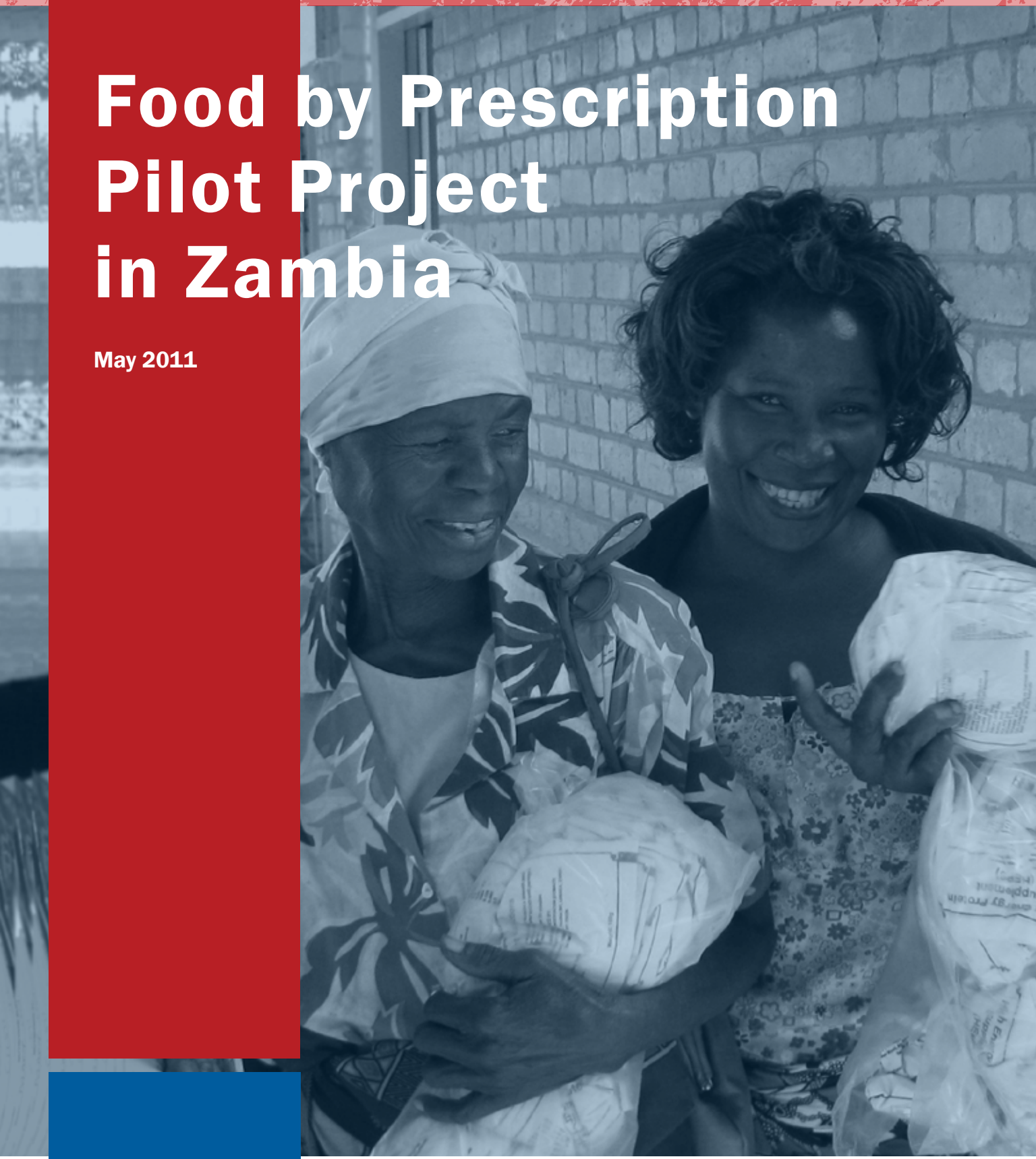
Food by Prescription Pilot Project in Zambia

May 2011



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Cover photo: Women receiving HEPS for sick relatives. Wusakile, Zambia.
Elizabeth Jere/CRS

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TABLE OF CONTENTS

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The Scaling Up Community Care to Enhance Safety Social nets – Return To Life (SUCCESS-RTL) Project wishes to thank all those who helped implement the Food by Prescription pilot program. We thank the United States Agency for International Development (USAID), through the American people, for providing CRS the opportunity to pilot this program in Zambia. We also wish to thank the Permanent Secretary of the Ministry of Health, District Health Management Teams, PEPFAR partners, and ART clinic management for allowing us to carry out the pilot at the HIV care and treatment facilities. We appreciate the ongoing partnership with the home-based care and hospice programs that participated. We also recognize the ongoing technical support and collaboration with the National Food and Nutrition Commission (NFNC) and Food and Nutrition Technical Assistance (FANTA) in planning and implementation of the pilot.

ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
BMI	Body Mass Index
CHAZ	Churches Health Association of Zambia
CIDRZ	Center for Infectious Disease Research in Zambia
CRS	Catholic Relief Services
DHMT	District Health Management Teams
F100	Formula 100
F75	Formula 75
FANTA	Food and Nutrition Technical Assistance
FBP	Food by Prescription
FDL	Food and Drug Laboratory
FGD	Focus Group Discussion
GRZ	Government of the Republic of Zambia
HAART	Highly Active Anti Retroviral Therapy
HBC	Home Based Care
HEPS	High Energy Protein Supplement
HIV	Human Immunodeficiency Virus
IYCN	Infant and Young Child Nutrition
MAM	Moderate Acute Malnutrition
MoH	Ministry of Health
MUAC	Mid-Upper Arm Circumference
NFNC	National Food and Nutrition Commission
NGO	Non Governmental Organization
NISIR	National Institute for Scientific and Industrial Research
NZP+	Network of Zambian People Living with HIV/AIDS
OLH	Our Lady's Hospice
PEM	Protein Energy Malnutrition
PCI	Project Concern International
PLHIV	People Living with HIV and AIDS
RUTF	Ready To Use Therapeutic Food
SAM	Severe Acute Malnutrition
SAS	Statistical Application Systems
SCMS	Supply Chain Management System
SUCCESS-RTL	Scaling Up Community Care to Enhance Social Safety nets – Return To Life
TB	Tuberculosis
USAID	United States Agency for International Development
USG	United States Government
UTH	University Teaching Hospital
WHO	World Health Organization

GLOSSARY

Body Mass Index (BMI): A simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in metres (kg/m2). BMI charts display contour lines or colors to indicate different BMI categories.

Caregiver: Providers of support and care in the delivery of palliative care services. These are either clinical care workers or workers with no training in nursing, medicine and related fields.

Cured: Patient that has reached the discharge criteria (BMI, MUAC, W/H -Z score or W/H % of median) and has been removed from the program. (Note: This terminology is used widely in general nutrition programs. However, in the HIV setting, it is recommended that the word "recovered" may be more appropriate given the incurable nature of the underlying disease.)

Defaulter: Patient that is absent for two consecutive weightings confirmed by a home visit.

High Energy Protein Supplement (HEPS): A maize-soy flour blend enriched with minerals and vitamins and is designed to treat acute malnutrition. HEPS is commonly consumed as porridge.

Home based care: An HBC service delivery point from which activities are delivered. In most cases these correspond to parishes. In some cases, a parish has more than one site while in others a site may serve more than one parish

Hospice: A facility or "special concept of care intended to provide comfort and support to patients and their families when a life limiting illness no longer responds to cure oriented treatment". In Zambia hospices are either a ward in a hospital, a private stand-alone inpatient facility, or a private facility with an active community palliative care program.

Length of stay: The total number of days/time that a client remained on the FBP program before discharge. This period is inclusive of periods of treatment, missed food supplementation and non-compliance.

Medical transfer: Patient that is referred to an ART clinic/hospital for medical reasons and this ART clinic will not continue the nutritional treatment

Mid-upper arm circumference (MUAC): An indicator for wasting used for children above six months old, pregnant women and clients whose height cannot be assessed.

New enrollment: Patient directly admitted to program to start the nutritional treatment.

Non responder: Patient that has not reached the discharge criteria after 3 months in the program

Pull System: A system in which the flow of resources targets replacing only what has been consumed. The product flow is determined by its demand by the final consumer.

Push system: A system in which product flow is based on a projected production plan. In a push environment, forecasts are used to predict what the production rates should be.

Re admission: Patient that has defaulted from FBP and is re-enrolled on the program.

Ready To Use Therapeutic Food (RUTF): A lipid based energy-dense, mineral/vitamin enriched food specifically designed to treat acute malnutrition. RUTF has a similar nutrient composition to F100.

Relapse: Weight loss in clients to the point of clinical malnutrition after recovery from a previous episode of clinical malnutrition.

Unknown or Loss to follow up: Patient that has left the program but the outcome (true defaulting or death) is not confirmed or verified by a home visit

Weight for height z-score: Expressed in standard deviations below the percentage of median of the U.S. National Center for Health Statistics (NCHS) reference population or WHO child growth standards (WFH <– z-score).

EXECUTIVE SUMMARY

With funding from President's Emergency Plan for AIDS Relief (PEPFAR), Catholic Relief Services incorporated the Food by Prescription (FBP) pilot program into an existing grant funded under the United States Agency for International Development (USAID). This pilot, called Scaling-up Community Care to Enhance Social Safety nets – Return to Life (SUCCESS-RTL), received $610,000 in September 2008. The FBP approach was new and untested in the country. The primary goal of the pilot was to improve outcomes for anti-retroviral therapy (ART) and palliative care clients by providing nutrition assessment, counseling and education, and therapeutic and supplementary foods to people whose lives were at risk because of malnutrition.

The pilot had two strategic objectives: to provide quality care and assistance to people whose lives are at risk because of malnutrition, and to promote community based initiatives to improve the nutritional status of its members. Clients received Ready to Use Therapeutic Food (RUTF) and/or High Energy Protein Supplement (HEPS) in three different settings: anti-retroviral therapy (ART) clinics, hospices and home-based care (HBC) programs. The pilot reached a total number of 5,360 clients as of December 2009, out of the planned target of 7,500. The pilot continued to March 2010, reaching additional clients.

The target groups for the FBP pilot were HIV-exposed children from six to 24 months, malnourished HIV positive children six months to 14.9 years, malnourished HIV positive pregnant and lactating women and malnourished HIV positive adults (men and non-pregnant or non-lactating women) 15 years and above. Of the total clients, 170 (5%) clients were HIV-exposed children between six and 24 months. Fifty-nine percent of clients were female. Thirty-three percent clients had been admitted to the pilot for severe malnutrition, and 44% were admitted for moderate malnutrition. This study collected and analyzed the results of the 22% clients who had been discharged from the program; the remaining 78% were still enrolled at the time of analysis. Of those who had been discharged, 84% were cured, 11% died from various causes, 4% were lost to follow-up and 1% were removed from treatment because of medical complications (e.g. diabetes, thrush).

Review of existing program records and facility records, key informant interviews and focus group discussions (FGDs) were carried out in 11 sites, sampled from the 20 pilot sites. Pilot experiences, lessons learnt and recommendations regarding operationalization of FBP interventions in community based HIV care and treatment settings are intended for further policy and program development. Implementation and integration of the FBP intervention was impacted by variations in the organization, management and operations of service delivery within and across the three different settings. Site policies and human and material resources also influenced integration. The evaluation revealed FBP services can integrate into the three service delivery settings, and requires commitment of senior management, well-trained staff, and strong community follow up linkages. Record-keeping was an identified gap. With proper screening, diagnosis and counseling, treating clinical malnutrition with RUTF and HEPS was effective. This report recommends that the Government of Zambia should consider integrating and scaling up FBP services into the HIV package of care.

A. Program Context

A1. NUTRITION AND HIV IN ZAMBIA

Malnutrition affects both children and adults in Zambia. In recent years, the Human Immunodeficiency Virus (HIV) epidemic has had a devastating impact on health, nutrition, food security and overall socioeconomic development in the country. Approximately 14.3% of adults aged 15-49 years are HIV positive and life expectancy is only 37 years. Seventy five percent of an estimated 750,000 to 1.2 million orphans in Zambia are due to HIV and AIDS[1].

Nutrition and HIV work in a vicious cycle. The weakening of the immune system as a result of HIV can lead to malnutrition, and malnutrition weakens the immune system of HIV positive people, contributing to rapid progression to AIDS. Nutrition requirements of PLHIV are influenced by age, physiological changes e.g. pregnancy or breastfeeding, physical activity, clinical stages of health, metabolism and viral load. The World Health Organization (WHO) recommends 1999 to 2580 kcal for health HIV negative adults. In HIV infection, energy needs increase. During asymptomatic phase, energy requirement increase by 10%; in symptomatic stage, energy requirements increase by 20 to 30%. Energy needs in HIV infected children increase by 10% in asymptomatic phase; 20 to 30% in symptomatic phase and 50 to 100% in children experiencing weight loss. WHO also recommends micronutrient supplementation for high risk groups (pregnant and lactating women and children) in resource-poor settings.

A2. FOOD BY PRESCRIPTION PILOT BACKGROUND

Catholic Relief Services (CRS) has implemented the Scaling Up Community Care to Enhance Social Safety nets (SUCCESS) – Return to Life (RTL) project in Zambia (2006-2010). The goal of the SUCCESS-RTL project was to improve the quality of life of PLHIV in Zambia by offering a holistic approach to palliative care that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual. As part of palliative care services, SUCCESS-RTL integrated nutrition interventions in hospice and home based care (HBC) settings. SUCCESS-RTL received funding through a cooperative agreement under the United States Agency for International Development (USAID) with funding from the President's Emergency Plan for AIDS Relief (PEPFAR).

In April 2008, USAID provided funding to SUCCESS-RTL to pilot the Food by Prescription (FBP) model in which interventions to treat and prevent clinical malnutrition were provided as part of HIV care and treatment. Clients were clinically and nutritionally assessed and counseled before they could access the therapeutic and/or supplementary foods that were used to treat clinical malnutrition. The model "medicalizes" food by providing it in daily dosages. The FBP concept was new and untested in Zambia, but had been successfully piloted in other PEPFAR countries (Kenya, Uganda, Ethiopia and Rwanda). While the approach emphasizes

1 *Central Statistics Office, Epidemiological Projections, 2005*

clinical care and treatment and has been implemented primarily in clinic settings elsewhere, in Zambia the FBP pilot program was implemented in hospitals, hospices and community HBC. Using three channels of service delivery allowed an opportunity for stronger linkages to community networks for outreach and follow-up so that clients could benefit from a more comprehensive set of services.

At national level, SUCCESS-RTL held a number of meetings on FBP with Zambia Prevention, Care and Treatment (ZPCT), AIDSRelief, Infant and Young Child Nutrition (IYCN) and Center for Infectious Disease Research in Zambia (CIRDZ)[2], the PEPFAR partners supporting HIV care services where the pilot was implemented. These partners selected sites where the pilot was implemented. 20 rural and urban ART clinics, hospices and HBC sites supported by PEPFAR care and treatment programs were selected for the pilot across seven provinces of Zambia. These were seven ART clinics, 11 hospices and two HBC programs (Appendix A). Site selection depended on high ART case load, high malnutrition rates, HIV prevalence rates, willingness to participate in FBP pilot, human and material resources available, capacity of facility to integrate FBP interventions in existing services and whether the site was supporting ART, PMTCT, or OVC programs.

SUCCESS-RTL implemented the pilot in collaboration with the National Food and Nutrition Commission (NFNC), a statutory body mandated to coordinate and guide nutrition policies and strategies. The program also collaborated with the Food and Nutrition Technical Assistance (FANTA-2), which works to improve nutrition and food security policies, strategies and programs by providing technical support to USAID and its partners, including host country governments, international organizations and NGO implementing partners. FANTA provided overall technical assistance, and NFNC developed the FBP guidelines and provided policy and technical guidance. SUCCESS-RTL provided overall coordination and implementation of the pilot project.

A3. PILOT GOAL AND OBJECTIVES

The primary goal of the FBP pilot project was to improve ART and palliative care clients' outcomes by providing nutrition assessments, nutrition counselling and education, therapeutic and supplementary foods to people whose lives were at risk from malnutrition. The pilot had the following two strategic objectives:

- To provide quality assistance to people whose lives were at risk because of malnutrition.
- To promote community based initiatives to improve the nutritional status of its members.

As part of the pilot implementation, USAID also requested that CRS address sustainability concerns and explore potential Public-Private Partnerships, leveraging and wrap-around services.

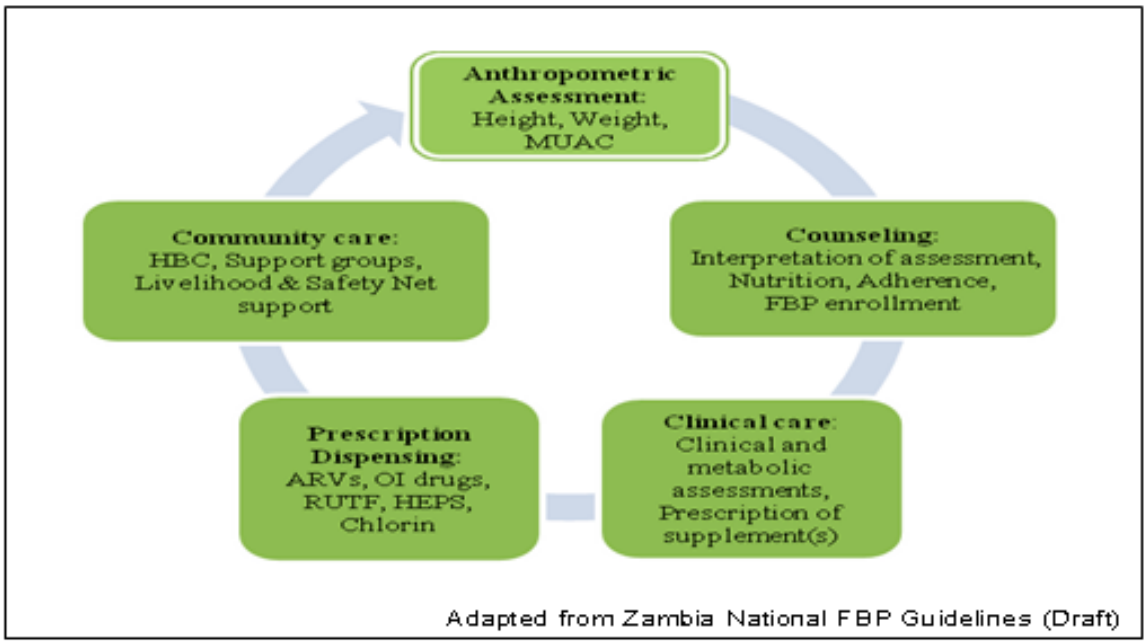
2 Sites that received funding from Infant and Young Child Feeding (IYCN) and Center for Infectious Disease Research in Zambia (CIDRZ) were initially considered for the pilot. The IYCN site pulled out of implementation for internal reasons, while the CIDRZ site transitioned to CHAZ support mid-way through the pilot.

B. Technical Approach to Implementation

B1. INTEGRATION OF FBP INTO CARE AND TREATMENT SERVICES

For the purposes of this pilot, integration meant the joint coordination, management and operations of all interventions needed to treat and prevent clinical malnutrition that achieve the greatest impact, with existing resources and within existing systems. Integration of FBP in the Zambia context was adapted from the FANTA flow chart (Figure 1). At each site, client flow depended on policies and guidelines, organization of activities, human resource and space for screening and counseling clients. FBP services were fully synchronized with HIV services but as outlined in Figure 1 below, the flow of clients from first contact to completion depended on how HIV services were set up. Service providers measured weight, height/length and Mid Upper Arm Circumference (MUAC)[3]; calculated Body Mass Index (BMI); determined Weight for Height –Z sore (W/H –Z score) or Weight for Height percent of median (W/H % median)[4]; categorized malnutrition; conducted counseling; and prescribed appropriate treatment for the defined treatment group. Food was dispensed through pharmacy, stores and offices. Data was captured at assessment, counseling, food prescription and food dispensing.

Figure 1: Food by Prescription Client Flow Model



Before pilot program activities commenced, SUCCESS-RTL conducted a rapid assessment in five sites to determine willingness to integrate FBP intervention in HIV services, human and resource capacities. The assessment revealed willingness across all sites to

3 Mid-upper arm circumference (MUAC) is an indicator for wasting used for children, pregnant and lactating women and any adults whose height cannot be measured.

4 The weight for height (W/H) index reflects current nutritional status and is used to assess wasting. It shows how a child's weight compares to the weight of a child of the same height and sex. Weight for height z-score is expressed in standard deviations below the median of the U.S. National Center for Health Statistics (NCHS) reference population (W/H % of median) or WHO child growth standards (W/H <– z-score).

incorporate FBP interventions in HIV services, sufficient existing screening and storage spaces, and adequate human resource capacity to implement the program. Sites needed training in the management of clinical malnutrition, and there were inadequate material resources across all sites.

SUCCESS-RTL organized a five-day FBP training in February 2009 in Lusaka, where 29 participants from nine ART sites, NFNC and SUCCESS-RTL project (interns) were trained. The workshop was facilitated by SUCCESS-RTL, FANTA, NFNC and Wusakile Hospital. Between January and March 2009, two more workshops, held in Lusaka and Chipata for hospice and HBC sites, trained 50 service providers. On average, two staff from each site received training. In addition, a FBP manual was developed to guide site activities, and SUCCESS-RTL developed and printed 200 patient registers, 500 food registers, 15,000 patient cards, 15,000 beneficiary monthly report forms and 500 prescription forms. The pilot also procured adult scales, Salter scales, calculators, height measures and MUAC tapes. All sites received laminated algorithms for managing SAM and MAM in children and adults, together with laminated BMI and W/H charts for use as job aids.

B2. TARGET GROUPS

PEPFAR's Policy Guidance on the Use of Emergency Plan Funds to Address Food and Nutrition Needs (September 2006) specifies the following target groups and allowable uses of PEPFAR resources for food and nutritional support:

- Adults or children with HIV on ART or eligible for ART with evidence of malnutrition.
- Adults or children with HIV enrolled in care programs and have evidence of malnutrition.
- HIV-positive pregnant and lactating women, identified through PMTCT or MCH programs
- HIV-exposed OVCs (of unknown sero-status), especially under the age of two identified through PMTCT/antenatal care (ANC)/maternal-and-child health (MCH) clinics, community-outreach or other OVC programs.[5]

B3. ADMISSION AND DISCHARGE CRITERIA

Admission and discharge to the program was according to the FBP protocol standard cut-off points for acute malnutrition. Children six months to 14.9 years were enrolled and discharged using W/H -Z score or W/H % or MUAC indicators. Pregnant and lactating women, and adults above 15 years whose height could not be taken, were enrolled and discharged using MUAC. Non-pregnant and non-lactating women and men 15 years old and above were enrolled and discharged using BMI (Appendix B).

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5 The Guidelines for a Food by Prescription Programme in Zambia (NFNC, 2008) includes malnourished HIV-affected OVC, aged 24 months to 17 years old, regardless of their HIV status. For the purpose of this pilot, however, the target group was narrowed to HIV-exposed children under two years.

B4. FOOD COMMODITIES

SUCCESS-RTL used two specialized foods in the pilot: Ready to Use Therapeutic Food (RUTF) and a fortified blend food, High Energy Protein Supplement (HEPS), which were both sourced locally[6]. The RUTF used was a paste composed of milk powder (full cream milk), sugar (ground sugar), peanut paste (roasted and ground peanuts), oil (any type of oil), and vitamin mineral mix (imported) packaged in 93 g sachets. Each sachet provides about 500 kcal. RUTF is water-free food, does not grow bacteria easily and is ready to eat.

HEPS is a fortified blended food composed of maize flour, soya flour, sugar and vitamin-mineral mix. For the pilot, HEPS was packaged in 100g sachets. Each sachet provided 350-380kcal. HEPS is a familiar product in Zambia with a long history of utilization in the nutritional support of young children and the chronically ill. HEPS is processed to reduce cooking time and is usually consumed in porridge form.

Packaging in sachets was intended to reduce sharing, to institutionalize the idea that these foods were 'medicines', to ease calculation of recommended daily allowances (RDAs) and to aid monitoring at household level. Children with severe acute malnutrition (SAM) were prescribed RUTF and those with moderate acute malnutrition (MAM) were prescribed both RUTF and HEPS, in amounts sufficient to provide 100% of their energy requirements per day (Appendix C). Adults with SAM, including pregnant and lactating women, were prescribed both RUTF and HEPS to meet 100% energy requirements per day; those with MAM received HEPS to meet 50% energy needs (Appendix D). Energy calculations were based on the WHO guidance[7] on nutrient requirements for PLHIV. Clients with complications were admitted to inpatient services while those without complications were treated as outpatients.

In addition, all clients received a household ration of Clorin[8] for water purification. Food and Clorin were dispensed through pharmacies, warehouses or offices depending on site set up. The pilot was also tasked with linking families of client PLHIV with income generating activities (IGAs), wrap-around or other food-nutrition leveraging opportunities to address broader family food insecurity issues.

B5. COORDINATING AND MANAGING THE FBP PILOT

SUCCESS-RTL designated a Program Manager to coordinate the pilot activities, three nutritionists to provide technical oversight, and a supply chain officer to manage the supply chain. The supply chain officer was assisted by the CRS Commodity and Logistics Unit (CLU) responsible for all procurement activities in the organization. The centralized

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6 The Guidelines for a Food by Prescription Programme in Zambia (NFNC, 2008) includes malnourished HIV-affected OVC, aged 24 months to 17 years old, regardless of their HIV status. For the purpose of this pilot, however, the target group was narrowed to HIV-exposed children under two years.

7 World Health Organization Consultation on Nutrition and HIV/AIDS in Africa. April 10-13, 2005. Participants' Statement, Durban, South Africa. Policy Discussion Paper No. 8. ACC/SCN, Geneva. 1991.

8 The brand name for a sodium hypochlorite solution used in Zambia is "Clorin."

procurement ensured that commodities procured were of the highest quality, and that procurement adhered to donor regulations and CRS standards. The support from CLU also ensured that commodities reached intended clients in a timely manner.

To continuously monitor pilot progress, the team developed a monitoring and evaluation (M&E) framework indicating the goal of the pilot, strategic objectives, intermediate results and process and output indicators. Sites were visited twice per quarter on average. A site checklist included assessment of client assessment and counseling, review of client registers, cards and commodity stack cards for completeness and accuracy, confirmation of the existence of FBP manual and malnutrition algorithms and how they were used, and analysis of monthly quantitative data.

Women receiving HEPS for sick relatives. Wusakile, Zambia. Elizabeth Jere/CRS

C. Methodology of pilot evaluation

C1. SELECTION OF SITES FOR PILOT EVALUATION

The team used purposive sampling to select 11 evaluation sites: six ART clinics, four hospices and one[9] HBC site (Appendix A). Sites were clustered according to location (province), locality (urban or rural), program type (ART, hospice, HBC), supporting organization, size of facility, number of cured and discharged clients and number of defaulters and unknown/loss to follow up.

C2. EVALUATION POPULATION

Before carrying out the evaluation, the team purposively identified key target groups. The groups comprised FBP intervention clients, health workers and community caregivers. The health staff included Nurses, Pharmacists, ART Coordinators and heath/hospice administrators. Community caregivers included site coordinators, nurses and volunteers. Of the planned 55 health worker interviewees, 38 health workers were interviewed. Of 11 targeted administrators, 10 were interviewed.

The team had planned to purposively sample a total of 10 clients per site who were cured and discharged, for a total of 110 clients. In sites where the number of cured and discharged clients was less than 10, clients who had been on the program for at least three months were to be interviewed. Of the total targeted sample per site, 25% of the targeted clients were children, 25% were pregnant and lactating women, and 50% were adults. The actual respondent numbers were lower than the targets. Ninety-one[10] clients were interviewed of whom 84 were adults and only seven were children (see Table 1). To gather data about children, SUCCESS-RTL interviewed the guardian considered to be most conversant with the child's FBP status and HIV care and treatment regimen.

Table 1: Evaluation Sample

	Malnourished HIV-exposed children	Malnourished HIV positive children	Pregnant & Lactating women	Adults	Total
Total clients enrolled at 11 sampled sites	156	225	37	1,253	**1671**
Number sampled	5	2	0	84	**91**

9 *The brand name for a sodium hypochlorite solution used in Zambia is "Clorin."*

10 *Total includes clients who were ineligible for interview because they were active in the program for less than three months, had died, or were lost to follow up (the latter is negligible numbers).*

C3. QUANTITATIVE DATA COLLECTION AND ANALYSIS

Quantitative data was collected from existing FBP program records and existing facility records. Additional data was collected through key informant interviews with administrators, health workers, caregivers, site coordinators, pharmacists, stores clerks and adherence counselors. Variables of interest were age, sex, date of admission on and discharge from FBP, weight, BMI, MUAC, W/H –Z score on admission and discharge, treatment group, length of stay on treatment and reason for discharge from the program. Data were edited and entered into Excel. After validation of the files, the data were exported to Statistical Application Systems (SAS) for further cleaning and analysis. Analyses of these data involved descriptive and inferential statistical analyses including frequencies and distributions of all study variables.

C4. QUALITATIVE DATA COLLECTION AND ANALYSIS

Qualitative data was collected using structured interviews, open-ended interviews and focus group discussions (FGD). Participants included FBP clients, ART staff, hospice coordinators, hospital pharmacists and caregivers. FGD were held with groups of five to 10 participants. Each FGD was led by a moderator and recorded by a note-taker; direct open-ended questions and narrative scenario methods were used.

A total of 91 clients, 10 administrators and 38 health workers were interviewed as key informants. SUCCESS-RTL also conducted five FGD with health staff and caregivers. Additional quantitative data was retrieved from monthly qualitative reports as well as field visit reports at SUCCESS-RTL, and from client registers and cards at facilities. Qualitative data was analyzed manually. The evaluation team read through the interviews to generate emerging themes. This process was followed by sorting of the data text, from which outputs were generated for content analysis. Facility registers, clients' cards, monthly reports and trip reports were included in the analysis.

C5. LIMITATIONS

The evaluation faced a variety of limitations during implementation. Not all partners informed clients of their interview times, so evaluation teams traveled to the field to trace some clients. Therefore, client selection was impacted by geographic distance, limitations in finding the clients, and time constraints for this level of follow up. As a result, the evaluation teams interviewed a disproportionate number of clients who were still on the program and could be found at the facility, and fewer cured and discharged clients than planned. Of the 91 clients sampled, 21 clients were cured and discharged, and 70 were still on the program. Unfortunately, the sample size of children was small, and therefore limited analysis of data on children cannot be generalized. Similarly, although pregnant and lactating women were included in sample population, the numbers were very small

thus no recommendation could be made about the suitability of an FBP programme for mothers or infants and young children.

The quality of site records also presented a limitation in data collection. The site records and monthly quantitative dataset had numerous missing anthropometric data which limited the scope of analysis. At some sites, data on types of food dispensed was incorrectly captured, and information for clients transitioning from one treatment category to the other was not consistently recorded in the registers or the client cards. SUCCESS-RTL could not use the quantitative data from three of the four hospices (Cicetekelo, Jon Hospice and Our Lady's Hospice) because of numerous discrepancies.

The length of the pilot implementation was very short at the time of the evaluation. Sites received food commodities in July 2009, and the evaluation was conducted in December 2009. This time was sufficient to measure the extent of integration of FBP into HIV care and treatment services. However, it limited access to a meaningful sample of graduated clients by site. Pooling the number of sampled clients may have masked individual site distribution patterns. Of the 21 cured and discharged respondents, 10 (48%) clients were from ART clinics, 10 (48%) were from hospices and only one individual was from the HBC.

One final limitation was that some health provider respondents were not very familiar with the program since they had come on board later on in the program.

C6. CHARACTERISTICS OF SAMPLED CLIENTS

Overall, eight-four (92%) sampled clients were adults (men and non-pregnant and non-lactating women) and only seven (8%) were children. The number of children enrolled was very low and this corresponds to national pediatric ART enrolment which stands at only 7% (unpublished HIV report). Fifty three percent of sampled respondents were females and 47% males with an age range of six months to 71 years and an average age of 37 years. There is no significant difference ($p = 0.94$) between males and females in these categories. Sixty two percent males and 38% females were cured and discharged. The rest were still on the program. The average for females was 34 years; for males, 40 years.

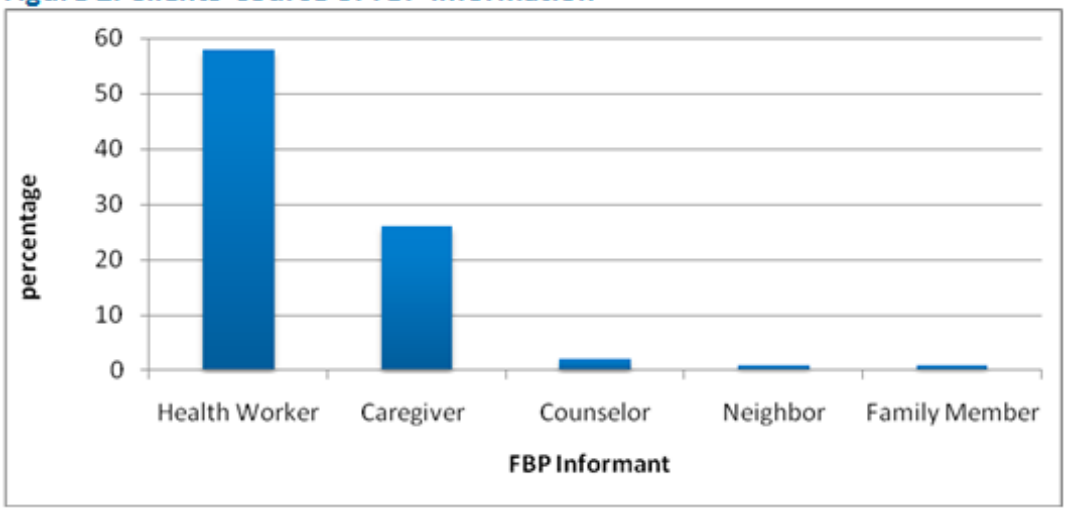
More than half (62%) of sampled clients were enrolled for SAM and 38% were enrolled for MAM[11]. The unusually high proportion of SAM clients was noted, and could be attributed to a number of factors. It should be noted that this pilot programme targeted hospices, where a disproportionate number of patients were admitted with SAM. In some settings, it was observed that clinical staff were not reliably weighing every client, tending instead to prioritize those who looked malnourished thus possibly inadvertently excluding those with

11 If, SAM is high while MAM remains relatively low, it is likely that non food factors such as disease, particularly HIV are important determinants of malnutrition.

MAM. It was also speculated that the gravity of illness kept SAM clients in the program longer and closer to the facilities, thus making them easier for the evaluation team to access. The majority were newly enrolled in HIV care and treatment, and had presented as wasted. However, others had been in ART or HBC programs for some time, which could indicate potential ART treatment failure, poor adherence, food insecurity, poor nutrition knowledge, or nutritional deficits related to opportunistic infections.

Clients' household size ranged from two to 20 individuals with an average of six individuals per household. Large household size may have serious implications on food availability. Predominant sources of income were informal labor (25.2%), petty trade (14.9%), small scale business (13.8%), formal employment (11.5%), and small scale farming (12.6%). More than half (59%) of respondents heard about the FBP pilot from health workers, and slightly more than a quarter (27%) heard from their caregivers, suggesting that most of the clients were admitted on FBP as an integrated part of HIV services. The remaining 14% were informed either by their counselors, neighbors or family members (Figure 2).

Figure 2: Clients' source of FBP information



Quantitative and qualitative samples were not meant to be generalized across all sites, and their value was in their relevance to the site to which they belonged. Qualitative data saturation suggested that the findings reflected common values and experiences. The potential of bias in interpretation was addressed through discussions with program staff at SUCCESS-RTL and facilities.

D. Results: Client outcomes

Effect of intervention on weight gain (g/kg/day)

Intervention effect was estimated as the difference in mean weight gain (g/kg/day) of those who were cured. SUCCESS-RTL analyzed data from 97 client records from five sampled sites: Serenje, Ndola and Wusakile Hospitals, Minga Hospice and Chipata HBC programs. SUCCESS-RTL collected data from an additional three hospices and two hospitals, but these sites have not been included due to data discrepancies that prevented in-depth analysis on weight gain.

All five sites showed an increase in average and median BMI between client entry and discharge. The average BMI on entry was 17.6 kg/m^2; the average BMI on discharge was 20.5 kg/m^2. The overall average increase in BMI pre-FBP to post-FBP was 2.9 kg/m^2.

Total weight gain ranged from 1.3 g/kg/day to 3.7 g/kg/day. In the absence of an international standard for weight gain in the management of adult malnutrition, this program compared its findings to the standard used in the treatment of malnourished children (3.5 g/kg/day) as described in the Zambian Food by Prescription Guidelines. The findings from the pilot indicate that adults did not meet the target of 3.5 g/kg/day at four of the five sites. This finding was harder to interpret but may be related to the severity of underlying illness.

Effect on health status of surveyed clients pre and post FBP intervention

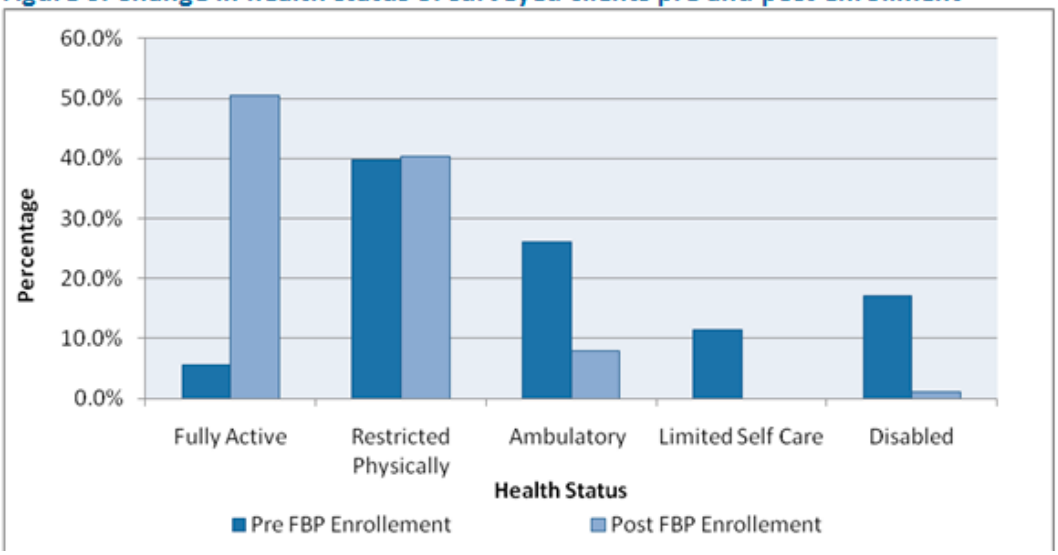
Clients were asked to rate their health status before FBP and after FBP intervention using the Eastern Cooperative Oncology Group (ECOG) performance scale (Table 2)[12]. After the intervention, most clients' health improved (Figure 3). Only 1% of clients were found to be completely disabled post-FBP compared to 17% pre-FBP. The majority of clients moved from being completely disabled (Grade 4) or capable of only limited self care (Grade 3) to being fully active (Grade 0). There is no significant difference by gender post-FBP ($p = 0.42$), indicating that the response to treatment was similar in males and females. This also could suggest that there was no difference in adherence to treatment by males and females.

12 If, SAM is high while MAM remains relatively low, it is likely that non food factors such as disease, particularly HIV are important determinants of malnutrition.

Table 2: ECOG Performance Status

Grade	Condition
0	Fully active, able to carry on all pre-disease performance without restriction.
1	Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work.
2	Ambulatory and capable of all self care but unable to carry out any work activities. Up and about more than 50% of waking hours.
3	Capable of only limited self care, confined to bed or chair more than 50% of waking hours.
4	Completely disabled. Cannot carry on any self care. Totally confined to bed or chair.
5	Dead

Figure 3: Change in health status of surveyed clients pre and post enrollment



Effect of intervention on length of stay

Length of stay was the total number of days that a client remained on the FBP program before discharge. The estimated length of stay used for planning was three months of SAM and another three months of MAM. The average length of stay across the pilot sample was 97 days (3.2 months) ranging from 20 days to 176 days (5.8 months) (Table 3). Since the project was only six months into implementation at time of evaluation, data was not analyzed for clients that did not respond to treatment at the recommended six months period.

Length of stay was closely related to many factors, including level of skills of the service provider, quality of counseling, adherence to food by clients, household food security, and health status upon enrollment, including presence of opportunistic infections.

Table 3: Effect of intervention on length of stay

Total duration of treatment (days) in clients enrolled by BMI < 18.5	Average no. of days	Minimum no. of days	Maximum no. of days	Median
Serenie District Hospital	106	89	140	96
Ndola Central Hospital	96	30	141	98
Wusakile Mine hospital	78	26	149	99
Wusakile Mine hospital (BMI > 18.5)	110	20	174	131
Minga Hospice	61	14	176	42
Chipata Home Based Care	128	92	138	138

The evaluation revealed that some sites had challenges enrolling and discharging clients correctly. Some clients were retained in the program after meeting the discharge criteria, sometimes for several more months; in two sites, some clients were discharged before they attained discharge weight. Surprisingly, one site enrolled a small number of clients whose BMI exceeded 18.5kg/m^2. These discrepancies were attributed to the use of untrained staff and a lack of understanding of the guidelines, which were rectified within the first three months of the program. Finally, all clients, upon achieving discharge criteria, were given a one-month 'transition' ration. Staff continued to collect data during this final month to ensure clients maintained their recovery trajectory. Having this extra month's data, however, created confusion in some sites when compiling 'discharge' data, as there was a tendency to include results gleaned from the additional month's ration.

Effect of intervention on type of discharge

When analyzing for length of stay in the programme by treatment group (SAM/MAM) or gender, the intervention showed no significant difference (Table 4). The recovery rate for the clients enrolled as severely malnourished was similar to the recovery rate for the clients enrolled as moderately malnourished, which indicates that the food prescribed was appropriate to meet the energy needs of each treatment group.

Of the 22% of clients already discharged from the program across all sites, 997 (84%) were cured, 127 (11%) died from various causes, 45 (4%) were unknown or lost to follow-up and 18 (1%) were removed from treatment because of medical complications. Client exit characteristics were measured against the Sphere Standards, used for a lack of an alternate standard measure. According to Sphere Standards[13], greater than 75% of discharges should be cured, less than 10% of discharges should be deaths, and less than 15% of discharges should be defaulters. The pilot results met the standards for cured and defaulted, and only barely missed meeting the standards for death, which was not surprising given the client population.

13 Sphere standards are designed for children in emergency situations and not for adults.

Table 4: Client Recovery Status relative to Nutrition Status on Enrolment (Sample Population)

Client status	Malnutrition Status (n=89)			
	Severe (n=55)		Moderate (n=34)	
	n	%	n	%
Cured & Discharged	13	23	8	23.5
Improving/Still in Program	41	75	25	73.5
Non Responder	0	0	1	3
Defaulter	1	2	0	0
	Sex (n=89)			
	Male (n=42)		Female (n=47)	
Cured & Discharged	13	61.9	8	38.1
Improving/Still in Program	28	43.1	37	56.9
Non Responder	1	100	0	0.0
Defaulter	0	0.0	1	100

Prescription frequency

According to FBP guidelines, SAM clients were required to receive bi-monthly rations because they needed regular, frequent contact with a treatment facility whilst MAM clients received their rations monthly. In this pilot, most clients received monthly rations. A few received a weekly ration because they were on weekly ART observation. It was difficult for clients to come for food on days when they did not have a regular ART clinic appointment. The average number of prescriptions for ever-enrolled clients was four, ranging from two to six.

Food consumption and dietary diversity

The link between HIV and food insecurity has been well documented. The FBP model is not meant to address household food insecurity; however respondents were asked questions regarding food insecurity to establish whether food insecurity had an impact on client recovery. It is important to note that the FBP evaluation occurred in December, at the beginning of the annual lean season in Zambia.

Both active and discharged clients reported household food insecurity. For the 70 clients (77%) still on the program, 24 (34%) reported cultivating their own food. This food lasted an average of 7.5 months ranging from three to twelve months. Of the 24 clients, only five reported still having cultivated food from the last season at the time of the evaluation. Those that did not cultivate own food reported depending on gifts from friends and family and purchases. Household food insecurity reported by the discharged clients (21) appeared to be worse than for those currently enrolled, indicating that most discharged clients were not benefitting from livelihood/economic strengthening programs or other food security initiatives which would prevent them from relapsing and support long-term sustained recovery. Because the pilot was implemented for only six months, SUCCESS-RTL was not able to track outcomes over a longer period.

Another important measure of food security is the number of meals people eat in a day. The number and diversity of meals provided per day also relates to the quality of nutrition counseling and education they received, a key component of the FBP model. The purpose of nutrition counseling is to enable clients to know locally available nutritious foods, to understand the relationship between good nutrition and HIV outcomes, and to be able to manage common opportunistic infections through nutrition.

Using a 24-hour recall period, information was collected on the types of foods and snacks that clients consumed during the previous 24 hours prior to the evaluation. Average number of meals eaten by children in respondents' households was 2.1 meals in the last 24 hours and average number of meals eaten by adults was 2.3 in the last 24 hours.

A food consumption score was calculated as described in the FANTA Guide Measuring Household Food Consumption: A Technical Guide. The score is based on the different food groups consumed as opposed to the number of different foods. The twelve different food groups that are used for the food consumption score are cereals, root and tubers, pulses/legumes, milk and milk product, eggs, meat and offal, fish and seafood, oil/fats, sugar/honey, fruits, vegetables and miscellaneous.

Table 5: Household food consumption and dietary diversity

Food group/type	n	%
Cereals	85	93.4
Dark green leafy vegetables	60	66.0
Cooking oil/fats	59	64.8
Sugar/sugar products	45	49.5
Legumes/beans	33	36.7
Vitamin A rich vegetables/tubers	28	31.1
Meat	21	23.1
Spices and caffeine or alcoholic beverages	21	23.1
Fish	19	20.9
Milk/milk products	15	16.4
Fruits	14	15.3
White roots/tubers	9	9.9
Eggs	9	9.9

Food consumption ranged from 0 to 11 with a mean score of 5.1, implying that, in the 24 hours before review, clients consumed approximately five different types of food from the above groups on the food consumption score chart (Table 5). Most clients reported that they were not able to eat appropriately because they could not access the other foods. This has an impact on recovery, as FBP foods were only meant to treat malnutrition and clients need regular foods to sustain the recovery trajectory.

These findings reveal possible danger of relapse due to eating fewer meals and having inadequate dietary diversity.

The RUTF, produced in Malawi, was packaged in 93-gram foil sachets.
Photo courtesy of Valid Nutrition.

E. Results: Integration of FBP into HIV care and treatment services

Integration of FBP services into HIV care and treatment services varied substantially. This evaluation considered how sites coordinated activities with existing resources and overall implementation of FBP interventions within existing systems.

E1. CLIENT FLOW

ART clinics: ART clinics followed the anticipated FBP model presented earlier in Figure 1. The majority achieved full integration of FBP and ART services. However, at one site where only partial integration was achieved, there was a negative effect client service uptake and consistency of participation. At this site, clients were assessed in the ART clinic but referred to a different location for FBP enrollment and often failed to present there. Clients missed FBP follow-up appointments that were not coinciding with ART clinics, especially those who were weak or lived far from the facility.

Facilities with weak linkages to community HBC or other outreach programs also had the highest number of defaulters, while those with stronger links benefitted. For example, Wusakile Mine Hospital's well-established referral system with Diocese of Ndola HBC program demonstrated a zero default rate because volunteer caregivers consistently followed up clients in their homes.

To reach more clients, some hospitals extended FBP services to outreach centers, satellite sites or mobile clinics from which they provided FBP services to the remote parts of their catchment areas. For example, St Francis Mission Hospital had six satellite clinics that were more than 75 kilometers from the main facility, some with over 1000 clients enrolled in their ART program. Extending service to satellite sites allowed these centers to serve large numbers of ART clients who needed service and helped to decongest the main facility. (Congestion increased when the hospital started the FBP pilot.) Wusakile Mine Hospital has three satellite clinics in peri-urban areas of Kitwe that serves adult ART clients; the main ART clinic at the hospital only caters for pediatric ART clients.

Sites had various challenges with transport to satellite clinics, as illustrated by the quotes below.

"We send the RUTF and HEPS with staff as they go for outreach activities. We have a schedule and there are many sites that we visit. When there are no staff visiting outreach sites in that week, no food is taken there. We have a dilemma in that we

cannot take food in advance because these sites do not have storage space." (ART clinic administrator).

"Sometimes we have no transport to take food to sites because the priority activity is to take staff for outreach activities. If the vehicle is full, there is nothing much I can do but wait. This is bad because clients miss taking the food." (FBP focal point person).

HBC: HBC programs provided a "one-stop" delivery model. Clients presenting at the HBC parish office were assessed, counseled, prescribed and dispensed food by the caregiver manning the parish office on the day of their visit. The same caregivers provided home-based follow-up and support to clients. The HBC program had a vehicle provided by SUCCESS-RTL for palliative care activities. One coordinator explained, "SUCCESS-RTL gave us a vehicle for palliative care and this is the same vehicle that is used to take the food to parish sites."

Hospice: Hospices provided FBP to both inpatient and outpatient clients. The inpatient clients received FBP services integrated into palliative care services provided in the hospice wards. If clients had not attained FBP discharge criteria when leaving the hospice, they were sent home with food.

Outpatient service models varied considerably for hospices. Some hospices with ART clinics modeled their clinic flow on Figure 1. Other hospices had outreach activities in community outstations, similar to the HBC model. Two hospital-based hospices used yet a different model: the hospital provided assessment and counseling and referred clients to the hospice for FBP. FBP follow-up appointments were aligned with palliative care appointments. Outreach activities were conducted for clients that stayed far away from the facility, and, in some cases, food was taken to clients' homes by hospice caregivers. For example, Cicetekelo Hospice had both an inpatient hospice and an HBC component. The volunteer caregivers from the HBC were responsible for following up outpatient clients while hospice staff were solely responsible for inpatient care and, at times, HBC volunteer caregivers assist at the hospice. In cases where outpatient clients could not go to the facility for the FBP services, the HBC team took the services to the community. This arrangement worked well because the Cicetekelo HBC program had a strong team led by a qualified nurse, and the team was quick to integrate the FBP intervention into palliative care services.

Lessons learned and Recommendations: Client Flow

Integration was evident because FBP client flow followed the existing systems at all sites. This evaluation found that, at every point of contact with health providers, FBP services were included in HIV care protocols. FBP services were not assigned to a specific cadre or desk, nor was it considered a program to be implemented by nutritionists only.

SUCCESS-RTL did not originally recommend decentralization to satellite clinics due to fears of "food going missing", challenges with supervision and monitoring, and incomplete record-keeping. Sites that chose to decentralize had mixed results. Hospital-initiated satellite outreach activities were quite successful in terms of numbers reached and consistent quality of services provided. Hospital outreach was implemented by either hospital ART staff or the satellite clinic staff, all of whom were trained health professionals. However, hospice FBP outreach varied in quality, which could be due to being implemented by lay counselors or volunteer caregivers. HBC, an outreach program by its nature, had smooth integration. These findings correspond with finding from SUCCESS-RTL field reports during the period under evaluation.

E2. FBP SERVICE PROVISION

The FBP package of care included anthropometric assessments, nutrition counseling, prescribing appropriate foods, provision of Clorin, linkage to livelihood activities and other social safety social nets and scheduling follow up visits. To validate quality of service delivery overall, service providers were asked to indicate each service they provided to the clients, and clients were in turn asked to indicate each service they received (Table 6). The number of clients indicating that they had received a service was lower than what service providers reported (Figure 4)[14]. After the initial question about services ever received, the client was then probed to further validate information.

Assessment: Clients indicating ever being assessed were 87.9%, slight lower than what was reported by service providers (97.4%). After probing, the majority of the adults (92.3%) reported being weighed, which was in line with the service provider response.

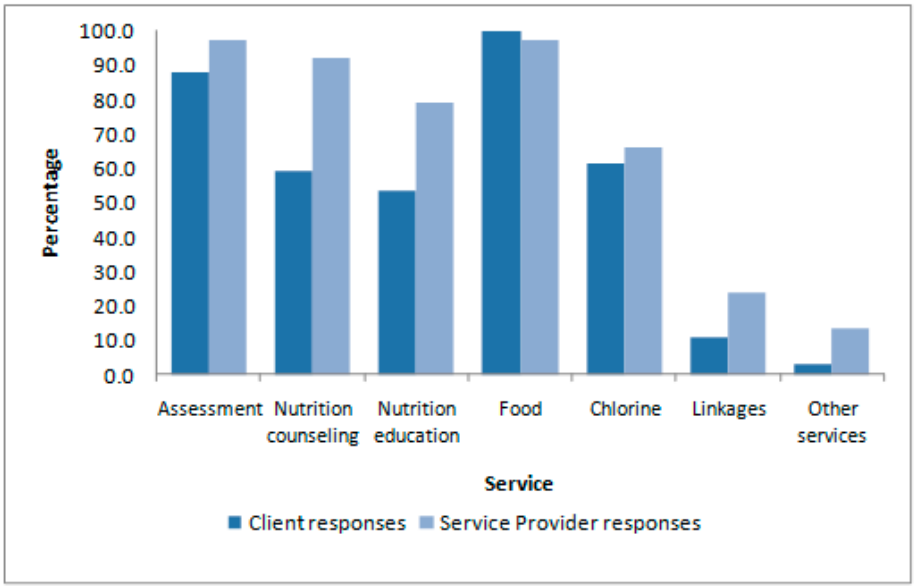
Apart from adult height, which was not required to be checked on subsequent visits, other indicators were not routinely taken.

14 NB: Each respondent could mention more than one measurement.

Table 6: Services received on every visit (client recall)

Service	Yes	No	Sometimes
Weight checked (adults)	92.3	1.1	0
Height checked (adults)	0	0	0
Weight, MUAC, height checked (children)	13.2	3.3	0
Client asked how they were feeling	75.8	13.2	-
Nutrition counseling given	63.7	23.4	12.9
Client asked how they were feeling	75.8	13.2	11.0
Clients changed eating habits due to nutrition counseling	58.2	25.3	16.5
Clients talked to service provider about nutrition related symptoms	45.1	48.4	6.5
Service provider asked about appetite	85.7	7.7	6.6
Follow-up visit scheduled	79.3	0.0	20.7
Missed scheduled visits	19	21.3	59.7

Figure 4: Variations in responses of clients and service providers about FBP service ever received and ever provided



Counseling: The majority of service providers (92.1%) mentioned that they provided nutrition counseling in contrast to 59.3% of clients who said they received counseling. Seventy-nine percent of the service providers said they provided nutrition education, in contrast to 53.8% clients who said they received nutrition education. This indicates a gap in perceived assessment and counseling services received by clients.

Clients were probed after the initial response to the first question. Sixty four percent said they received nutrition counseling on every visit, which is a slight increase over the first response of 59.3%. Further, 45% mentioned being asked about nutrition related

symptoms. By gender, the number of female clients (68.8%) who received counseling on every visit was slightly more than male clients (60.0%).

Clients were asked whether the counseling they received made them change their eating habits; 58.2% said they changed behavior. The majority of female clients (81.6%) said counseling helped improve their eating habits and only half (55.6%) of the male clients said the counseling made them change their eating habits. This may be expected because in Zambia, women are normally responsible for preparing food. However the difference was not significant (p=0.6). The majority of clients (85.7%) mentioned that they were asked about appetite. This was important because it was used to gauge whether clients were able to consume the foods provided and as instructed. Table 6 also shows that 79 percent of the clients said they were given a follow up date and of these 19 percent missed the scheduled visit, 21 percent said they never missed and the remainder sometimes missed a scheduled visit.

Finally, 76 clients reported being asked how they were generally feeling and 45 percent said they were asked about nutrition-related symptoms. This information is important because it determines the depth of counseling clients received. The information on nutrition related symptoms was compared with what service providers said they provided and discussed further under service provider practices assessment below.

Food: Food was provided to 100% of respondents as expected. Ninety seven percent of service providers said they provided food, although this was interpreted as providing FBP services but not necessarily having the personal responsibility for prescribing or dispensing the food.

Clorin: The responses about having provided and received Clorin were consistent between clients and providers. Clorin was only purchased once[15] and some sites ran out before the evaluation.

Additional client feedback: As part of the evaluation, clients were asked additional questions about a variety of service quality indicators, such as instructions and explanations provided by service providers, eating habits, stock outs and food packaging, quality of services the pilot sites offered, and clients' adherence to the services provided (Table 7).

The evaluation asked two questions to establish whether the objective of the pilot program was understood by program implementers and beneficiaries. Fifty percent of

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15 Clorin was purchased from USAID-funded Society for Family Health (SFH) project (PSI). At the time of implementation, SFH was in the process of close out of their US-government funded contract and could only provide what was available at the time.

respondents said that they were informed that FBP duration would be three to six months, and others said that they were informed that they would be prescribed food until they attained their normal weight (at least 85 percent of ideal weight). In addition, 83 percent said they were told the reasons they had been enrolled on FBP pilot program. Common reasons mentioned were that they were underweight, on ARVs, sickly, weak and not responding to treatment.

The evaluation also probed for information on client understanding of food preparation and consumption, and to determine the impact of service delivery on these factors. Ninety-eight percent of clients said they were given instructions on how to prepare the foods, and 98 percent said they were told how often to eat the foods. Of these, 78 percent said that they ate the foods according to instructions and 36 percent said they skipped some doses. Of those that skipped doses, 33 percent said they missed because of stock outs at the site or that there was no one at the site to give them their prescription, indicating the impact of gaps in human resources and supply chain management.

Table 7: Client feedback

	Yes		No		Sometimes		Total
	n	%	n	%	n	%	n
Duration on FBP	43	50	43	50	-	-	86
Reasons for being on FBP	72	83	15	17	-	-	87
Instructions on food preparation	86	98	2	2	-	-	88
Food consumed as instructed	68	78	6	7	13	15	87
Food lasted entire period it was given for	59	69	10	11	17	20	86
Questioned about side effects	69	85.2	12	14.8	-	-	81
Skipped meals	32	36.4	56	63.6	-	-	88
Skipped meals due to stock outs/absence of staff at facility	29	32.6	60	67.4	-	-	89
Carried the food on my own	51	56	27	29.7	13	14.3	91
Program delivered food	12	13.2	79	86.8	-	-	91
Packaging convenient	73	82.0	16	18.0	-	-	89
Visited at home	40	45	49	55	-	-	89

Of the 15 percent who reported that they did not eat the food as instructed, they mentioned that RUTF and HEPS received from FBP program was the only food they had at home, and others said they just liked the taste of RUTF and HEPS so they ate more. However seven percent consumed less than recommended because they said they found RUTF too sweet and/or too salty, or experienced diarrhea and vomiting after eating RUTF. Clients also reported that although they were experiencing diarrhea and vomiting initially, symptoms went away within a week or two. Some clients, however, just did not just like the food.

Overall more than half (69 percent) said food lasted through the entire period it was provided for, but 20 percent ran out of food sometimes, and 11 percent reported always

running out of food before the end of the prescribed duration. By gender, 71 percent of female clients had food lasting the entire period it was intended, which was similar to the overall finding, and 64 percent of male clients said food lasted the entire period it was prescribed. Slightly less than a quarter (22.2 percent) female clients said they sometimes had food running out before intended period in comparison to 18 percent of the males. These findings were also similar to the overall finding. Seven percent of female clients always run out of food before intended period compared to 18 percent of their male counterparts. These findings present no significance difference ($p=0.28$) by gender. Although more females than males said their RUTF and/or HEPS lasted for the entire period, more females also reported high proportion of sharing.

Not all clients were able to carry a one-month supply of food, which was 8.4 kg of RUTF (90 sachets) and 12 kg of HEPS (100 sachets) if they were being treated for SAM, or only 12 kg of HEPS if they were being treated for MAM. Quantities for children were less than adult quantities (Appendix C). Slight above half of all clients (56 percent) said they were able to carry their own supplies home, while 13 percent said the program delivered the food to them. The clients that had food supplies delivered to their homes were only from HBC programs. Ndola Central Hospital gave bi-monthly supplies of food because some clients were failing to carry their supplies, which may have been exacerbated by clients facing difficulties carrying their food down three flights of stairs in the hospital. On packaging, 82 percent said the packaging was very convenient because it was easy to carry, use and store. The 18 percent that had problems with packaging mentioned that the sachets were too small, the contents were too little and that they preferred larger packaging (e.g. 25 kg).

To promote nutrition, a number of nutrition promotion education meetings were held in communities of the pilot site catchment areas. Across all sites, 74 respondents attended these meetings, and 62 percent of these were involved in organizing the meetings. Responses varied within sites, with some service providers mentioning that they were involved in community education programs and others saying that they had never been involved in nutrition community meetings. Sites that had community outreach programs and HBC components mentioned higher involvement in these activities. Some topics discussed included positive living, infant feeding, maternal nutrition, identifying malnutrition, water/hygiene/sanitation, voluntary counseling and testing (VCT), balanced diets and benefits of RUTF and HEPS.

Materials used at these meetings were accessed from a variety of sources, including Kara Counseling and Training Trust, MOH, Network of Zambian People Living with HIV/AIDS (NZP+) and CRS. Members of the community on their own initiative also conducted nutrition meetings to highlight the importance of the FBP pilot program and

the community's roles and responsibilities in the program. Forty-three percent of service providers mentioned that nutrition knowledge has increased and that they have observed some changes in nutrition behaviors as a result of these activities. They mentioned that people were able to name foods appropriate for PLHIV including general good nutrition facts. Clients also sought nutrition information voluntarily.

Service provider practices assessment: A service provider practices assessment form was designed to gather information on practices with regard to managing nutrition related symptoms. The form had all the steps indicated and any steps that the health staff mentioned spontaneously were entered as "Yes". After service provider explained the whole process, then the interviewer went back to probe for those steps that were not mentioned. If the staff answered in affirmative then "probed Yes" was entered, while a "No" was entered for all those areas that the staff said they did not perform.

Service providers did not ask comprehensive questions about major physical signs of nutritional status. Diarrhea and nausea were the most common symptoms assessed. Anemia, constipation and edema were not often assessed when inquiring about nutritional related symptoms a client might have experienced in the last month. A number of service providers reported that they did not assess for wasting, constipation and thrush. Other nutrition-related symptoms mentioned were painful legs, vomiting and loss of appetite.

Twenty six percent of service providers interviewed said they had never been trained in FBP and 34 percent said they had never been trained in HIV and Nutrition. Further analysis to determine the role of training in enhancing the service providers' assessment and diagnostic practices was calculated. This entailed correlating training with a number of variables related to nutrition assessment and diagnostic skills and practices. There was no statistically significant association between reported training and the screening and diagnostic skills for malnutrition for most variables except for screening for bilateral edema which showed a weak association ($p=0.05$). Lack of association was most likely due to the high trained staff turnover, and that programs assigned service providers to implement the program who were not trained. Alternately, the training length or design did not make meaningful contribution to the skills and knowledge of these staff concerned.

Lessons Learned and Recommendations: Service Provision

Enrollment for adults whose height could not be taken was based on MUAC. However, using MUAC alone resulted in missing eligible clients. The cut-off for MUAC for screening purposes should be increased. Referred clients can then be further assessed at the site for eligibility. More service providers reported providing counseling than clients reported receiving counseling. There was a disconnect between either provision of counseling or

perception by clients of what constitutes nutrition counseling. Regardless, findings point to a need for increased emphasis on consistent provision of nutrition counseling and education that provides comprehensive information. When integrating FBP services into HIV care and treatment services, a person trained in counseling should be identified to undertake the counseling service provision. Analysis of the average amount of time available for nutrition counseling and amount of time required for nutrition counseling was recommended for future programs, as service providers gave a wide range of subjective answers during the evaluation, and actual practices were not recorded during monitoring visits to sites.

A more detailed assessment is needed to determine the percent of eligible FBP clients that received Clorin from other sources, since other health promotion programs in Zambia commonly provide Clorin (e.g. through GRZ seasonal cholera prevention exercises, as part of the HBC package, etc).

Quality of service provision and training of service providers are linked. Even after training, not all service providers did comprehensive nutrition assessment on all HIV clients. Weight measurement was a standardized practice, but BMI was rarely calculated and MUAC was equally rare. As a result, some eligible clients for FBP may have been missed, while other ineligible clients were enrolled. The pilot recommends that service providers receive more training in order to correctly implement the program according to enrollment and discharge criteria. In addition, without comprehensive monitoring, sites were unable to consistently track recovery of enrolled clients over time. In addition to the initial service provider trainings, SUCCESS-RTL also used a staffing ratio of one nutritionist technical assistant (responsible for providing mentorship) to five FBP sites. More rigorous mentorship is required, such as placing a mentor at a site for an extended period of time. A quality assurance feedback loop was missing from implementation.

E3. FOOD STORAGE AND DISPENSING

Unlike FBP pilot implementation in other PEPFAR countries, SUCCESS-RTL did not sub-contract to a supply chain organization to support logistics of RUTF and HEPS. The two foods were also not part of the Supply Chain Management Systems (SCMS) commodities forecasts, nor were they included in the government commodities system in Zambia. At the start of the pilot, CRS investigated the potential of integrating RUTF and HEPS warehousing and delivery into the Medical Stores (MSL) or CHAZ systems, but this

was not successful[16]. Therefore, all aspects of supply chain management were solely undertaken by CRS-Zambia under the organization's Commodities and Logistics Unit. A supply chain officer was hired to specifically manage the FBP supply chain system and develop standard operating procedures for sites related to food commodities.

CRS used the push system to forecast, purchase and deliver commodities to sites. During the implementation period, the pull system was tried but posed challenges for the team. HEPS has a shelf life of only six months, and RUTF initially had a shelf life of four months, although this improved to one year when the packaging changed mid-way through the pilot to vacuum-packed sachets. With client numbers fluctuated every month, the project decided a pull system would reduce the risk of stock outs or food expiry.

Figure 5: Procurement cycle

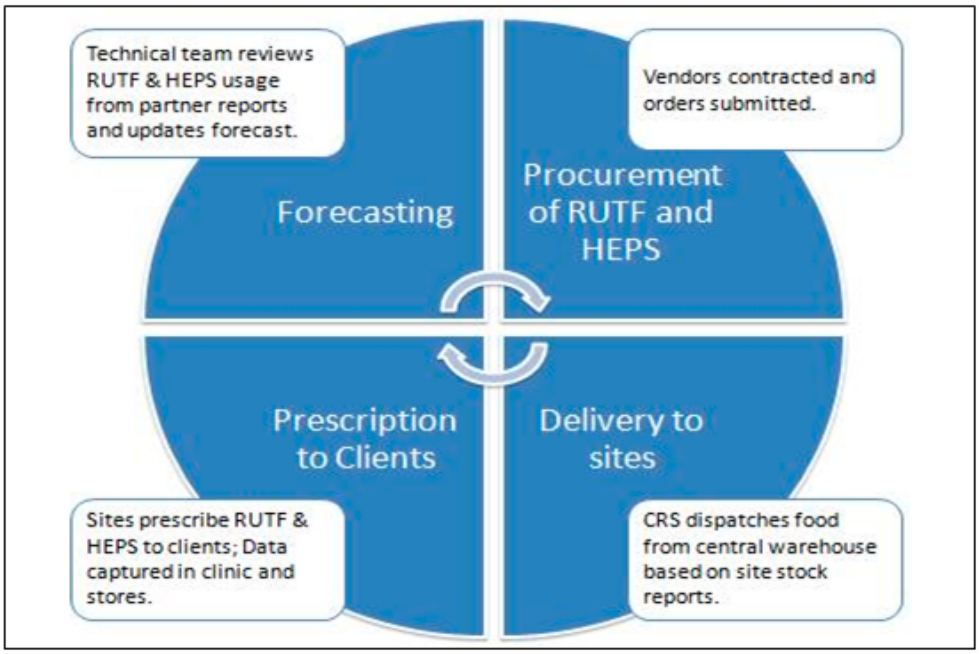

Figure 5 outlines the procurement system used. For every batch of food procured, vendors submitted a quality assurance certificate for microbiological and biochemical indicators to CRS (Appendix E). CRS also contracted National Institute for Scientific and Industrial Research (NISIR) and Food and Drug Laboratory (FDL) at the University Teaching Hospital (UTH) to confirm that food conformed to required standards. In cases where standards were not met, the food was rejected and replaced with another batch that was also accompanied by 'fit for consumption' certification and re-tested.

16 One of the main reasons that MSL did not want to store the food was due to packaging. RUTF was packed in bottles that leaked, but was later changed to vacuum packed sachets. HEPS packed in large bags can have leaks, but using small polyethylene sachets prevented this problem.

The baseline assessment conducted in five sites prior to the pilot had revealed that sites had adequate storage facilities. However, during implementation, storage space became one of the biggest challenges at the sites. For example, Ndola Central ART clinic and Serenje District Hospital were forced to store the bulk commodity in the kitchen because of inadequate storage space.

Where service providers were asked to suggest the ideal locations for dispensing food, responses were divergent. Some service providers said that the pharmacy was the ideal place to dispense RUTF and HEPS to ensure FBP was fully integrated in HIV care services, while others felt pharmacies were already overwhelmed with distributing drugs. Administrators were similarly split in their opinions.

During the evaluation, health providers were asked who prescribed FBP food supplies and who prescribed drugs. In ART clinics and some hospices, drug and food prescribers were the same cadre. When asked where FBP food supplies were dispensed, there were wide variations across programs (Table 8). For example, St Francis Mission Hospital used drug prescribers to prescribe the food. When it came to dispensing, clients received drugs from the pharmacy and accessed food from the store room. Many sites reported that pharmacists were overwhelmed with dispensing drugs and could not add on other responsibilities. In the HBC program, caregivers prescribed and dispensed the food and drugs together. Ndola Central Hospital used nutritionists to prescribe and dispense food. The food was dispensed from the nutritionists' office on the third floor, whilst drugs were dispensed from the ART clinic pharmacy in the basement floor of the hospital.

Table 8: Food storage and dispensing mechanisms by pilot site

Site	Storage	Dispensing area	Prescriber	Dispenser
St Francis Mission Hospital	Store room	Store room	CO/Nurse	Stores Clerk
Ndola Central Hospital	Kitchen	Office	Nutritionist	Nutritionist
Serenie district Hospital	Kitchen	ART dispensary	Clinician/nurse	Pharmacy technician
Wusakile Mine Hospital	Store room	Pharmacy	Clinician/CO/Nurse	Pharmacy tech.
Chreso Ministries Clinic	Store room	Pharmacy	Clinician/CO/Nurse	Pharmacist
Minga Hospice	Store room	Office	Caregiver	Caregiver
Cicetekelo Hospice	Store room	Duty room	Nurse	Nurse
Our Ladys Hospice	Store room	Pharmacy	CO/nurse	Pharmacist
Jon Hospice	Container	Duty room	Caregiver	Caregiver
Chipata HBC	Store room	Office	Caregiver	Caregiver

Of the respondents, only 32 percent said they had been trained in logistics. Health providers, including pharmacists, were asked the type of internal requisition system they used. More than a quarter (34.2 percent) reported using the drug requisition system for food requisition and 45 percent said they used a different system. The predominant reason for using different system was that food and drugs were provided in parallel,

non-over-lapping systems: Drugs are sourced from Medical Stores (MSL) using standard government documentation, whereas FBP commodities were provided by SUCCESS-RTL with a different set of forms. Health providers were further asked if they were satisfied with the current internal requisition system. Thirty-nine percent said they were satisfied with the food requisition system used at their sites, but a quarter (26.1 percent) said that the drug and food requisition system should be synchronized to reduce the burden of parallel systems.

Lessons Learned and Recommendations: Food Storage and Dispensing

Supply chain management was a major challenge of implementation. Three factors influenced the difficulties faced with forecasting:

- Month-to-month enrollment of new clients varied considerably within a site,
- Length of stay for clients varied, and
- Commodities had relatively short shelf life.

CRS did not send more than two months of commodities at a time to a site to accommodate limited storage space and variable uptake, but this resulted in commodity stock outs at some sites. There was also the issue of lead time for commodity production, which was not initiated until an order was received. The potential for stock outs was further exacerbated because suppliers needed extra time to pack HEPS into 100gm sachets. A stronger supply chain management system will be required for future programs, either through integration with existing national systems or through sub-contracting a supply chain agency. A pull system could be considered for a large scale program. Considering that almost all sites sourced drugs from the government, it would probably be economical to integrate FBP commodities into the drug system to reduce redundancy.

While the pilot aimed to integrate ART drug and FBP commodities into one system at the sites, partners often followed different procedures for supply chain practices for food compared to drugs. In some sites, it was apparent that SOPs for drugs were being followed rather than FBP SOPs. Staff turnover at sites also affected continuity of adherence to SOPs. Sites also had frequent late submissions of stock reports to SUCCESS-RTL, and many written reports did not match actual stock counts done during monitoring visits. A greater emphasis on mentorship for persons in charge of stock management was required.

Food was stored in places other than drugs due to limited space, although at the assessment period, facilities had indicated that they had enough space and even showed the assessment team these storage spaces. Alternate storage spaces, such as kitchens, did not meet storage standards of temperature and humidity. On-going assessment of storage conditions and relation to client flow is needed throughout implementation.

E4. LINKAGES AND WRAP-AROUND PROGRAMMING

The FBP pilot program aimed to identify linkages for PLHIV or their families to income-generation activities, wrap-around or other food-nutrition leveraging opportunities to address broader family food insecurity issues. Although the issue had been well-elaborated with sites, less than half (45 percent) of health providers across all sites reported that they had linked with social safety-net projects. Organizations mentioned were UNICEF, WFP, CHAZ, Project Concern International (PCI), MOH, CHAMP, local IGA projects (Issubilo, Iseni tubombele pamo, Rainbow project), ZPCT, CRS, Kamwala Clinic, RAPIDS, PUSH and the Salvation Army. Hospices had more linkages than hospitals. Sites that did not link clients to any livelihood program reported that these programs did not exist in their catchment areas. However, 40 percent of health providers from Lusaka and Copperbelt programs mentioned that they linked clients to IGAs such as gardening, chicken rearing, HEPS production, *chilimba*[17] and petty trading. Overall, the effect on clients was small; only 11 percent of clients mentioned being linked to livelihood activities.

Lessons Learned and Recommendations: Linkages and Wrap-around Programming

Identification of linkages should be a required step at the assessment and design stage. Other stakeholders involved with livelihood programs need to be part of the design team so that issues of linkages can be resolved before the project is launched. A mapping of all stakeholders with whom the program could collaborate would be an advisable step. If no potential organizations for linkages exist, then perhaps building in a small economic strengthening initiative into the FBP program could be considered.

E5. HUMAN RESOURCE CAPACITY

One of the objectives of the evaluation was to assess and determine whether existing human and institutional capacity of the sites was adequate to implement and manage the pilot. Sites were not provided with any additional funds to hire new staff to manage and/or implement FBP as the model aims at integration into existing duties. Human resource roles and responsibilities varied by the type of facility (Appendix F). Staff level of effort depended on site mode of operation, capacity and organization. Each site designated a focal point person responsible for the integration processes, capacity building, monitoring progress and reporting.

17 *Chilimba is a micro enterprise program run by Ndola Diocese. According to capability, a homogenous support group raises 50% of required funds to run an IGA. The Diocese provides the remaining 50% which is paid back on a monthly basis once the group begins to make profit.*

ART clinics: Of the six sites sampled for the evaluation, two were faith based, one was private and three were government facilities. Before the FBP pilot, ART facilities only offered nutrition services through MCH clinics, specifically targeting under-five children, and facilities had no nutritional programs targeting PLHIV.

Pilot sites were responsible for selecting staff for FBP trainings and in most cases, the trained staffs were appointed as FBP focal point persons. To initiate pilot activities at sites, trained staff held trainings or orientation meetings for fellow service providers. Six (54.5 percent) of the sampled sites held orientation meetings for all relevant staff. Facility administrators were involved in the integration process to varying degrees. Four administrators (36.3 percent) from ART clinics and HBC were fully involved in the integration process and were responsible for streamlining roles and responsibilities for staff assigned to FBP pilot. Other sites did not go through these processes. Some focal point persons said that management, especially administrators, should have been more proactive and given full support to the integration process and actual implementation like they did with other programs.

Sites were able to align FBP with ART services and ensured that client FBP appointments coincided with regular ART appointments. Across ART clinic sites, there were fundamental variations in organization and staffing levels. The number of staff assigned to the FBP pilot varied substantially, ranging from five to thirty, with the average number of staff involved in the FBP program at 9.5 per facility. Staff involved in the pilot included clinicians, clinical officers, nurses, nutritionists, pharmacists, volunteer caregivers, stores and data clerks (Appendix F). The focal point person for the pilot was usually a nurse except for Ndola Central Hospital, which appointed a nutritionist to spearhead the pilot. Of all sites, only Ndola Central and Serenje District Hospitals had nutritionists on staff. The type of cadre selected to spearhead the pilot did not affect the mode of operation, however.

Overall the FBP integration into HIV services was well accepted, although, in the beginning, staffs complained about heavy work load. Health providers felt that management involvement positively impacted implementation. For instance, where nurses resisted involvement, management involvement was able to stimulate interest. Some staff requested incentives for the additional work load.

"The program is very good but there no incentives for staff. If these were provided, staff would have been motivated and worked harder. Without incentives, most people did not put in much effort and as a focal point person, I had to do most of the work because I was assigned to do so." (FBP focal point person)

Hospices: Across hospices, staff involved in HBC ranged from three to 10, with the average number of staff allocated to the FBP program at 7.6 per hospice and included

nurses, clinical officers, clinicians, pharmacists, adherence counselors and volunteer caregivers. Because of the technical content of FBP, SUCCESS-RTL recommended that all sites identify a trained health worker to lead implementation. The majority of hospices, however, appointed lay people or volunteer caregivers to spearhead the pilot, despite the large number of health workers working at the hospice. This may reflect a misunderstanding by management that FBP was a food aid program rather than a clinical care initiative.

Although caregivers had basic training and relevant experience in palliative care, their lack of professional training frequently resulted in inadequate understanding of technical nutrition issues as well as management difficulties. This was evident when enrolling and discharging clients, calculating BMI for clients who did not fall within the values on the chart, enrolling and discharging children using W/H -Z Score charts, filling in registers and patient cards, and the quality of counseling given.

HBC Programmes: HBC programmes assigned one lay person to coordinate the FBP pilot, who was stationed at the Diocese and was supported by parish site coordinators (volunteer caregivers). The parish was the point of FBP implementation. At the parish, the site coordinator was supported by other volunteer caregivers.

The number of caregivers involved in the FBP pilot ranged from 10 to 20, with an average of 15 caregivers per parish. Two of the three parishes where the evaluation took place had challenges with the technical part of the program. However, the third parish, also manned by a volunteer site coordinator, excelled in implementation, with up-to-date documentation, correct recording of anthropometry indicators, correct transition of clients from SAM to MAM, and correct discharge of clients.

Lessons Learned & Recommendations: Human Resources

One notable finding across all sites was that where administrators supervised the implementation of the pilot, staff showed more commitment in implementing pilot activities and record-keeping for these sites was more up-to-date.

Larger programs faced more problems with integration, and to be successful would require a very motivated coordinator on-site. The level of technical complexity in FBP ideally requires a coordinator on-site with higher level of training and understanding of nutrition. Sites with many ART prescribers required more training inputs, and staff had varying schedules making it a challenge to bring together a group for training. Even with basic nutrition training, many volunteer caregivers were not able to correctly follow the criteria and record-keeping. However, this is not to say that level of education or degrees necessarily dictates success or failure of FBP. The deciding factor seemed to be the ability of the service provider to grasp the nutrition information and concepts, and their personal motivation to provide quality services.

Many staff requested incentives for providing FBP services. Administrators also felt that additional available funds would enable the focal point persons to commit more time and effort to FBP. This request should be considered by the government for scale-up, and should also be considered as part of the ongoing national discussion on incentives for volunteer caregivers. Implementing sites would benefit from developing scopes of work for site focal point persons and other key staff related to FBP, or integration of these responsibilities into their regular job descriptions. Orientation meetings held by leaders with staff proved valuable, but could require a small input of funds to support attendance by community organizations and volunteers necessary for linkages and follow-up.

E6. MONITORING AND EVALUATION

Monitoring and evaluation and timely, accurate reporting proved to be a challenge at many sites because indicators related to assessment, counseling and food prescription were not routinely collected as part of existing M&E systems. For example, forms used in SmartCare, the national electronic and paper-based M&E system for ART programs, have a provision for indicating weight and height but not BMI. Likewise for children, there was provision for weight and the date weight was taken, but had no instruction to classify in terms of W/H -Z score or W/H % median.

To address these gaps, the FBP team developed tools required for pilot implementation. A client register was used to collect program-wide client details and information on treatment progression; a food register indicated the type and amount of food collected at each visit; a prescription form prescribed the type of food the client was to receive; a monthly report form collated quantitative information from registers; and a client card monitored the individual treatment trajectory and was used as a nutrition counseling guide. Information fed into two monthly reporting forms for submission to SUCCESS-RTL which captured quantitative and qualitative data on client enrollment and discharge and commodity stock information.

For pilot sites with satellite centers, FBP focal point persons monitored activities on a weekly or monthly basis depending on work schedule. To ensure quality reports and timely reporting from satellite sites, some sites reported by mid-month to submission of the report by the end of the month. Another site went further and developed its own monitoring protocols.

Initially, sites had problems collecting data because of the number of variables on the registers and forms. With frequent mentoring and close monitoring, most challenges were resolved. Initially, staff stated that they did not have time to complete registers and other forms because they were overwhelmed with their regular jobs. However, with time, staff

appreciated the registers, prescription and monthly report forms used to monitor the clients and the program. The patient card was used consistently, but had the most gaps in completion of variables. Client weights were not regularly captured, which made it difficult to interpret weight gain by month. The cards were also meant as counseling tools, but were rarely used for this purpose.

Submission of reports to SUCCESS-RTL was a challenge. Overall, ART clinics provided more timely and accurate reports compared to hospices and HBC programs. ART clinics were able to successfully delegate reporting responsibility if a staff was not present, but many hospices and HBC programs experienced reporting delays when the key person was absent.

Lessons Learned and Recommendations: Monitoring and Evaluation

Standardized forms used in ART clinics do not include space to capture FBP data, requiring the introduction of new registers and forms. Incorporating nutrition indicators into existing ART forms is strongly recommended.

Despite the addition of forms, service providers understood the importance of collecting information and were quick to point out how the information was assisting them to follow clients' progress. Training influenced M&E performance. Partners with more frequent monitoring visits had less difficulty with reporting. In retrospect, the initial FBP training at the start of the project should have allowed for more time for participants to practice using the M&E forms, and feedback from the participants could have fed into form revision. Training of site-level data clerks could have also been valuable.

Measuring the PEPFAR indicator "Number of eligible clients who received food and/or nutrition services" was a challenge. Sites could not track clients who received only nutrition counseling, but not food, because clients who received nutrition counseling were not necessarily malnourished and eligible for food, and therefore these clients were not captured in the registers. It is recommended that PEPFAR develop best practices on capturing nutrition service data.

A nurse at Wusakile Hospital uses the BMI chart to determine her client's nutritional status.
Elizabeth Jere/CRS

The HEPS, produced in Zambia, was packaged in 100-gram packets.
Elizabeth Jere/CRS

F. Discussion & Conclusion

FBP implementation strengths in Zambia: The findings from the evaluation demonstrated that FBP is an effective and important model in treating clinical malnutrition in Zambia. The pilot resulted in improved general health and nutritional status of adult PLHIV, pregnant and lactating women, and infected and HIV-exposed children. The regimens of therapeutic and supplementary foods were efficacious in treating clinical malnutrition. The "medicalization" concept was appreciated and understood by clients and service providers alike.

Alignment of FBP services with existing HIV care and treatment services was successful. Integration did not interrupt current service delivery, and FBP services were perceived as an add-on service to the existing HIV services. Integrating FBP services into existing systems used available human and material resources, supported with training opportunities and additional reporting systems. The cost of introducing an integrated program to prevent and treat malnutrition is consequently lower in comparison to introducing a stand-alone program.

The FBP pilot program can be adapted into various clinic and community settings in Zambia, allowing an opportunity for wider coverage. ART clinic sites, and decentralized outreach sites, can integrate FBP into existing client flow models and service provision, using strengthened existing linkages to community networks to support outreach and follow-up. Hospices can provide FBP services to both inpatient and outpatient palliative care clients, and can use their affiliated HBC programs to follow up outpatient clients for continuum of care. HBC programs can implement the FBP model at parish level, and can address household-level nutritional issues, as well as physical, psychological, social and spiritual issues, providing an opportunity to understand causes of malnutrition and to assess existing vulnerabilities.

FBP implementation gaps in Zambia: In Zambia, nutrition has not been included as a crucial component of HIV care and treatment service delivery. Outside of the FBP pilot, many HIV care and treatment service providers have not been trained in nutrition assessment and counseling. The government reporting system also does not capture key nutrition indicators (e.g. BMI, W/H). The combined result of lack of training and lack of reporting is that there is a nationwide gap in detecting and tracking malnutrition prevalence in PLHIV. There needs to be an increased focus on nutrition assessment, counseling and reporting to serve as a foundation for the potential introduction of FBP programming. Increased focus on assessment of children and pregnant and lactating women is required, as these populations were under-represented in the pilot program. The ART model in general does not reach high numbers of children, and potentially

a better model for reaching children with FBP would be through assessment and identification of malnutrition in the MCH clinic setting, combined with provider-initiated counseling and testing, and subsequent referral to ART as required.

The pilot relied on existing resources at sites to implement the pilot. SUCCESS-RTL was not able to provide financial input to ART clinics, and the Implementing Partners supporting the ART clinics (ZPCT, AIDSRelief, etc) had not planned for FBP activities as part of their budgets. While sites were able to implement the initiative with existing resources, many requested moderate financial input in the future to strengthen human resources and to cascade the training.

FBP implementation relied on parallel supply chain systems and M&E systems, which would not be efficient for scale-up to a nationwide program. It required additional training for service providers, more time dedicated to completing additional forms, and allocation of storage space. In some cases, existing SOPs were not followed, yet new SOPs were not created. Tools developed for the pilot were not always consistently or correctly used, and require further modification and capacity-building.

The draft national guidelines are comprehensive and in line with international standards, but because the guidelines were not finalized, entry and discharge criteria, including food protocols, were modified during pilot implementation. Additional areas of the guidelines that could be strengthened include provision of standards for quality assurance upon which service delivery can be measured. Currently the only standard that could be applied are Sphere Standards, designed for children in emergency situations and not for adults. In addition, revised guidelines could include recommended service provider-to-client ratios and establish the average counseling time required. Finally, further evaluation of MUAC as a screening tool is required.

Sustainability factors: The most prominent concerns stated in relation to FBP sustainability is the cost of procuring the food commodities and the fear of creating dependency. Certainly, the decision to procure therapeutic and supplementary foods requires significant upfront investment from governments, service delivery sites, and donors. However, the cost of food must be compared to the cost of mortality and morbidity. If malnutrition is left untreated, both nutrition rehabilitation and HIV treatment become increasingly more difficult, more costly and more likely to fail in achieving positive health outcomes. Routine nutrition assessment and counseling of all PLHIV can prevent many from reaching the stage of requiring therapeutic foods, therefore lowering cost over time. The cost of capacity building should be offset over time as assessment and counseling are implemented as part of standard practice. As a way forward, the government of Zambia is encouraged to consider nutrition as part of the standard HIV care package for PLHIV, rather than as a stand-alone “optional” intervention as it is now.

In relation to the fear of creating dependency, the FBP pilot did not find this to be realized. It was well-understood by service providers and communities that FBP was not designed to address food insecurity. Clients received counseling and understood why they were receiving food, and were informed about the duration of the treatment period. Linkages between FBP and food security programs were generally weak, and this gap requires additional focus and strategy to strengthen collaboration between government ministries and donors during design stage. Implementing FBP in areas with active PD-Hearth or SILC programs may also strengthen support provided to the FBP beneficiaries and their families.

Currently, clients not eligible for the FBP program have no opportunity to procure RUTF in the private sector in Zambia. Exploring opportunities to dispense therapeutic and supplementary foods through other outlets such as private pharmacies and work place programs had been suggested by the donor and the National Food and Nutrition Commission. In the FBP pilot, this option was not implemented as it requires a well-developed marketing strategy, a separate supply chain system and a change in product packaging. SUCCESS-RTL was able to link Valid International, producers of RUTF, and to Land O' Lakes International to create new relationships that could lead to future opportunities for collaboration on marketing. As an immediate way forward, there is a recognized need for implementation of quality monitoring to ensure that therapeutic foods currently produced locally in Zambia meet acceptable standards.

G. Recommendations

OVERALL RECOMMENDATIONS ON FOOD BY PRESCRIPTION:

The pilot program evaluation findings support scale-up of the Food by Prescription model in Zambia, and future allocation of funding for scale-up of this initiative is recommended.

National recommendations:

- Finalize the Guidelines for a Food by Prescription Programme in Zambia.
- Standardize nutrition assessment as part of ART care and treatment services, and modify SmartCare to enable capture of anthropometric data such as MUAC, BMI and W/H.
- Expand the roll-out of Nutrition and HIV training to service providers, and explore methods for on-site mentorship to build skills.
- Strengthen the food commodity supply chain. Consider piloting a pull system. Identify opportunities for integrating food commodities into national forecasting, procurement and delivery mechanisms to prevent parallel systems.
- Conduct an impact evaluation to measure longer term effects of the FBP program on clients.
- Involve pilot sites in the design of future scale-up programs.
- Identify FBP models that can identify greater numbers of children, particularly those between the ages of six to 24 months, and pregnant and lactating women.
- Conduct thorough assessments of sites before program implementation, focusing on key indicators of successful integration, such as assessment of storage space for food commodities, standard operating procedures for stock management, demonstrated assessment and counseling skills, level of support from senior administration, and community follow up mechanisms.
- Consider alternate terms for “Food by Prescription” as it insinuates high emphasis on food and less emphasis on the importance of nutritional assessment and counseling.

Site recommendations:

- Allocate staff appropriately to maximize existing human and institutional capacities to implement FBP, and ensure senior administrative support for FBP implementation.
- Provide additional training for comprehensive anthropometric assessment, supported by quality assurance feedback mechanisms, particularly for staff working in HIV care.
- Place emphasis on accurate, timely data collection and recording, and build capacity of staff in data collection, management, analysis and utilization.
- During program design, identify food security linkages that can support ART clients.
- Strengthen linkages between ART, PMTCT, MCH clinics and communities to identify greater numbers of children, particularly those between the ages of six to 24 months, and pregnant and lactating women.
- Utilize trained personnel in supply chain management to manage food stocks and reporting on food commodities, and supervise to ensure that staff adhere to SOPs.

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13. Nutrition Care and Support for People Living with HIV.

I. Appendices

A: Food by Prescription pilot sites

#	Name of Site	Sampled for Evaluation	Type	Managing Authority	Province (District)	HIV care & treatment funding affiliation
1	Chreso Ministries	*	ART clinic	Private health center	Lusaka (Lusaka)	AIDSRelief
2	Circle of Hope		ART clinic	Private health center	Lusaka (Lusaka)	AIDSRelief
3	St Francis Mission Hospital	*	ART clinic	Mission hospital	Eastern (Katete)	AIDSRelief
4	Siavonga District Hospital	*	ART clinic	GRZ hospital	Southern (Siavonga)	AIDSRelief
5	Serenie District Hospital	*	ART Clinic	GRZ hospital	Central (Serenie)	ZPCT
6	Chilonga Mission Hospital		ART Clinic	Mission hospital	Northern (Mpika)	AIDSRelief
7	Ndola Central Hospital	*	ART clinic	GRZ hospital	Copperbelt (Ndola)	ZPCT
8	Wusakile Mine Hospital	*	ART Clinic	Mine hospital	Copperbelt (Kitwe)	AIDSRelief
9	Cicetekelo Hospice	*	Hospice	Private / Faith-based	Copperbelt (Ndola)	SUCCESS-RTL
10	Our Ladys Hospice	*	Hospice	Private / Faith-based	Lusaka (Lusaka)	SUCCESS-RTL/CHAZ
11	Mother of Mercy Hospice		Hospice	Private / Faith-based	Lusaka (Lusaka)	SUCCESS-RTL/CHAZ
12	Human Services Trust		Hospice	Private	Lusaka (Kafue)	SUCCESS-RTL
13	Mpanshya Hospice		Hospice	Mission hospital	Lusaka (Chongwe)	SUCCESS-RTL/CHAZ
14	Jon Hospice	*	Hospice	NGO / Kara Counselling	Lusaka (Lusaka)	SUCCESS-RTL/KCTT
15	Martin Hospice		Hospice	NGO / Kara Counselling	Southern (Choma)	SUCCESS-RTL/KCTT
16	Ranchod Hospice		Hospice	NGO / Kara Counselling	Central (Kabwe)	SUCCESS-RTL/KCTT
17	Minga Hospice	*	Hospice	Mission hospital	Eastern (Petauke)	SUCCESS-RTL / CHAZ
18	Lumezi Hospice		Hospice	Mission hospital	Eastern (Lundazi)	SUCCESS-RTL/CHAZ
19	Chipata HBC	*	Home Based Care	Chipata Diocese	Eastern (Chipata)	SUCCESS-RTL
20	Solwezi HBC		Home Based Care	Solwezi Diocese	Northwestern (Solwezi)	SUCCESS-RTL

AIDSRelief is managed by CRS with Track 1 PEPFAR funding through HRSA.
ZPCT is managed by Family Health International (FHI) with PEPFAR funding through USAID-Zambia.
SUCCESS-RTL is managed by CRS with PEPFAR funding through USAID-Zambia.

B: Client Admission and Discharge Criteria

Indicators	Age group	Severe malnutrition (SAM)	Moderate malnutrition (MAM)	Discharge
Edema on both legs (bilateral edema) **or** Edema of the whole body (generalized edema)	Children Adolescents Adults	Yes	No	No edema and other criteria below are met
Weight for Height % median (W/H %) **or** **Weight for Height Z score (W/H Z score)**	Children more than 6 months of age	W/H % median less than 70% **or** W/H less than -3 Z score	More than 70%; but less than 79% **or** W/H more than -3; but less than -2 Z score	W/H is 85% (ideal weight)
	Adolescents	W/H % median less than 70% **or** W/H less than -3 Z score	W/H more than 70; but less than 79% **or** W/H more than -3; but less than -2 Z score	W/H is 85% (ideal weight)
MUAC	6 months – 11.9 months	Less than 11cm	More than 11.0 cm; but less than 12.5 cm	More than 12.5 cm
	12 months – 59.9 months	Less than 11 cm	More than 11.0 cm; but less than 12.5 cm	More than 12.5 cm
	5 years – 9.9 years	Less than 13.5 cm	More than 13.5 cm; but less than 14.5 cm	More than 14.5 cm
	10 – 14.9 years	Less than 16 cm	More than 16.0 cm; but less than 18.5 cm	More than 18.5 cm
	15 years and above (adults)	Less than 16 cm	More than 16.0 cm; but less than 18.5 cm	More than 18.5 cm
	Pregnant and lactating women (baby < 6 mos)	Less than 21 cm	More than 21.0 cm; but less than 23.0 cm	More than 23 cm
BMI	15 years and above (adults)	Less than 16	More than 16; but less than 18.5	More than 18.5

C: Food rations for severely and moderately malnourished children

Severe malnutrition: Ration for children with (6 months – 59.9 months) with weight more than 10kg: *RUTF only*			
Weight of Child (kg)	**RUTF Sachets/day**	**RUTF Sachets/week**	**RUTF Sachets/month**
Less than 6.0 kg	2	14	60
6.1 – 8.0 kg	3	21	90
8.1 – 10 kg	4	24	120
More than 10 kg	5	35	150

Moderate malnutrition: Ration for children between 6 months – 14.9 years: *Combination of RUTF and HEPS*						
	RUTF		+	**HEPS**		
Age	**Sachets/day**	**Sachets/month**		**Sachets/day**	**Sachets/week**	**Sachets/month**
6 – 11.9 months	3 sachets/5 days	18 sachets	+	1	7	30
12 – 23.9 months	1 sachet/day	30 sachets		1	7	30
24 – 59.9 months	1 sachet/day	30 sachets		2	14	60
6 – 9.9 years	1 sachet/day	30 sachets		3	21	90
10 – 14.9 years	1 sachet/day	30 sachets		4	28	120

*RUTF sachets are 93gm each; 1 MT of RUTF cost USD $ 5800 at time of the pilot

**HEPS sachets are 100gm each; 1 MT of HEPS cost USD $ 690 at time of the pilot

D: Food rations for severely and moderately malnourished adults, pregnant and lactating women

Severe malnutrition: Adults, Pregnant & Lactating women: *Combination of RUTF and HEPS*						
	Sachets/day		**Sachets/week**		**Sachets/month**	
Cadre	RUTF	HEPS	RUTF	HEPS	RUTF	HEPS
Adults > 15 years (non-pregnant & non-lactating)	3	4	21	28	90	120
Pregnant women (from 2nd trimester or when pregnancy is showing)	3	4	21	28	90	120
Lactating women (with child below 6 months old)	3	4	21	28	90	120

Moderate malnutrition: Adults, Pregnant & Lactating women: *HEPS only*			
Cadre	**HEPS Sachets/day**	**HEPS Sachets/week**	**HEPS Sachets/month**
Adults > 15 years (non-pregnant & non-lactating)	4	28	120
Pregnant women (from 2nd trimester or when pregnancy is showing)	4	28	120
Lactating women (with child below 6 months old)	4	28	120

*RUTF sachets are 93gm each; 1 MT of RUTF cost USD $ 5800 at time of the pilot

**HEPS sachets are 100gm each; 1 MT of HEPS cost USD $ 690 at time of the pilot

E: Biochemical and Microbiological parameters for RUTF and HEPS

RUTF parameters:

Biochemical:	**Acceptable level**
Moisture (%)	1 - 4
Total Ash (%)	2 - 3
Protein (%)	13 - 15
Fat (%)	28 - 36
Energy (kcal/100g)	350 minimum
Free fat acid (%)	<0.5
Peroxide value ($mEqO_2/kg$	<10

Microbiological:	**Acceptable levels**
Aflatoxin level	5 ppb maximum
Total plate count (microorganism content) (cfu/g)	10,000/g maximum
Coliforms	negative in 1 g
Clostridium perfringes	negative in 1 g
Yeast	maximum 10 in 1 g
Moulds	maximum 50 in 1 g
Salmonella sp	negative in 125 g
Pathogenic staphylococcus	negative in 1 g
Listeria	Negative in 25g

HEPS parameters:

Biochemical:	**Acceptable levels**
Protein (%)	14 min (NX 6.25) on dry matter
Moisture (%)	10 maximum
Fat (%)	6 minimum
Fiber	5 maximum
Energy (K Cal/100g)	350 k Cal / 100g minimum
Urease Activity (pH Diff)	0.05 – 0.2 pH Difference

Microbiological:	**Acceptable levels**
Aerobic plate count (cfu/g):	<10,000
Yeasts count (cfu/g):	Less than 10
Moulds (cfu/g):	Less than 10
Total coliforms (MPN/g):	Less than 10
E. Coli (MPN/g):	Absent
Staphylococcus aureus (cfu/g):	Less than 10
Salmonella	Absent

F: Roles and responsibilities in FBP implementation across sites

Site	Anthropometry evaluation	Nutrition counseling and Education	Prescribing nutritional supplements	Dispensing food	Nutrition outreach
Siavonga DH	Registered nurse Enrolled midwife CHWs	Medical Officer Clinical Office Registered nurse	Medical Officer Clinical Officer	Pharmacist	n/a
Chreso Ministries	Clinical Officer Enrolled nurse	Community health worker Pharmacy Assistant	Medical Officer Clinical Officer	Pharmacist	Enrolled nurse Enrolled midwife CHWs
St Francis	Adherence counselor	Adherence counselor	Nurse prescriber	Stores clerk	
Ndola Central Hospital	Medical Officer Registered nurse Nutritionist	Medical Officer Clinical Officers Registered nurse Nutritionist	Medical Officer Registered nurse Nutritionist	Registered nurse Nutritionist	n/a
Serenie DH	Clinical Officer Enrolled nurse Nutritionist	Clinical Officer Registered/enrolled nurse Nutritionist	Clinical Officer Registered nurse Nutritionist	Registered/enrolled nurse Adherence Counselor Nutritionist	Enrolled nurse Nutritionist
Wusakile Mine Hospital	Medical Officer Clinical Officer	Medical Officer Clinical Officer Registered midwife Registered/enrolled nurse Nutritionist	Medical Officer Clinical Officer	Pharmacist Pharmacy Technician	
Jon Hospice	Outreach Coordinator Caregiver	Enrolled nurse Community volunteer Outreach Coordinator	Outreach Coord.	Outreach Coordinator	Outreach Coord.
Minga Hospice	Medical Officer Clinical Officer Caregiver	Registered/enrolled nurse Caregiver	Caregiver	Caregiver	Caregiver
Cicetekelo Hospice	Registered/enrolled nurse Enrolled midwife Caregiver	Registered/enrolled nurse Enrolled midwife Caregiver	Medical Officer Registered/enr. nurse Enrolled midwife	Registered/enrolled nurse Enrolled midwife Caregiver	Caregivers Nurses
Chipata HBC	Caregiver	Caregiver	Caregiver	Caregiver	Caregiver

G: Final Evaluation Tools

SUCCESS-RTL NUTRITION PILOT EVALUATION
HOSPITAL / HOSPICE ADMINISTRATORS AND HBC COORDINATORS INTERVIEW GUIDE

INTRODUCTION: My name is _____. I am here on behalf of Catholic Relief Services (CRS) to conduct an assessment of the SUCCESS Return to Life (SUCCESS-RTL) project's nutrition and Food by Prescription (FBP) pilot program. The FBP pilot program has been implemented in hospices, hospitals and through Catholic Diocese Home Based Care programs.

I would like to invite you to participate in an interview to help gather information about the FBP pilot program. This information will be used to assess the effectiveness of the FBP pilot and also the effect of the interventions on clients. Furthermore the information will help in formulating recommendations for any follow on FBP programs. I am under obligation to CRS to ensure that all the information collected during this interview is treated with utmost confidentiality and will be used only for the purpose of the assessment. This interview is anonymous and will take about 30 to respond to.

Would you like to participate in the interview? (a) Yes [ ] (b) No [ ]
If 'Yes' kindly sign the accompanying consent form

1.1	Date |__||__| Month|__||__| Yr|__||__||__||__|	
1.2	District	
1.3	Hospital	
1.4	Facility (Satellite)	
1.5	Questionnaire No:	
Name of Interviewer/ Research Assistant		

If 'No' End the interview.

Date of Interview: _____

1.0 BACKGROUND INFORMATION: FACILITY OR PROGRAM PROVIDING SUPPORT

1.1 Type [Tick one]: [ ] Hospice [ ] Hospital, Clinic or Health Centre [ ] HBC

1.2 Partner Name [Hospice, Hospital/Clinic, Diocese]:

1.3 Managing Authority: [ ] Government [ ] Mission [ ] Private

1.4

Marital Status:	Education:	Religion:
[ ] Single	[ ] None/Not Schooled	[ ] Catholic
[ ] Married	[ ] Primary	[ ] Christian, non-Catholic [Specify]
[ ] Divorced	[ ] Secondary	[ ] Hindu
[ ] Widowed	[ ] Higher	[ ] Muslim
[ ] Separated		[ ] Other [Specify]

1.5 What is your main Source of Income?

1 = Formal job
2 = Small scale farming/sale of produce
3 = Remittances
4 = Small scale business (non farming)
5 = Petty trade
6 = Fishing
7 = Informal labour
8 = Begging
9 = Other [Specify]

1.6 How many people live in your household?

Age Category	Male	Female
Number of children	0 to 6 months	
6 to 11.9 months		
12 to 23.9 months		
24 to 59.9 months		
5 to 14.9 Years		
Adults (male and non pregnant or lactating women)	15 years and above	
Pregnant and lactating		

2.0 FBP INTEGRATION IN EXISTING HIV CARE AND TREATMENT SERVICES

2.1 What type(s) of care do you provide at this facility? [Circle all that apply]

1 = Adult ART
2 = PMTCT
3 = Pediatric ART

4 = VCT

5 = Others (Specify)

2.2 Do you receive financial, technical, in kind or external support for these services?

1=Yes 2=No

If yes, explain from where.

2.3 What kind of nutritional support does the facility provide?

1=Food by Prescription

2= Integrated Management of Acute Malnutrition

3=Infant and Young Child Feeding

4=Early Childhood Development

5=Maternal nutrition

6=Micronutrient Supplementation

7=Growth promotion & monitoring

8=Community nutrition outreach activities

9=Other [Specify]

2.4 Did you have any challenges integrating FBP in existing HIV services?

1=Yes 2=No

If yes, what were the challenges?

2.5 What measures did you take to integrate the program into HIV services?

2.6 How many members of staff did you allocate for the FBP program?

2.7 Was this number adequate to implement the program?

1=Yes 2=No

If no, how many health staff would you recommend for the number of clients you reached in the last five months?

2.8 Does your program have FBP outreach or satellite clinics?

1=Yes 2=No

If yes, explain why you decided to include outreach services and/or satellite clinics?

2.9 How did this system work for you? (Probe for successes and challenges)

2.10 How was the food requisitioned and dispensed for outreach and satellite clinics? (Probe where the food was kept, how the food was requisitioned and by who, etc)

2.11 How did you train staff from satellite clinics? Please explain.

2.12 How did you supervise and monitor activities at these sites? (Probe who was responsible, how often

it was done, how easy it was to do etc)

2.13 What reporting system did you put in place to ensure quality reports and timely reporting? Probe for challenges

2.14 What systems and capacity building would you recommend to be put in place before a facility expands FBP to satellite clinics? Please explain

2.15 Did your staff find it challenging to implement FBP services?
1=Yes 2=No
If yes, explain the challenges encountered

2.16 How were these challenges overcome? Please explain

2.17 Do your staff share FBP information with you?
1=Yes 2=No
If yes, what information do they share and how often is this done? Please explain
If no, why not?

2.18 Do you think the pharmacy is the ideal place for dispensing FBP commodities?
If yes, explain.
If no, explain why not

2.19 Do you think that FBP services had a positive impact on clients health?
1=Yes 2=No
If yes, explain
If no, why not

2.20 Do you think FBP services should be integrated in other services or not?
1=Yes 2=No
If yes, explain?
If no, why not?

2.21 Would you want to continue with the FBP program beyond the pilot phase?
1=Yes 2=No 3=Not sure
If yes, would you implement the program as it is? Please explain
If no, what changes would you make?

3.0 KNOWLEDGE ABOUT NUTRITION AND MALNUTRITION

3.1 How many health staff or caregivers were trained in FBP in the last 5 months?

3.2 What were the details of the training?

3.3 How many health workers or caregivers were trained in HIV and Nutrition in the last 5 months?

3.4 What were the details of the HIV and Nutrition training?

3.5 Did people who were trained in courses above orient/train other staff who did not attend these trainings?

1=Yes 2=No

If no, why not?

3.6 Does your facility or home based care program use any nutrition guidelines ?

1=Yes 2=No

If yes, which guidelines are these?

If no go to section 4.0

3.7 Are all the health workers or caregivers working on the nutrition and FBP pilot familiar with the guidelines for HIV and nutrition?

1=Yes 2=No

3.8 How do these guidelines help the health workers or caregivers in implementing the nutrition program?

3.9 Have health workers or caregivers faced any challenges in using or applying the guidelines?

1=Yes 2=No

4.0 Linkages with Livelihoods Programs

4.1 Does your facility offer clients on the FBP program any referral to livelihoods projects?

1=Yes 2=No

If yes, which one(s) and who runs them? Please explain

If no, why not?

5.0 Linkages with other Stakeholders

5.1 Do you work with other stakeholders in implementing the nutrition program?

1=Yes 2=No

If yes, which stakeholders are these?

5.2 Can you explain the kind of collaboration that exists between your facility and the stakeholders mentioned above?

5.3 How has your facility benefitted from collaborating with the other stakeholders in implementing the FBP pilot program? Please explain.

6.0 Community Sensitization

6.1 Do you have a community/outreach component?
1=Yes 2=No
If yes who is responsible for the outreach component?

6.2 Is FBP part of outreach activities?
1=Yes 2=No

6.3 What type of FBP services do they provide?

6.4 In the last 5 months has your facility or home based care program organized any sensitization or health education to promote nutrition interventions in the communities around?
1=Yes 2=No
If yes, how many times?

6.5 What kind of information did health staff share during the meetings / sensitizations?

6.6 Were any IEC materials used during the sensitization meetings?
1=Yes 2=No
If yes, where are the materials obtained from?

6.7 What changes have you observed in nutrition behaviours among the clients and community members as a result of the sensitizations and health education?

6.8 Has the community been involved in the nutrition and FBP program?
1=Yes 2=No
If yes, what is their involvement and who is involved?

7.0 PROGRAM LOGISTICS

7.1 Where is food dispensed from at this facility?

7.2 Where is the food stored?

7.3 Who is responsible for the logistics of procuring / requisition, storing and dispensing the food?

7.4 Are these the same persons responsible for drugs?
1=Yes 2=No

7.5 What documentation is used at different levels?

7.6 How is internal requisition done?

7.7 Did you experience some interruptions in the food supply chain?
1=Yes 2=No

If yes, how did this impact on the program and what measures did you take?

7.8 Was your food requisition system the same as the drug requisition system?

7.9 Were you satisfied with how the FBP logistics worked?
1=Yes 2=No
If no, why not?

7.10 In your opinion what worked well and what didn't work well with logistics?

7.11 How would you design it if you were responsible for designing the system?
How would you like the procurement done?
Who should do it?

7.12 Were any of your staff trained in logistics?
1=Yes 2=No
If yes, which staff were trained?

8.0 MONITORING AND EVALUATION

8.1 What kind of monitoring information did your facility or home based care program collect for the pilot?

8.2 Who did you give the task of collecting monitoring information?

8.3 How did they find the process?

8.4 Were the health workers or caregivers ever asked for recommendations to improve the

nutrition pilot based on their observations or views?

1=Yes 2=No

If yes, what were their observations?

What were the recommendations?

8.5 Do you feel the information that was collected for monitoring FBP useful?

1=Yes 2=No

If yes, in what ways was the information useful?

If no, why not?

9.0 GENERAL INFORMATION

9.1 What are your views about FBP program?

End of interview.

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