better nutrition, and decreased need for children at home.

Catholic Relief Services (CRS)-Zambia is currently investigating the impact of nutritional supplementation on the QOL and anthropometric status of HIV+ home-based care (HBC) program clients over a six-month period. Dependent variables include BMI, QOL scores, MUAC, and dietary diversity.

Targeted Food Aid to PMTCT Clients

With regard specifically to PMTCT programs, participants proposed the following indicators: weight change/BMI, symptoms (e.g., diarrhea), productive capacity levels, quality of life, coping strategies, program uptake (increased testing, disclosure, attendance at counseling sessions), maternal weight change, BMI and MUAC, birth outcomes and infant weight, level of mixed feeding, exclusive breastfeeding, weaning (timing and success), length of exclusive breastfeeding, and duration of the weaning period.

M&E systems have already been developed for PMTCT programs regionally. However, most of these systems focus on program uptake and outcomes (women

receiving voluntary counseling and testing, mother–infant dyads receiving Nevirapine, and number of children testing positive at 18 months) and do not focus on the impact of food assistance. Respondents felt the need to substantially improve monitoring of nondrug prevention measures and to include nutritional and behavioral indicators in the current PMTCT M&E plans.

It was widely agreed that food aid attached to PMTCT programs would increase program participation. If food aid were linked to HIV status, disclosure would also be inadvertently increased, though this raises ethical issues on the use of food.

As with all food aid interventions, it was predicted that PMTCT participants would gain weight and improve their nutritional status. Because there are links between maternal nutritional status and birth outcomes, numbers of LBW children born to HIV-positive mothers, weight gain during pregnancy, BMI during lactation, and infant growth were all mentioned as potential indicators to measure impacts.

Infant feeding practices such as the level of mixed feeding, exclusive breastfeeding, and accelerated weaning behavior are a great concern to many involved in PMTCT. Insufficient energy for the mother to exclusively breastfeed, lack of household food security, and low availability of proper weaning foods were examples of inhibitors to exclusive breastfeeding and accelerated weaning, thus increasing the risk of vertical transmission. Indicators of food aid impact on PMTCT could therefore include incidence of mixed feeding and duration of the weaning period (e.g., duration of mixed feeding) for HIV positive mothers. Indicators proposed would reflect the type of PMTCT food assistance and counseling provided. Currently, there are no indicators which measure exclusive breastfeeding or quality of weaning practices.

Other impacts previously mentioned such as QOL, productive capacity, and coping strategies were also brought up by PMTCT stakeholders as indicators that could be used to examine food aid impacts on PMTCT participants.

Issues That Could Affect Measurement

A number of general concerns were raised that could affect data collection and measurement of impact: time, equipment, training, experience, and existence of indicators and assessment tools; the tools to measure expected impact either do not exist or have not been fully tested. For example, the need to be realistic about the long-term and potentially cyclical needs of CI households was discussed. For this reason, NGOs are trying to develop assessment tools that can identify when to intervene with food support and when to "pull back." The concept of identifying a "trigger point" for both safe graduation and increased vulnerability are needed. Finally, the availability of staff that can design and complete studies of the com-

plexity that will be necessary to show causal attribution of food aid to individual and household impact are a concern.

Discussion

Proposed Indicators

This research highlighted the dearth of evidence, in print and in the field, that measures the impact of food aid on PLWHA. Current M&E systems are not designed to evaluate this impact. Despite the lack of evidence, numerous testimonials from HIV-positive beneficiaries and program staff gave examples of impacts on the chronically ill. Nobody expressed doubt about the importance of food aid as a key component of comprehensive HIV/AIDS services. From a literature review,[8] discussions with technical staff, and experience from traditional food aid evaluations, a framework of suggested indicators to measure the impact of food aid on individuals and households living with HIV/AIDS are proposed.

According to the review of the literature and field research, anticipated improvements from food aid at the household and individual levels are increased daily food consumption, money available for other needs, and household food security. These improvements generate a cascade of changes that are believed to result in increased weight, energy, treatment adherence, school attendance, immunity, medical treatment, QOL, productive capacity, and ultimately survival. In addition, there is an anticipated increase in programmatic uptake (Fig. 16.1).

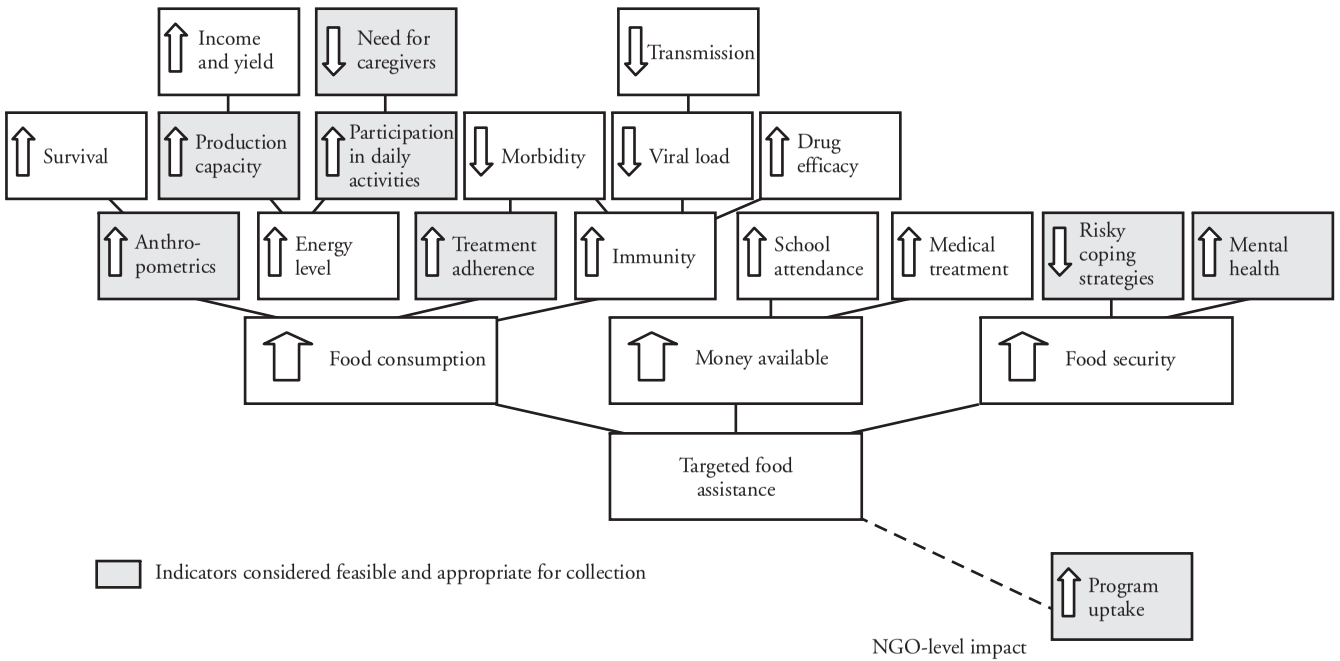
Because many indicators are difficult to collect (and to interpret), this chapter considers a short list of indicators. Yet C-SAFE does not purport that they are the most appropriate in all cases. They are simply those thought to be the most feasible and relevant given C-SAFE's operating environment and capacity. The indicators highlighted in Figure 16.1 are: anthropometrics (BMI, MUAC, weight for age, and percentage weight change), treatment adherence and default rates (TB, ART), infant feeding protocols, coping strategies, mental health, productivity, ability to perform daily living activities, need for caregivers, and program uptake.

A decision as to which of the indicators to use will depend on the relationship with food aid, biological plausibility, and their perceived feasibility for partners.

Some medically oriented impacts such as viral load were not included because they would require extensive clinical examinations not deemed to be realistic. Obviously, if these data are available, they could be used. Other medically oriented impacts suggested, such as diarrhea incidence and drug efficacy, were not included.

With indicators that are high up the flow chart (Fig. 16.1), it will be difficult to separate out the impact of food aid from other factors influencing that variable.

Figure 16.1 Potential impact of food aid on persons living with HIV and AIDS



So the farther away the potential impact is listed away from food aid, the less likely an indicator measuring those impacts would be recommended. The impact of increased money available to the household (because less money is being spent on food) is more difficult to attribute directly to food assistance, as there are many other reasons why a household has more money available to it besides food aid. School attendance, for example, was not recommended for collection because of the difficulty in collecting quality data and the number of other factors that could influence attendance.

It is not feasible to use all indicators. Implementers will have to examine program objectives and capacities to determine what indicators to use. Indicators are recommended by program type (Table 16.1). Lesser-known and more experimental indicators (handgrip strength, BIA, and head circumference) were not included.

Challenges to Evaluating Impact

Establishing a framework to measure the impact of food aid on PLWHA is not simple. Constraints include data collection capacity, complexity of study design and analysis, financial resources, and limited understanding of the interplay between HIV and micro- and macronutrients. Also intrahousehold distribution, sales, and food sharing will all be uncontrollable variables.

Proving causal attribution of an impact to food aid is difficult because of HIV disease complexity and numerous factors influencing beneficiaries' experiences.

Table 16.1 Indicators for consideration to measure impact of TFA by program type

	Program type				
				PMTCT	
Indicators for consideration in measuring impact	TB	ART	CI	Mother	Child
1. Anthropometrics					
BMI	X	X	X	X	
Percentage of weight change		X	X	X	
MUAC				X	
Weight for age					X
Weight for height					X
2. Treatment adherence	X	X		X	
3. Risky coping strategies		X	X	X	
4–6. Quality of life					
Mental health	X	X	X	X	
Activities of daily living	X	X	X	X	
Productive capacity	X	X	X	X	
7. Need for caregivers		X	X		
8. Program uptake	X			X	

Morbidity, mortality, length of hospital stay, and community ability to care are influenced by many factors, and only an extensive and rigorous evaluation design could sort out whether an impact was related to food aid versus rainfall, government policy, quality of local medical facilities, and similar issues.

Potential confounders must be identified and collected in baseline and monitoring tools, particularly if a cross-sectional survey design is used rather than a baseline-evaluation model. Research is needed to better understand independent variables relevant to collect to show causal attribution of food aid. One confounding variable is continued wasting even for beneficiaries on ART (Miller 2003). Other variables include ART side impacts such as nausea, vomiting, metabolic complications of treatment (derangement of lipid and glucose metabolism) (Shevitz and Knox 2001) and prolonged recovery times (Sandige et al. 2004).

Key control variables include, but are not limited to, demographic information (e.g., gender, age, ethnicity, location, household size), program inputs (e.g., quantity of food and commodities received and for what duration), treatment received (e.g., ARVs, breastfeeding counseling, cotrimoxazole), stage of disease and CD4 count at onset and completion of research period, and signs and symptoms experienced by PLWHA during research period. If these variables are not controlled for, it will not be possible to determine what impact came from food aid and what came from other sources.

Recommendations

Neither the literature review nor the field research found significant evidence of TFA impacts being measured among PLWHA. The following recommendations therefore do not reflect validated research but, rather, ideas from TFA technical staff:

- Pilot the indicators noted in the Discussion section of this chapter at select sites of C-SAFE, Improving-Livelihoods through Increasing Food Security (I-LIFE), and similar NGO food aid programs targeting PLWHA to measure program impact.

- Indicators measuring program inputs, activities, and outcomes are also needed as monitoring tools and to help interpret impact indicators but are not discussed in this chapter.

- Include suggested indicators into future C-SAFE and I-LIFE surveys and eventually integrate these indicators into future project M&E systems.

- In established end-use monitoring, postdistribution monitoring, and community and household surveillance collection tools, link data already collected such as coping strategies, school participation, and program uptake to participation in food aid programs.

- Establish M&E partnerships between health centers and with district-level, central governmental, and food aid programs serving similar populations and determine mutual areas of interest in order to share information.

- Share lessons learned among C-SAFE partners, the wider UN/NGO network, and health service providers.

The literature review identified two research priorities for evaluating the impact of food aid on PLWHA: (1) mixed (qualitative and quantitative) studies of optimal dietary advice with the outcomes such as quality of life, morbidity, disease progression, and survival time (CRCHS, WHO, AED-SARA Project 2003), and (2) quantitative studies of optimal nutrition support and outcomes such as body composition, morbidity (especially diarrhea), CD4 counts, viral load, disease progression, survival time, and MTCT (rate) (CRCHS, WHO, AED-SARA Project).

Notes

1. The term targeted food assistance (TFA) is used by the C-SAFE members to include individual or household rations, dry or wet distribution methods, and "supplemental" and "complementary" feeding. TFA is distinct from general food distributions (GFD) and food for assets (FFA). It refers to targeted feeding to specific vulnerable groups such as the chronically ill (a proxy for HIV/AIDS).

2. To date, C-SAFE has used chronic illness as a proxy for AIDS as defined by an individual experiencing persistent and recurring illness lasting three months or more, which has reduced that person's level of productive capacity.

3. A summary of C-SAFE's better practices in TFA, which cites examples of these types of programs, was published by the C-SAFE Learning Center in 2005. The document also provides guidance for linking food aid with medical interventions. *Targeted Food Assistance in the Context of HIV/AIDS* is available at www.c-safe.org.

4. Learning Spaces was housed by the Regional Program Unit of C-SAFE through September 2005. This initiative provided a vehicle for learning among consortium members and other stakeholders on key themes such as HIV/AIDS and food security, food aid targeting, and lessons learned from working in a consortium format.

5. Body mass index is calculated as kilograms of mass divided by height (in meters) squared.

6. Documents include *Targeted Food Assistance in the Context of HIV/AIDS, Food Aid and Chronic Illness: Insights from the Community and Household Surveillance Surveys,* and others.

7. Personal communication with Dr. Mina Hosseinipour, UNC Project, Tidziwe Clinic, Lilongwe Central Hospital, Lilongwe, Malawi.

8. A limitation of this work was the lack of published research available at the time of this study. A review of the gray literature was therefore used, and thus, the exploratory nature of this work and the recommendations that emanate from it are acknowledged.

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