



# **CRS SUCCESS Palliative Care Nutritional Supplementation Targeted Evaluation**

## **Final Report**



Giving Hope to a World of Need



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## **Final Report May 2007**

**Written by: Kari Egge MPH, PhD, James Campbell MSc, Shannon Senefeld MA, Susan Strasser RN, PhD and Linda Lovick MPH**

**Catholic Relief Services – Zambia Program**



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Cover Photo:  
Well trained, volunteer HBC caregivers, recruited from local communities, are instrumental in facilitating nutritional supplements for HBC clients (CRS/Zambia).

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# ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ARV	Anti-retroviral
BMI	Body Mass Index
CG	Caregiver
CRS	Catholic Relief Services
C-SAFE	Consortium for Southern African Food Security Emergency
CSI	Coping Strategy Index
CTX	Cotrimoxazole
DHS	Demographic and Health Surveys
DOTS	Directly Observed Treatment Short-course
ECOG	Eastern Cooperative Oncology Group
ERT	Emergency Response Team
FCS	Food Consumption Score
FFP	Food for Peace
FDP	Food Distribution Point
HBC	Home Based Care
HEPS	High Energy Protein Supplement
HIV	Human Immunodeficiency Virus
HQ	Headquarters
ICB	Institutional Capacity Building
M&E	Monitoring and Evaluation
MHS	Mental Health Score
MOS	Medical Outcome Survey
MUAC	Mid-Upper Arm Circumference
OVC	Orphans and Vulnerable Children
PCP	<i>Pneumocystis carinii</i> pneumonia
PEPFAR	President's Emergency Plan for AIDS Relief
PHS	Physical Health Score
PLWHA	Person Living With HIV or AIDS
QOL	Quality of Life
SARO	Southern Africa Regional Office
SD	Standard Deviation
SUCCESS	Scaling-Up Community Care to Enhance Social Safety-nets
TB	Tuberculosis
USAID	United States Agency for International Development
USD	United States Dollar
VCT	Voluntary Counseling and Testing
WFP	World Food Program
WHO	World Health Organization

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The original concept of this evaluation originated with Horizons, although they were ultimately unable to actually conduct the evaluation. CRS/Zambia, the CRS Southern Africa Regional Office (SARO), and USAID/Zambia then built on this initial concept with an external consultant to conduct the targeted evaluation presented here.

The entire evaluation would not have been possible without the excellent work of local Diocesan partners in Solwezi, Mongu and Monze. These partners provide the daily home-based care and support to the clients who participated in this evaluation. Without the partners, the entire SUCCESS program would not exist. In addition, these partners worked tirelessly to participate in this evaluation in addition to their on-going work.

In addition to the local partners, special thanks is due to all of the CRS/Zambia staff who worked many extra long hours to ensure this evaluation was completed, including all SUCCESS and M&E staff.

Finally, specific thanks are due to key individuals who supported this project: Carl Henn of USAID/Zambia, who contributed numerous ideas, instrument review and on-going technical support; Marta Levitt-Dayal of USAID/Zambia, who suggested an evaluation and provided on-going support; Tim Quick for his reviews; Driss Moumane of CRS/SARO, who worked tirelessly to secure support for this endeavor; Michele Broemmelsiek of CRS/Zambia, who committed her staff to this important evaluation and who supported this initiative throughout its on-going process and; Annemarie Reilly of CRS/SARO, who supported this evaluation with her staff's time.

# EXECUTIVE SUMMARY

Catholic Relief Services (CRS) Zambia, with financial support from the President's Emergency Plan for AIDS Relief (PEPFAR) through USAID and CRS, and in partnership with the Catholic Dioceses of Solwezi, Mongu, and Monze, conducted a targeted evaluation of nutritional supplementation. This project aimed to investigate the impact of nutritional supplements on HIV positive home based care (HBC) clients not taking ARVs that met the criteria for targeted nutritional supplementation. The study was carried out from April to October 2005.

A quasi-experimental design was used to investigate the impact of nutritional supplementation on the quality of life and anthropometric status of HIV positive SUCCESS<sup>1</sup> HBC program clients over a 6-month period. Participants for the intervention arm were drawn from SUCCESS program clients that tested positive for HIV in Solwezi diocese (Northwestern Province) and Mongu (Western Province). Food used for supplementation in Solwezi was purchased locally using PEPFAR funds from USAID and food used for Mongu was provided by the Food for Peace C-SAFE Project<sup>2</sup>. A reference group of controls was drawn from HBC clients participating in the Monze Diocese HBC program in Southern Province. This reference group met the criteria for nutritional supplementation (and would be enrolled once funding becomes available). All three areas were similar in culture, agriculture, and climate.

The results show that the nutritional supplements had a significantly positive impact on almost all quality of life and nutritional variables measured.

Key results include:

- Physical and mental health quality of life index scores in the intervention arm significantly increased from baseline to end line ( $p < 0.001$ ), while both scores in the control arm remained statistically unchanged. When controlled for, tuberculosis treatment was not a factor that contributed to the change in physical health summary scores.
- Food consumption scores, which measure the nutritional quality and diversity of the household diet, decreased significantly in the control arm ( $p < 0.001$ ) while remaining statistically the same in the intervention arm.
- The number of meals eaten per day in the intervention arm increased by 13 percent ( $p < 0.05$ ), while decreasing by 11.5 percent in the control arm ( $p < 0.05$ ).
- The severity and frequency of coping strategies used by the household in the past 30 days, as measured by the Coping Strategy Index, decreased significantly in the intervention arm ( $p < 0.001$ ), while increasing in the control arm ( $p < 0.001$ ).
- Mid-upper arm circumference (MUAC) measurements, which reflect anthropometric status, significantly increased from baseline to end line in the intervention arm ( $p < 0.001$ ), while measurements in the control remained statistically unchanged. (While significant,

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<sup>1</sup> Scaling-Up Community Care to Enhance Social Safety-nets

<sup>2</sup> Consortium for Southern African Food Security Emergency

mean MUAC measurements in both the intervention and control groups were above levels for moderate malnutrition at both baseline and end line).

- Although not statistically significant, a trend may exist (evidences by p values <0.1) in the change in weights based on site (p=0.066) as well as tuberculosis treatment (p=0.09).
- The average number of AIDS related symptoms per client decreased from 6.04 to 4.76 (p<0.001) in the intervention arm, while increasing insignificantly from 5.21 to 5.57 in the control arm.
- The mean ECOG score<sup>3</sup>, which measured clients' ability to take care of themselves, perform daily activities and work, improved in the intervention arm (p<0.001), while declining in the control arm (p<0.05).
- The amount of time an HBC client needed assistance per day from a family member or community volunteer caregiver decreased significantly in the intervention arm (p<0.001) while increasing significantly in the control arm (p<0.05).

The data indicate that nutritional supplements can have positive impacts on the quality of life for HIV positive home based care clients who have not yet been put on ARVs. Not only does nutritional supplementation have the potential to reduce malnutrition and improve the physical status of the client, it can also enhance a client's mental outlook, increase participation in activities of daily living, and reduce the number and severity of negative coping strategies required by client households. Clients receiving nutritional supplements not only improved their quality of life, but also improved the food security status of their household, potentially preventing additional cases of HIV through reduction of risky behaviors.

Yet these findings should be interpreted with full acknowledgement of the limitations of the targeted evaluation. Attrition throughout the life of the study was high, 64 percent (baseline n=1,309 and end line n=906). While some of the reasons for loss of participants were concerning, such as loss to follow up and inability to clarify HIV status which could impact the results in unpredictable ways, other reasons for exclusion were important potential confounders and for which removal from the analysis were warranted. These included negative HIV serostatus, receipt of food support, participant was not food insecure and pregnant or lactating women. A full review of the reasons for attrition is presented in Table 2. Access to tuberculosis treatment, while not significant in preliminary analysis warrants further investigation as a potential confounder.

This evaluation's power lies in its reflection of positive change in a real program, implemented by local partners, with all the constraints of funding, personnel, and everyday problems of running a home-based care activity in a resource poor setting. Future evaluations should build off of the initial findings presented here.

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<sup>3</sup> Eastern Cooperative Oncology Group, see page 21 for more detail.

# INTRODUCTION

Globally, there is a paucity of information regarding the impact of nutritional supplements on recipients' lives in settings of high AIDS prevalence and low resources. While a handful of studies have been conducted on the nutritional impact of food aid, prior to this targeted evaluation, there were no published studies that directly examined the impact of large-scale targeted food assistance on Quality of Life (QOL) for people living with HIV or AIDS (PLWHA). In addition, very little research has been conducted in resource-poor settings on the impact of food aid on overall health and functioning of PLWHA, with the majority of existing research focusing on large outcome measures such as changes in mortality. Furthermore, to date there has not been a systematic evaluation in Zambia that measures the impact of this nutrition intervention on PLWHA receiving HBC services and support.

Since the introduction of nutritional supplements into the CRS SUCCESS program, very positive anecdotal evidence has been reported by the diocesan partners; e.g., as a result of including nutritional supplements in the palliative care package of services, people gained weight and recovered from being bed-bound to active family life again. It was hypothesized that nutritional supplements would have a wide-spread impact on HBC clients' lives; the primary impacts of which would be on the clients' nutritional status and quality of life. It was also expected that nutritional supplements would help to reduce the severity and frequency of coping strategies used by the household, increase the quality and diversity of the client's diet, and, clients would improve their performance status as a result of an improved physiological and psychological status, and hopefully decrease the number of AIDS related symptoms. Thus, it was hypothesized that nutritional support would have multiple positive effects on health status over the short term.

In order to test these hypotheses, Catholic Relief Services (CRS) Zambia, with financial support from USAID/PEPFAR and CRS, and in partnership with the Catholic Dioceses of Solwezi, Mongu, and Monze, conducted a targeted evaluation from April to October 2005 on the impact of nutritional supplements on HIV positive home based care (HBC) chronically ill clients not on ARVs. The primary objective was to investigate the impact of nutritional supplementation on the quality of life (QOL) and anthropometric status of HIV positive SUCCESS HBC program clients over a six-month period in a scientifically verifiable manner. Food used for supplementation in Solwezi, which covers Northwestern Province, was purchased locally using the President's Emergency Plan for AIDS Relief (PEPFAR) funds from USAID, and food used for Mongu in the Western Province was provided by USAID's Food for Peace (FFP) program through C-SAFE<sup>4</sup>.

By conducting this targeted evaluation and demonstrating the outcomes from nutritional supplements, donors and program implementers will be enabled to make better decisions regarding allocation of resources and design of palliative care programs.

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<sup>4</sup> Consortium for Southern Africa Food Security Emergency. The consortium is a regional response to the food security crisis in southern Africa led by CARE, Catholic Relief Services (CRS) and World Vision (WV), with ADRA serving as an additional member in Zambia. C-SAFE currently implements programs in Lesotho, Zambia and Zimbabwe.

# METHODOLOGY

## Study Design and Sample Size

A quasi-experimental design was used to examine changes in HIV positive HBC clients that were not on ARVs over a six-month period from April to October 2005.

The evaluation had three arms:

- HIV positive HBC clients receiving High Energy Protein Supplement (HEPS) and vegetable oil (Solwezi Diocese)
- HIV positive HBC clients receiving bulgur wheat or sorghum and common beans or peas (Mongu Diocese)
- HIV positive HBC clients receiving no food aid/nutritional supplement (Monze Diocese)

Rations were distributed on a monthly basis in a dry format based on an average household size of six. Table 1 describes the ration compositions.

**Table 1: Ration per Person per Day**

Diocese and ration composition	Energy (kcal) per person	Protein (g)	Fat (g)
Solwezi 139g HEPS 13.3g Oil	609.37	19.46	22.24
Mongu 268g of bulgur wheat or sorghum 67g of common beans or peas	1214.08	46.41	7.75



Above: 25 Kg bags of HEPS await distribution for the Solwezi arm of the targeted evaluation, locally purchased and funded by PEPFAR/USAID. Left: Bulgur for the Mongu arm was provided by the C-SAFE Project, funded by Food for Peace/USAID.

Two different rations' compositions were included to test whether impact resulted from either or both types of nutritional supplement. However, the type of data collected (i.e. only survey data with no additional clinical information, such as serum draws or detailed consumption information) and the great differences between the quality and quantity of the two nutritional supplements preclude the researchers from making statements regarding the efficacy of either of the rations as compared to the other.

To allow for attrition due to unknown or negative HIV status, death and loss to follow-up, baseline recruitment targets were 450 in Solwezi, 450 in Mongu and 900 in Monze, in anticipation of yielding at least 250 per arm at end line. A greater number of HBC clients were included in the baseline in Monze, since clients had not been pre-screened for food security status and only clients from food insecure households to match those in Solwezi and Mongu could be used. As there were a finite number of HBC clients enrolling in the Solwezi and Mongu supplementation component of the HBC program and participation was voluntary, exact numbers of participants could not be guaranteed.

To be eligible for participation in the evaluation clients needed to be:

- a registered HBC client (chronically ill) in Solwezi, Mongu or Monze
- food insecure according to SUCCESS program food security screening tools
- new to the HBC nutritional supplementation component (cases)
- not receiving food aid from another source (controls)
- 18 years or older
- not taking anti-retrovirals (ARVs) and
- confirmed HIV positive

The design was vetted by technical advisors at CRS and USAID and approved by the Zambian Internal Ethics Review Board.

### **Study sites and target population**

The targeted evaluation was conducted in three dioceses that have similar HBC programs, namely Solwezi, Mongu and Monze. These locations were chosen specifically because CRS is currently active in supporting the HBC programs in Solwezi and Mongu and has plans to fully engage Monze as a partner in the near future. The two supported dioceses therefore served as the intervention sites, while the latter served as the reference (control) group. A description of HBC offered in the three sites is included in Annex C.

Study sites were selected for their overall similarities; each arm comprising rural areas with mid-sized urban centers. Cases were drawn from HIV positive clients of the SUCCESS project HBC program in the Catholic Dioceses of Solwezi and Mongu located in Zambia's Northwestern and Western Provinces respectively. Dioceses roughly follow provincial borders. All clients in the case arm were new enrollees in the nutritional supplement component of the HBC program. Controls were drawn from an HBC program in Monze diocese with the same support services as in Solwezi and Mongu, which while not yet under SUCCESS program funding, is expected to receive funds for palliative care support and nutritional supplementation in the next funding cycle. Monze was chosen as a control area as it has a similar residential environment and level

of food insecurity as Solwezi and Mongu. No HBC clients in the control were denied any type of nutritional supplementation or program benefit in order to participate in the targeted evaluation.

In addition to choosing areas of similar topographic and cultural background, all clients underwent the same screening for food security and only those who met the criteria for being *chronically ill* and *food insecure* were included in the evaluation. By ensuring a common food security status, the homogeneity amongst evaluation participants was increased. The screening tool is included in Annex A.

All three HBC programs offer similar services and are managed in the same manner (see Annex C for a list of services and activities under the HBC programs). Communities identify volunteers who undergo HBC training. Once trained, the volunteers then visit clients in their homes weekly. Further follow up and support is dependent on the level of illness. Clients receive basic psychosocial and pastoral support, as well as health and prevention education on a number of topics. Nurses design care plans, which the volunteer caregivers follow, many provide directly observed treatment (DOTS) support for enrolled clients who also have tuberculosis (TB). Other hallmarks of HBC are as needed clinical referral, referral of family members, where available, to other support services, OVC care and support, nutritional counseling, insecticide-treated mosquito nets, Positive Living Groups, and access to volunteer counseling and testing (VCT). Entry into the HBC programs is by clinical referral.

A brief description of the three areas follows:

### **Solwezi**

The Diocese of Solwezi covers the entire administrative boundary of Northwestern province with seven districts. According to the results of a 2000 census, the population for Solwezi diocese was estimated at 610,975. Generally, the population is sparsely scattered over an area of 125,826 square kilometers and there are three dominant languages. The majority of the people are engaged in agriculture as a primary source for their livelihoods.

The HBC program has 14 sites (parishes and sub-parishes) from which it provides palliative care and support for approximately 1,800 clients. According to the 2002 Zambian Demographic and Health Survey (DHS) the Northwestern province has the second lowest HIV prevalence in Zambia, with an estimated nine percent of its population being HIV positive. Notably, it is one of the only areas in Zambia where male circumcision (a protective practice that may reduce the acquisition and transmission of HIV) is practiced.

### **Mongu**

The Diocese of Mongu covers 5 of the 7 districts of Western province. It is divided into 11 parishes cover 88,000 square kilometers with an estimated population of 760,000 people. It provides palliative care services to over 2,500 clients, 1,400 of whom already access ART. The 2002 DHS indicated an HIV prevalence of 13 percent. Though agriculture is widely practiced, sandy soil and proneness to drought characterize this province.

## **Monze**

The Diocese of Monze covers 9 out of the 11 districts of Southern Province. It has the third highest HIV prevalence in Zambia of 18 percent. It covers an area of 75,000 square kilometres and is divided into 21 parishes of which 17 host HBC programs. Topographically, the diocese has three main zones. These are the flat flood plain along the Kafue River in the North; low lying lands and escarpments of the Zambezi Valley to the southeast; and in between, a plateau area. The diocese is generally prone to drought, with the valley areas most affected.

These HBC programs have been in operation five, eight and fifteen years respectively.

## **Survey Instruments**

A pen and paper questionnaire was developed in Lusaka in conjunction with partner representatives from Solwezi and Mongu using a compilation of questions previously tested and used by CRS, C-SAFE, WFP and researchers from Johns Hopkins and other universities. Questionnaires were pre-tested in the field and modified during simultaneous enumerator trainings in Solwezi and Mongu. The questionnaire was written in English, but administered in the appropriate local language/dialect and back translated. This process was practiced in training sessions. Specific to Monze, a separate screening tool developed for the SUCCESS program was used to determine food security status.

The survey instrument was targeted at both the household and the individual HBC client levels and divided into 13 thematic sections as described below:

### a) Household level questions:

- Household demographics (household size, gender, age and position of all household members)
- Distribution of current sources of food consumed by household (food aid, production, purchases, gifts)
- Coping strategies
- Household income amount and sources
- Household receipt and usage of food aid

### b) Individual level questions administered to HBC client:

- Current health status (progression/state of HIV and AIDS – WHO stage, signs and symptoms of HIV disease)
- Performance status based on the ECOG scale
- Current medical treatment
- Current support received externally and level of need for assistance by any type of caregiver
- Quality of life which measures the concept of well-being based on a holistic understanding of health including both physical and mental health
- 24-hour recall of food consumption
- Anthropometric information (weight, height and mid-upper arm circumference)
- Target ration consumption

General selection of information to collect was based on findings from research done for the C-SAFE program on indicators to measure food aid impact on the chronically ill by Susan Strasser and Kari Egge<sup>5</sup>. All of the household level questions, the 24-hour food consumption recall and target ration consumption questions were taken from the C-SAFE End of Project Evaluation as these measures had been pre-tested and validated on similar population groups<sup>6</sup>. Minor modifications in order to adapt to this evaluation's objectives and population were made in a few cases.

Questions on health status and medical treatment were developed using the definition of the WHO HIV clinical stages<sup>7</sup> and questions from the Zambian Ministry of Health AIDS Notification Surveillance Form. The Eastern Cooperative Oncology Group (ECOG) performance scale question was based on the definition published in 1982 in the American Journal of Clinical Oncology modified for use in resource poor settings<sup>8</sup>. Anthropometric, target ration and support questions were created by participants at the questionnaire development workshop based on experience.

Questions on quality of life were from a modified version of the MOS-QOL tool<sup>9,10</sup> developed by T. Christopher Mast and colleagues which was used in Rakai, Uganda<sup>11</sup>. It was chosen for its ease of use and the practical and unambiguous nature of the survey questions. It was also appropriate as the MOS-QOL explores personal impacts of disease, physically and psychologically, which are directly relevant to care, support and general development efforts in which CRS is involved. In addition to more traditional measures of nutritional status such as weight, which in the case of HIV disease are complicated by disease stage and uncertain treatment availability, adding a quality of life measure offered a valid gauge of individual general sense of well being and ability to carry out daily activities.

## Data Collection

Data collection was carried out by 85 enumerators. The enumerators were educated young adults, recruited as enumerators from the survey operational zones; many had previous data collection experience. Enumerators participated in a three-day training workshop conducted by CRS and partner staff. In addition, at least one medical personnel trained the enumerators on the health related questions and anthropometric measurement techniques. The training included classroom and field based practice sessions. A copy of the enumerator training manual is available upon request.

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<sup>5</sup> Egge, K. and Strasser, S. (2005). Measuring the Impact of Targeted Food Assistance on HIV/AIDS-Beneficiary Groups. Johannesburg: C-SAFE.

<sup>6</sup> C-SAFE, Zambia End of Project Survey Questionnaire, May 2005.

<sup>7</sup> WHO (2005). Interim WHO Clinical Staging of HIV/AIDS and HIV/AIDS Case Definitions Surveillance. WHO: Africa Region.

<sup>8</sup> Oken, M. M., Creech, R. H., Tormey, D. C., Horton, J., Davis, T. E., McFadden, E. T., Carbone, P. P. (1982). Toxicity And Response Criteria Of The Eastern Cooperative Oncology Group. American Journal of Clinical Oncology. 5:649-655.

<sup>9</sup> For more information on the MOS-quality of life tool [http://www.rand.org/health/surveys\\_tools/mos/index.html](http://www.rand.org/health/surveys_tools/mos/index.html)

<sup>10</sup> Egge, K. and Strasser, S. (2005).

<sup>11</sup> Mast, T. C., Kigozi, G., Wabwire-Mangen, F., Black, R., Sewankambo, N., Serwadda, D., Gray, R., Wawer, M., Wu, A. W. (2004). Measuring quality of life among HIV-infected women using a culturally adapted questionnaire in Rakai district, Uganda. AIDS Care. 16:81-94.

The trained enumerators conducted the interviews and took anthropometric measurements, at the HBC program food distribution points (FDP) in the case of the intervention arms and at the local parish in the control arm. HBC volunteers assisted with logistics. Pre-established lists of clients were used to ensure all eligible clients were invited to participate in the evaluation and that follow-up of all clients could occur. Using the FDPs for interviews allowed for immediate receipt of food and enhanced the quality of data collection since more supervision was provided and anthropometric measurement equipment was stationary.

Ambulatory HBC clients were asked to come to food distribution points in Solwezi and Mongu or to the local parish in the control arm of Monze on a set day. On that day, they were asked to participate in the evaluation survey while receiving their first monthly ration of supplements. Non-ambulatory HBC clients were visited by mobile interview teams.

Before the client was interviewed, the purpose and requirements of the targeted evaluation were explained. It was explained that this evaluation was completely voluntary and having had an HIV test was not necessary to continue with the baseline questionnaire. HBC services would be provided regardless of participation in the evaluation. Those HBC clients agreeing to be in the evaluation were asked to sign a consent form.

Anthropometric information was collected according to WHO protocols, using a spring scale and adult height boards either acquired locally or provided by the Central Statistics Office of Zambia, as well as MUAC tapes. Selected enumerators were trained on anthropometric measurement by an experienced supervisor and were responsible for all anthropometric measurements.

End line questionnaires were primarily completed in October and November with some follow up in December 2005 by the same enumerators and supervisors who conducted the baseline component. Only HBC clients who completed the baseline were interviewed for the end line. In Monze, HBC clients who did not meet the food insecurity eligibility requirements for food aid were not included in the end line.

HIV status was not queried during either of the interviews, but was gathered by HBC volunteers during weekly home visits. The trained HBC volunteers confidentially asked the HBC clients if they would be willing to reveal their HIV status. If clients reported not knowing their status or not having been tested previously, the volunteers encouraged clients to learn their status, which is a normal part of the HBC support services, including offering home test options. A separate confidential database, containing HIV testing results linked to the end line questionnaires by unique identification numbers, was prepared by the diocesan partners. Client information was entered into databases using numerical identification codes and, as names were never recorded, confidentiality of the clients was maintained.

### **Data Processing and Analysis**

Initial data entry, cleaning and organization was conducted using SAS v. 8.0. Outliers and missing data were verified with written questionnaires. Subsequent analysis was conducted

using SPSS v. 10.0. The CRS statistician in Lusaka and technical experts at CRS headquarters and the regional office assisted the primary investigator with the analysis plan and execution.

Clients who could not be proven HIV positive were excluded from analysis as the evaluation objective was to gauge the impact of nutritional supplements only within HIV positive individuals. Clients who were on ARV treatment were not analyzed since it would be unclear whether change was due to nutritional supplements and/or medication effects. Additionally, clients who were pregnant or lactating were not included in anthropometric analysis due to condition-related weight fluctuations and validity concerns.

Anthropometric measurements of weight, height and MUAC were cleaned and then compared between baseline and end line. Weight below 30kg and MUAC less than 150mm were considered out of range as were outlier anthropometric values with variations greater than 10kg in weight, 3cm in height, or 50mm in MUAC between baseline and end line. Body mass indices (BMI) were calculated using cleaned weight and height measurements.

A series of validated composite indicators were calculated after the data was cleaned. Mental and physical health summary scores were calculated using a modified version of the scoring tool used to calculate scores in Rakai, Uganda provided by Mast<sup>12</sup> and colleagues.

Food consumption scores (FCS) were calculated by assigning weighted values to foods consumed by HBC clients within 24 hours prior to the interview according to nutritional density. These weight allocations have been used in other surveys of the same population groups in Zambia by Rich Caldwell and colleagues at C-SAFE and WFP<sup>13</sup>. The higher the FCS, the more nutritionally dense and diverse was the client's diet. Using the concept developed by Maxwell et al.<sup>14</sup>, coping strategies index (CSI) scores were calculated using severity rankings from Zambia baseline and final surveys for C-SAFE by Caldwell and colleagues.

The WHO Clinical Staging Criteria for Adults and Adolescents developed by the WHO Africa Region was used to classify clients according to clinical stage of disease. The ECOG performance scale was used to assess the impact of disease progression on daily functioning of clients at baseline and end line.

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12 Scoring tool provided by Mast, used to calculate MHS and PHS in article: Mast, T.C., Kigozi, G., Wabwire-Mangen, F., Black, R., Sewankambo, N., Serwadda, D., Gray, R., Wawer, M., & Wu, A. W. (2004). Measuring the quality of life among HIV-infected women using a culturally adapted questionnaire in Rakai district, Uganda. *AIDS Care*. 16:81-94.

13 Caldwell, R., Huddle, J., Luma, J. (2005). Draft - Food Aid and Chronic Illness: Insights from the Community and Household Surveillance Surveys. Presented at the International Conference on HIV/AIDS and Food and Nutrition Security, sponsored by IFPRI, Durban, South Africa, 14-16 April 2005.

14 Maxwell, D., Watkins, B., Wheeler, R., Collins, G. (2003). The Coping Strategies Index: A tool for rapidly measuring food security and the impact of food aid programs in emergencies. Nairobi: CARE Eastern and Central Africa Regional Management Unit and the World Food Programme Vulnerability Assessment Mapping Unit.

# RESULTS

## Data Summary

A total of 1,724 HBC clients were interviewed at baseline (Tables 2 and 3). Over half of the clients were from Monze, where extra HBC clients were included in the baseline to ensure that sufficient participants were found who were of similar food insecurity status as in the Solwezi and Mongu cohort. From the 931 participants in Monze, only 684 met the food insecurity criteria to serve as controls. Of these, 168 clients were removed either because they were receiving food aid from another source or were on ARVs. This left 516 clients from Monze, 413 from Mongu and 380 from Solwezi for a total of 1,309 clients to be included in baseline analysis.

In October and November 2005, 911 HBC clients in the three sites completed the end line survey. There were 403 clients who participated in the baseline, but did not complete the end line questionnaire. The main reasons given as to why these clients were unavailable included: death, relocation out of the area, discharge from the program, admittance to the hospital and temporarily being out of town, at a funeral or out in the fields.

From the 911 clients who completed the end line, 578 records were discarded from analysis due to clients starting on ARVs since baseline, unknown or negative HIV status, or not completing the baseline questionnaire. For all results with the exception of anthropometric measurements, the sample size is 328 (81 in Mongu, 124 in Solwezi and 123 in Monze). This includes only HBC clients over 18 years old who have been identified through written communication from the implementing partner as being HIV positive and who self-reported not being on ARVs. For the analysis of anthropometric measurements, women who identified themselves as being pregnant or lactating (n=56) were not included due to fluctuating weight and MUAC changes, reducing the sample to 272.

**Table 2: Study Population from Baseline to Final Analysis, with Reasons for Attrition**

Diocese	Number of Clients at Baseline	Number of Clients at End line	Final Number of HIV Positive Clients	Final Number of Clients in Analysis	Comments/Reasons for Attrition through Life of the Study
Mongu	415	303	134	79 (55 removed due to pregnancy, lactation, or ARV commencement, also 2 people were not the same person as at baseline)	<ul style="list-style-type: none"> <li>▪ 77 Were on ARV treatment or received food supplements at baseline</li> <li>▪ 35 Died</li> <li>▪ 6 Tested negative</li> <li>▪ 163 were not tested or did not reveal results</li> </ul>
Solwezi	380	305	157	114 (43 removed due to pregnancy, lactation, ARV commencement, and 7 were determined not the same person as at baseline)	<ul style="list-style-type: none"> <li>▪ 21 Were on ARV treatment or received food supplements at baseline</li> <li>▪ 85 Tested negative</li> <li>▪ 63 Were not tested or did not reveal results</li> </ul>
Monze	929	303	144	115 (29 removed due to pregnancy, lactation, or ARV commencement)	<ul style="list-style-type: none"> <li>▪ 404 Not food insecure, Started ARV treatment or received food supplements</li> <li>▪ 41 Died</li> <li>▪ 67 Tested negative</li> <li>▪ 85 Were not tested or did not reveal results</li> </ul>
<b>Total</b>	<b>1724</b>	<b>911</b>	<b>435</b>	<b>308<sup>15</sup></b>	

## Demographics

The HBC clients from Solwezi, Mongu and Monze participated in the targeted evaluation were similar in many ways. In all of the areas, at least 60 percent of clients were women, more than 50 percent were heads of households and, while average household size ranged from 6.58 to 7.48, there was no significant difference ( $F=2.658$ ,  $p>0.05$ ) in the average number of people living at the clients' residence. However, differences did exist amongst the three groups in age and marital status. Clients in Solwezi were on average younger and more likely to be married than clients in Mongu and Monze.

**Table 3: Selected Demographic Characteristics of the Evaluation Population**

Characteristic	Mongu n=81	Solwezi n=124	Monze n=123	Test for significance
<b>Gender</b>				
Male	37.5%	31.5%	39.8%	$\chi^2=1.975$ (0.373)

<sup>15</sup> Final N = 328, but 20 pregnant or lactating women were removed from the anthropometric analyses.

Characteristic	Mongu n=81	Solwezi n=124	Monze n=123	Test for significance
Female	62.5%	68.5%	60.2%	
<b>Marital Status</b>				
Married	29.6%	49.2%	39.0%	
Divorced	11.1%	10.5%	11.4%	
Widowed	25.9%	25.8%	34.1%	
Single	29.6%	8.9%	9.8%	
Separated	3.7%	5.6%	5.7%	
Mean Age (SD)	42.47 (15.71)	38.27 (12.15)	43.55 (13.73)	F=4.980 (0.007)
<b>Age Categories</b>				
18-19	1.3%	0.8%	1.6%	
20-24	3.8%	8.1%	2.4%	
25-29	15.4%	13.0%	7.3%	
30-34	15.4%	17.9%	16.3%	
35-39	17.9%	25.2%	13.8%	
40-44	7.7%	8.9%	20.3%	
45-49	5.1%	12.2%	10.6%	
50+	33.3%	13.8%	27.6%	
<b>Relationship to Head of Household</b>				
Head	51.9%	51.2%	53.3%	
Spouse	12.7%	30.1%	25.0%	
Child	16.5%	12.2%	6.7%	
Father/mother	3.8%	0	6.7%	
Brother/sister	10.1%		5.0%	
Other relative	5.1%	5.7%	3.3%	
No relation	0	0.8%	0	
Mean household size (SD)	7.48 (2.65)	6.58 (2.61)	7.07 (3.03)	F=2.658 (0.072)

The main sources of income were quite diverse in all three of the evaluation sites. In addition to farming, the informal sector, petty trade and begging were key contributors of income to HBC clients. Only in Solwezi were a large percentage of clients focused primarily on one source of income: farming.

**Table 4: Main Source of Income**

Source of Income	Mongu n=81	Solwezi n=124	Monze n=123
Formal job	5 (6.2%)	5 (4.0%)	5 (4.1%)
Small scale farming/sale of produce	13 (16.0%)	57 (46.0%)	19 (15.4%)
Remittances	4 (4.9%)	10 (8.1%)	8 (6.5%)
Small scale business (non-farming)	9 (11.1%)	11 (8.9%)	14 (11.4%)
Petty Trade	14 (17.3%)	8 (6.5%)	20 (16.3%)
Fishing	3 (3.7%)	n/a	4 (3.3%)
Informal labor	15 (18.5%)	24 (19.4%)	31 (25.2%)
Begging	12 (14.8%)	9 (7.3%)	22 (17.9%)
Other	6 (7.4%)	n/a	n/a

When asked their average monthly household income, many clients, particularly in the intervention arms, were unsure of the amount. The largest percentage of clients reported earnings less than 50,000 kwacha (approximately 11 USD at the time of the survey), while only a

small portion reported values above 100,000 kwacha (approximately 22 USD at the time of the survey).

**Table 5: Average Household Monthly Income**

Monthly Income	Mongu n=81	Solwezi n=124	Monze n=123
<11USD	24 (29.6%)	53 (42.7%)	61 (49.6%)
11-22 USD	10 (12.3%)	11 (8.9%)	28 (22.8%)
>22-33 USD	1 (1.2%)	7 (5.6%)	11 (8.9%)
>33-44 USD	1 (1.2%)	2 (1.6%)	5 (4.1%)
>44 USD	1 (1.2%)	3 (2.4%)	5 (4.1%)
Not sure	44 (54.3%)	48 (38.7%)	13 (10.6%)

## Food Security: Consumption and Coping Strategies

### *Consumption of the HBC Nutritional Supplement*

In the intervention arm, questions were included to verify that the ration was consumed and to gauge how long the ration lasted. In Solwezi, where HBC clients received a monthly ration of HEPS and oil, 93.9 percent of the clients surveyed confirmed they had eaten HEPS in the 30 days prior to the survey. In Mongu, where HBC clients received a monthly ration of beans and bulgur wheat (or sorghum and peas) from C-SAFE, 91.1 percent of clients confirmed they had eaten the ration in the past 30 days.

### *Number of Meals Eaten per Day*

In the intervention arms, the HBC clients had been pre-screened to ensure their households met the food insecurity criteria described earlier regarding the nutritional supplements program. The same screening was done in Monze simultaneously with the baseline questionnaire, so all clients completing the end line questionnaire had similar food security status.

The average number of self-reported meals eaten in the 24 hours prior to the survey was significantly less in the intervention arms than the control area at baseline ( $p<0.001$ ). After six months of nutritional supplements, the average number of meals eaten per day in the intervention arms increased significantly by 13 percent ( $p<0.001$ ) while in the control arm the number of meals decreased by 11.5 percent ( $p<0.05$ ).

**Table 6: Number of Meals Eaten in Previous 24 Hours**

Diocese	Study Phase	Mean	Std. Deviation	t-value (sig.)
Mongu n=81	Baseline	1.63	1.19	0.560 (0.577)
	End line	1.70	0.66	
Solwezi n =123	Baseline	1.45	0.75	3.285 (0.001)
	End line	1.74	0.84	
Monze n =122	Baseline	2.18	0.71	-3.134 (0.002)
	End line	1.93	0.71	

Diocese	Study Phase	Mean	Std. Deviation	t-value (sig.)
Intervention arm n=204	Baseline	1.52	0.77	2.678 (0.008)
	End line	1.72	0.95	

### ***Food Consumption***

As described by Caldwell and colleagues<sup>16</sup>, the food consumption score (FCS) is a proxy “for the diversity and nutritional quality of the household diet.” To calculate the FCS, all food eaten in the past 24 hours is assigned a value according to nutritional density. Animal proteins receive the highest value of 4, legumes 3, cereal 2, while sugars and fats equal 0.5. Clients were asked whether they had consumed eighteen different food items or categories (e.g., rice, fruit, green leafy vegetables) as part of a snack or meal in the past 24 hours. The higher the total score, the more nutritious and diverse was the diet. The exact question asked can be seen in the questionnaire in Annex B.

There were no significant differences between the mean baseline food consumption scores. From baseline to end line, the FCS did not change significantly in Mongu, but was significantly lower in Solwezi and Monze ( $p < 0.001$ ). When combined as one intervention arm, there was no statistical change between baseline and end line in Mongu and Solwezi ( $p > 0.05$ ). Food consumption scores were not correlated at baseline or end line with gender, age or self-reported health status of the client, or household size.

**Table 7: Mean Food Consumption Score for Previous 24 Hours**

Diocese	Study Phase	Mean	Std. Deviation	t-value (sig.)
Mongu n=81	Baseline	10.57	6.39	1.852 (0.068)
	End line	12.25	7.43	
Solwezi n =109	Baseline	10.98	6.43	-2.590 (0.011)
	End line	9.31	5.12	
Monze n =117	Baseline	10.65	5.91	-4.436 (0.000)
	End line	7.80	4.79	
Intervention arm n=190	Baseline	10.81	6.39	-0.460 (0.646)
	End line	10.56	6.68	

In order to contextualize the FCS, categories of high (24 or more points), medium (12-23 points) and low (less than 12 points) consumption were created. Up to three-quarters of the HBC clients in each arm were classified at both baseline and end line as having low consumption diets while less than eight percent of clients had high consumption diets. Whereas there was no significant difference at baseline between the intervention arm and control arm ( $\chi^2=2.169$ ,  $p=0.338$ ), at end line the intervention arm had significantly fewer low consumption households than the control ( $\chi^2=10.057$ ,  $p=0.007$ ).

<sup>16</sup> Caldwell, R., Huddle, J., Luma, J. Food Aid and Chronic Illness: Insights from the Community and Household Surveillance Surveys, presented at the International Conference on HIV/AIDS and Food and Nutrition Security, IFPRI, Durban, South Africa, 14-16 April 2005.

**Table 8: Level of Consumption Based on 24-hour Recall**

Diocese	Level of Consumption	Baseline	End line
Mongu n=81	Low	54 (66.7%)	48 (59.3%)
	Medium	23 (28.4%)	27 (33.3%)
	High	4 (4.9%)	6 (7.4%)
Solwezi n =109	Low	74 (67.9%)	88 (80.7%)
	Medium	28 (25.7%)	18 (16.5%)
	High	7 (6.4%)	3 (2.8%)
Monze n =117	Low	77 (65.8%)	99 (84.6%)
	Medium	37 (31.6%)	18 (15.4%)
	High	3 (2.6%)	

***Coping Strategies Index (CSI)***

As a measure of the frequency and severity of strategies used by households to cope with food insecurity over the past 30 days, clients were asked to rate twelve common coping strategies on a scale from one to five (with one being “never” and five being “almost every day”). The questions and severity weights given to each strategy were based on focus groups conducted by C-SAFE staff on the same and similar population groups in Zambia for the C-SAFE baseline and end of project surveys. The questions and severity weights used are listed in Table 9. CSI is an **inverse** measure, i.e., the higher the score, the more frequent and severe the coping strategies.

**Table 9: Coping Strategies and Severity Weights Used in CSI Calculation**

	Coping Strategies	Severity Weight
F1	Rely on less preferred food or less expensive food?	2.00
F2	Borrow food or rely on help from friends and/or relatives?	2.75
F3	Purchase food on credit?	3.25
F4	Rely more on wild food or rely more on hunting?	2.50
F5	Harvest immature crops?	3.50
F6	Send HH members to eat elsewhere?	3.25
F7	Send HH members to beg?	3.50
F8	Limit portion sizes at mealtime?	3.25
F9	Restrict consumption by adults so children can eat?	2.75
F10	Restrict consumption of non-productive members in favor of productive ones?	2.25
F11	Reduce the number of meals eaten in a day?	2.75
F12	Skip entire days without eating?	4.00
F13	Rely more on piecework?	2.00
F14	Increase reliance of sales of wild or natural products?	2.25
F15	Rely on food aid?	3.75

Of a possible maximum CSI score of 177.5 and minimum of 35.5, the mean CSI score at baseline was 87.11 (SD=22.31) in Mongu, 81.22 (SD=20.10) in Solwezi, and 79.32 (SD=16.23) in Monze. At end line, the mean CSI scores were significantly lower in Solwezi ( $p<0.05$ ) and Mongu ( $p<0.001$ ) and significantly higher in Monze ( $p<0.001$ ) as compared to baseline scores.

The combined change from baseline to end line in the two intervention arms was also significantly lower compared to the control arm ( $t(196) = -6.587, p < 0.001$ ).

**Table 10: Coping Strategy Index Scores**

Diocese	Study Phase	Mean	Std. Deviation	t-value (sig.)
Mongu n=81	Baseline	87.11	22.31	-4.953 (000)
	End line	72.82	15.00	
Solwezi n =115	Baseline	81.22	20.10	-2.936 (0.004)
	End line	74.28	20.26	
Monze n=118	Baseline	79.32	16.23	4.049 (000)
	End line	88.16	22.31	
Intervention arm n=196	Baseline	83.66	21.19	-5.416 (000)
	End line	73.67	15.42	

## Health Status, Treatment and Support Requirements

### *Self-reported Health Status*

The majority of clients reported having been sick in the past 30 days, both at baseline and end line. There was no difference between the numbers of clients reporting being ill from baseline to end line within any of the arms nor was there any statistical difference between the arms at baseline or in amount of change over time.

**Table 11: Number of HBC Clients Sick in the Past 30 Days**

Diocese	Baseline	End line	t-value (sig.)
Mongu n=74	62 (83.8%)	64 (86.5%)	0.532 (0.596)
Solwezi n=114	97 (85.1%)	96 (84.2%)	-0.192 (0.848)
Monze n=109	95 (87.2%)	86 (88.1%)	0.228 (0.820)

During the 12 months prior to the baseline, the number of visits to the hospital ranged from zero to 30 with an average of 1.81 admissions. The range at end line was zero to 37 with an average of 1.67 visits. The average annual number of visits was not statistically different amongst the three arms nor was the change from baseline to end line statistically significant within or between arms.

**Table 12: Times Admitted to the Hospital in Past Year**

Diocese	Mean Baseline (SD)	Mean End line (SD)	t-value (sig.)
Mongu n=81	1.44 (1.89)	1.52 (3.18)	0.179 (0.858)
Solwezi n=115	2.21 (3.23)	1.85 (3.69)	-0.818 (0.415)
Monze n=123	1.75 (3.27)	1.61 (3.00)	-0.361 (0.719)

## Illnesses

HBC clients reported a variety of serious illness and health problems (Tables 13 and 14). The most common diseases, with over half of all HBC clients reporting the condition, were significant weight loss, prolonged fever, tuberculosis and recurrent upper respiratory infection. The least common symptoms, with less than a quarter of clients reporting the condition were Kaposi sarcoma, meningitis, oral thrush and herpes zoster (shingles).

**Table 13: AIDS Related Conditions at Baseline and End line**

Symptom	Diocese					
	Mongu n=81		Solwezi n=124		Monze n=122	
	Baseline	End line	Baseline	End line	Baseline	End line
>10% Weight loss	81.5%	56.8%	87.1%	33.1%	87.0%	86.9%
Generalized lymph node enlargement	22.2%	23.5%	38.7%	25.0%	19.5%	25.2%
Skin infections	46.9%	32.1%	48.4%	30.6%	39.8%	39.8%
Non resolving herpes simplex	21.0%	29.6%	31.5%	16.9%	30.1%	30.9%
Herpes Zoster within 5 years	21.0%	19.8%	25.8%	22.6%	24.4%	20.3%
Recurrent upper respiratory infection	53.1%	64.2%	53.2%	38.7%	63.4%	67.5%
Unexplained chronic diarrhea >30 days	22.2%	29.6%	41.9%	43.5%	44.7%	52.0%
Unexplained prolonged fever >30 days	55.6%	33.3%	66.9%	54.0%	54.5%	67.5%
Oral thrush	12.3%	21.0%	25.0%	17.7%	24.4%	34.1%
Tuberculosis (TB)	75.3%	65.4%	91.1%	79.0%	31.7%	37.4%
Pneumonia	56.8%	55.6%	47.6%	38.7%	40.7%	31.7%
Kaposi sarcoma	8.6%	12.3%	13.7%	1.6%	8.9%	8.9%
Meningitis	14.1%	28.2%	15.5%	12.8%	20.9%	23.5%
Persistent confusion or dementia	55.6%	56.8%	50.8%	37.9%	28.5%	35.0%

The average number of AIDS related symptoms per client at baseline ranged from 5.21 ( $SD=2.44$ ) in Monze to 6.33 ( $SD=2.57$ ) in Solwezi. After receiving nutritional supplements for six months, the average number of symptoms decreased in Solwezi and Mongu, although a one-way analysis of variance demonstrated that only in Solwezi was the decrease statistically significant ( $p<0.001$ ). Combined as one intervention arm, the decrease was significant ( $p<0.0001$ ). In Monze, where clients did not receive any supplementation, the mean number of symptoms increased, but not at a statistically significant level.

Table 14 shows that there is a clear difference between dioceses in the number of persons with recognized tuberculosis (TB) at both baseline and end line. Over 65 percent and as high as 91 percent of participants in the intervention arm were diagnosed with TB, less than 38 percent of participants in the control group, at both baseline and end line, had recognized TB. While this may reflect a true difference in the prevalence of TB between geographic areas, it more likely reflects an important difference in identification and treatment of active TB. This difference would therefore need to be acknowledged as a serious potential confounder and is further analyzed and discussed in the section on medical treatment.

**Table 14: Average Number of AIDS Related Symptoms per Client**

Diocese	Study Phase	Mean	Std. Deviation	t-value (sig.)
Mongu n=81	Baseline	5.59	2.16	-1.39 (0.168)
	End line	5.12	2.50	
Solwezi n =124	Baseline	6.33	2.57	-2.37 (000)
	End line	4.52	2.61	
Monze n =122	Baseline	5.21	2.44	1.26 (0.211)
	End line	5.57	2.38	
Intervention arm n=205	Baseline	6.04	2.44	-5.759 (000)
	End line	4.76	2.58	

***Performance Status***

The Eastern Cooperative Oncology Group (ECOG) scale measures performance status on a scale of zero to four. The performance associated with each grade is outlined in Box 1.

**Box 1: Eastern Cooperative Oncology Group Scale (ECOG) Performance Status Scale**

0	Fully active, able to carry on all pre-disease activities without restriction
1	Restricted in physically strenuous activity, but ambulatory and able to carry out work of a light or sedentary nature
2	Ambulatory and capable of all self-care, but unable to carry out any work activities. Out of bed >50 percent
3	Capable of only limited self-care, confined to bed or chair >50 percent waking hours
4	Completely disabled, cannot carry on any self-care, totally confined to bed or chair

ECOG analysis examined the overall ECOG gain score for all clients from the three intervention arms. The score was calculated by taking the difference between the ECOG performance score recorded for a particular individual for the two phases of the targeted evaluation. Thus, the difference should be negative for those individuals whose health had improved over the course of the targeted evaluation (e.g.,  $ECOG_{final} - ECOG_{base} \rightarrow 2 - 3 = -1$ ). With the majority of clients ranking between 2 and 3 on the ECOG scale at baseline and end line, the average HBC client was someone who could care for herself and walk around, but not work.

**Table 15: Baseline and End line ECOG Performance Level**

Diocese	ECOG Level	Baseline	End line
Mongu n=81	0	6 (7.4%)	4 (4.9%)
	1	43 (53.1%)	63 (77.8%)
	2	9 (11.1%)	7 (8.6%)
	3	17 (21.0%)	4 (4.9%)
	4	6 (7.4%)	3 (3.7%)
Solwezi n=123	0	15 (12.2%)	41 (33.1%)
	1	60 (48.8%)	54 (43.5%)

Diocese	ECOG Level	Baseline	End line
	2	26 (21.1%)	22 (17.7%)
	3	16 (13.0%)	5 (4.0%)
	4	6 (4.9%)	2 (1.6%)
Monze n=123	0	23 (18.7%)	15 (12.2%)
	1	68 (55.3%)	56 (45.5%)
	2	21 (17.1%)	37 (30.1%)
	3	5 (4.1%)	11 (8.9%)
	4	6 (4.9%)	4 (3.3%)

The mean change for the ECOG gain score for Mongu, Solwezi and Monze, was -0.432, -0.516 and 0.244 respectively. This translates to clients in both intervention sites reporting an increase in their performance levels over the six-month evaluation period, conversely the mean change in performance exhibited in the control group decreased over the same period, the difference between the groups is highly significant ( $p < 0.001$ ). This is further evident from the results in Table 16, where twice as many clients in the control arm reported worsening performance during the evaluation period as compared to clients in the intervention arms. Exploring the pairwise differences between the mean change in the ECOG gain demonstrates that of the three contrasts shown in the table below, the differences between the intervention sites of Mongu and Solwezi and the control site are significant ( $p$ -values=0.002 and  $< 0.001$  respectively). The difference between mean change in the ECOG gain for the intervention groups of Mongu and Solwezi is not significant ( $p=0.903$ ).

**Table 16: Percent Change in Performance Activity from Baseline to End line**

Diocese	Worsened	Maintained	Improved
Mongu n=81	19.8%	38.3%	42.0%
Solwezi n=123	18.7%	35.0%	46.3%
Monze n=123	39.0%	38.2%	22.8%

### ***Medical Treatment***

A variety of treatment modalities were provided to participants in both the intervention and control arms of the targeted evaluation as presented in Table 17. As is shown in the table, the use of Septrin (Cotrimoxazole) was only seen in 42.7 to 59.3 percent of clients. *Pneumocystis carinii* pneumonia (PCP) prophylaxis is a vital preventative measure within the comprehensive care of HIV positive patients and suggests an area of care and support which could be improved. Cotrimoxazole (CTX) prophylaxis was not part of Zambian MOH policy or guidelines at the time of the targeted evaluation, although the important role of CTX prophylaxis is acknowledged. Cotrimoxazole is a standard component of the HBC nurses' kits for treatment of relevant opportunistic infections as needed.

The other striking finding from the review of medical treatment is the treatment of tuberculosis through the directly observed therapy short-course (DOTS) program. As Table 17 shows, there

is a significant difference between the intervention dioceses and the control diocese with regard to the percentage of people on DOTS therapy. This is an important and potential confounder to the results of the targeted nutritional evaluation. As one of the most common HIV associated opportunistic infections and a disease which, in and of itself, can cause profound weight loss, TB identification and treatment is a significant part of the comprehensive care and support of people living with HIV and AIDS.

**Table 17: Medical Treatments from Baseline to End line**

Medical Treatment	Diocese					
	Mongu n=78		Solwezi n=115		Monze n=114	
	Base	End	Base	End	Base	End
DOTS	51 (63.0%)	32 (39.5%)	96 (78.0%)	72 (58.1%)	28 (23.0%)	19 (15.4%)
Septrin*	37 (46.3%)	40 (49.4%)	73 (59.3%)	53 (42.7%)	57 (47.1%)	68 (55.3%)
Other Antibiotics	24 (30.0%)	42 (51.9%)	47 (38.2%)	35 (28.2%)	46 (38.0%)	51 (41.5%)
Other Medicines	22 (27.2%)	4 (4.9%)	8 (6.5%)	11 (9.3%)	22 (18.8%)	21 (17.1%)
Multi-vitamins	42 (52.5%)	42 (51.9%)	74 (60.2%)	62 (50.0%)	33 (27.3%)	47 (38.2%)
Traditional Medicine	12 (15.0%)	9 (11.1%)	19 (15.4%)	12 (9.7%)	18 (15.0%)	36 (29.3%)

\*Cotrimoxazole

Since the use of DOTS varied between intervention and control arms, further analysis was done to control for this potential confounder. A repeated measures ANOVA was used to analyze the effect of TB treatment on weight gain (n=130, F=2.86, p=0.0921). Although the results are not significant, a trend may be present and the differences found in weight may be influenced by whether a person was receiving TB treatment at the time of the survey.

### ***Support Needed from Caregivers***

Each client was asked at baseline and end line what percentage of time they required a caregiver or assistance from a family member to help them during the day. Answers were coded into four categories: 1=<25%, 2=25-50%, 3=50-75%, 4=75-100%. The scores were then summed to arrive at an average value for each phase and arm.

When asked how much time per day they needed help from either family or outsiders, the average HBC client required support or assistance 25-50 percent of the time at baseline. After six months of nutritional supplements, clients in Solwezi and Mongu were able to function with statistically less assistance while in Monze they needed significantly more assistance. When combining the two intervention arms, the mean assistance score at baseline was 2.47 (SD=0.95) and at end line 1.90 (SD=0.84). This is a highly significant reduction of need for care (t=-6.822, p<0.001).

**Table 18: Percentage of Time HBC Clients Require Assistance**

Level of assistance needed per day	Diocese					
	Mongu n=78		Solwezi n=115		Monze n=114	
	Base	End	Base	End	Base	End
Less than 25%	14.8%	31.3%	17.9%	41.1%	24.4%	18.9%
25-50%	27.2%	37.5%	39.8%	40.3%	40.7%	29.5%
50-75%	35.8%	25.0%	30.1%	16.9%	26.0%	41.8%
Over 75%	22.2%	6.3%	12.2%	1.6%	8.9%	9.8%
Mean Caregiver Score	2.64 (0.98)	2.06 (0.90)	2.37 (0.92)	1.80 (0.78)	2.20 (0.91)	2.43 (0.91)
t-value (sig.)	-3.84 (000)		-5.766 (000)		1.984 (0.050)	

### Anthropometric Impact

Analysis was conducted on the anthropometric measurements of HBC clients who were proven to be HIV positive, not pregnant, not lactating and not on ARVs (Table 19).

**Table 19: Mean Values and Mean Changes in Anthropometric Measurement**

	Mean Baseline BMI <sup>17</sup> (SD)	Mean End line BMI (SD)	t-value (sig.)	Mean Baseline MUAC (SD)	Mean End line MUAC (SD)	t-value (sig.)
Mongu n=39 (BMI) n=72 (MUAC)	19.40 (1.56)	19.63 (2.25)	0.873 (0.388)	241.82mm (20.00)	249.24 (23.22)	3.321 (0.001)
Solwezi n=95 n=116	19.66 (2.28)	19.75 (2.419)	0.507 (0.614)	240.90 (25.40)	248.75 (26.09)	4.829 (000)
Monze n=79 n=107	19.36 (2.89)	19.20 (3.07)	-0.951 (0.345)	244.50 (26.86)	240.93 (30.43)	-1.685 (0.095)
Intervention arm n=134 n=188	19.58 (2.10)	19.71 (2.36)	0.900 (0.370)	239.27 (27.49)	246.97 (27.56)	4.157 (.000)

Mean baseline BMI and MUAC values in the three evaluation arms were not statistically different. Similarly, change between baseline and end line BMI values also was not statistically different among the three arms. Within the three arms there were slight increases in BMI within Solwezi and Mongu, and a decrease in Monze from baseline to end line, but none were statistically significant.

The MUAC measurements, on the other hand, indicated significant anthropometric improvement comparing the intervention and the control arms. The increase in mean MUAC values from baseline to end line was also significant (Table 20) in the combined intervention arms as compared to the change in the control arm ( $p < 0.001$ ). This significant change should be tempered by the fact that mean MUAC values were above excepted cut off values for moderate malnutrition as mentioned in the footnote below.

<sup>17</sup> Cut-off criteria for malnutrition in selective feeding programs for adults are BMI <16 (severe malnutrition), BMI 16.0-16.99 (moderate malnutrition) and MUAC <16.0 cm (severe malnutrition) and MUAC 16.0-18.49 (moderate malnutrition).

**Table 20: Anthropometric Comparison of Means**

	Comparison between Mean Baselines t-value (sig.)		Comparison of Change in Baseline and End line t-value (sig.)	
	BMI	MUAC	BMI	MUAC
Intervention vs. Control	-0.606 (0.546)	1.087 (0.278)	-1.277 (0.203)	-4.509 (000)

There was no significant difference in the baseline mean BMI and MUAC between the two arms (Table 20, column 2). In addition, there was no significant correlation between the change in BMI values from baseline to end line by gender, age, marital status, household or health status at end line in either the intervention or the control arms.

Gender, marital status, and health status of the client at end line were not significantly correlated with change in MUAC values between baseline and end line in the intervention or control arms. Age was significantly correlated with MUAC change in the intervention arm ( $r_s(183)=0.240$ ,  $p<0.05$ ) as was household size ( $r_s(187)=0.150$ ,  $p<0.05$ ), but not in the control arm. Younger HBC clients in the intervention arm had larger increases in MUAC scores than older clients and as households grew larger in size, change in MUAC scores increased.

### Quality of Life Impact

Clients' quality of life was measured using an adapted MOS-HIV questionnaire. The MOS questionnaire was initially developed for the Medical Outcome Study, which was a longitudinal study for chronically ill patients. The questionnaire consisted of 20 short questions (SF-20) that measured several dimensions of a patient's health status namely, physical functioning, role functioning, social functioning, mental health, current health perceptions and level of pain. These questions can be seen in the questionnaire in Annex B.

After re-examining the tool based on input from patients, clinical trial participants and providers of care to HIV and AIDS patients, the SF-20 went through a few iterations and several additional adjustments were made to form the MOS-HIV questionnaire. Five additional dimensions were added to bring the total to 11; measures for energy/fatigue, cognitive functioning, health distress, and quality of life were incorporated into the instrument<sup>18</sup>. This new instrument was called the SF-35, corresponding to the 35 questions asked of patients to determine their quality of life status.

The scores under each dimension or subscale are transformed into a score based on a zero to 100 point scale. The higher score represents a healthier patient for all of the dimensions described above. Additionally, the linear combinations of the subscale scores are transformed into two summary scores; a physical health summary score and a mental health summary score, both of which are normalized to have a mean of 50 and a standard deviation of 10. This is done to standardize the summary scores for comparison with other studies/populations that have used similar methods. Using the transformed score also makes it possible to compare the subscales to determine which dimension, if any, an intervention may impact the most.

<sup>18</sup> MOS-HIV Health Survey Users Manual; Albert Wu 1999.

For the purposes of the evaluation, the SF-35 was modified to make it more culturally and linguistically appropriate within the operational environment, for example in the local languages some of the questions used on the SF-35 instrument are redundant. The final instrument used for the TE consisted of 26 questions as opposed to the 35 used by the MOS-HIV questionnaire.

The transformation algorithm used to scale the scores for the different measured dimensions or subscales and the numbers of items in each are shown in the table below. It should be noted that the transformation algorithms were adjusted to reflect the actual number of items per subscale to maintain the scoring structure as outlined in the MOS-HIV Users Manual.

There is extensive evidence which substantiates the reliability, validity and responsiveness of the MOS-HIV instrument<sup>19</sup>. Although the instrument used differed slightly from the SF-35 the reliability for the instrument used in the targeted evaluation is quite similar to the SF-20, which also has been shown to provide valid and reliable results.

**Table 21: Transformation Algorithms for the MOS-HIV Sub Scales**

Sub Scale	No of Items (SF-35)	No of Items (TE)	Transformation of Scores <sup>20</sup>
General Health Perception	5	1	= (100/(4 - 1)) * (GHP Score - 1)
Physical Functioning	6	5	= (100/(15 - 5)) * (PF Score - 5)
Role Functioning	2	1	= (100/(2 - 1)) * (RF Score - 1)
Social Functioning	1	1	= (100/(5 - 1)) * (SF Score - 1)
Cognitive Functioning	4	4	= (100/(20 - 4)) * (CF Score - 4)
Energy/Fatigue	4	3	= (100/(15 - 3)) * (EF Score - 3)
Health Distress	4	3	= (100/(15 - 3)) * (HD Score - 3)
Quality of Life	1	1	= (100/(4 - 1)) * (QoL Score - 1)
Health Transition	1	1	= (100/(5 - 1)) * (HT Score - 1)
Mental Health	5	4	= (100/(20 - 4)) * (MH Score - 4)
Pain	2	2	= (100/(8 - 2)) * (Pa Score - 2)†

### *Interpretation of the Scores*

According to the MOS-HIV Users Manual, there are several different ways to interpret the scores for the various dimensions. In terms of standard deviation units, 0.2 is considered small, 0.5 moderate and 0.8 large. A change of one standard deviation unit for any of the measured dimensions is most likely “meaningful”. The manual also cites an example for the energy/fatigue subscale; a change or difference by seven or more points is equivalent to the difference expected between a symptomatic and an asymptomatic HIV infected patient.

The results in Table 22 show that of the eleven dimensions evaluated: the difference in mean score ( $\bar{X}_s$ ) was significant for six of the subscales in the Mongu cohort, namely, General Health Perception, Physical Functioning, Role Functioning, Pain, Health Distress, and Quality of Life;

<sup>19</sup> Wu, A. W., Reviki, D. A., Jacobson, D., Malitz, F. E. Evidence for reliability, validity and usefulness of the Medical Outcomes Study HIV Health Survey (Qual Lif Res. 1997; 6:481-493)

<sup>20</sup> Transformation differs from the SF-35 Transformation Scoring Algorithm.

for five subscales in the Solwezi cohort, specifically, General Health Perception, Pain, Health Distress, Quality of Life and Health Transition. There were no significant changes found in the Monze cohort, which was the control group.

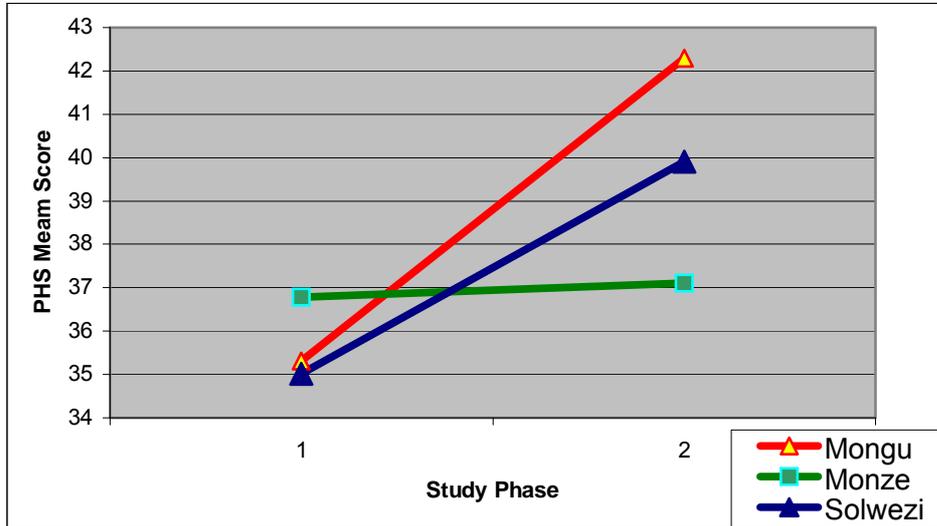
It is also interesting to note that Monze was the only site in which any of the mean dimension scores decreased over the course of the TE. Although not significant, the mean score decreased for the following dimensions: Physical Functioning, Energy/Fatigue, Mental Health and Health Transition. These decreases may explain the drop in the Mental Health Summary Score for the Monze cohort.

**Table 22: MOS-HIV Sub Scales, Mean Scores with 95% Confidence Intervals, and the Change in Mean and Standard Deviations**

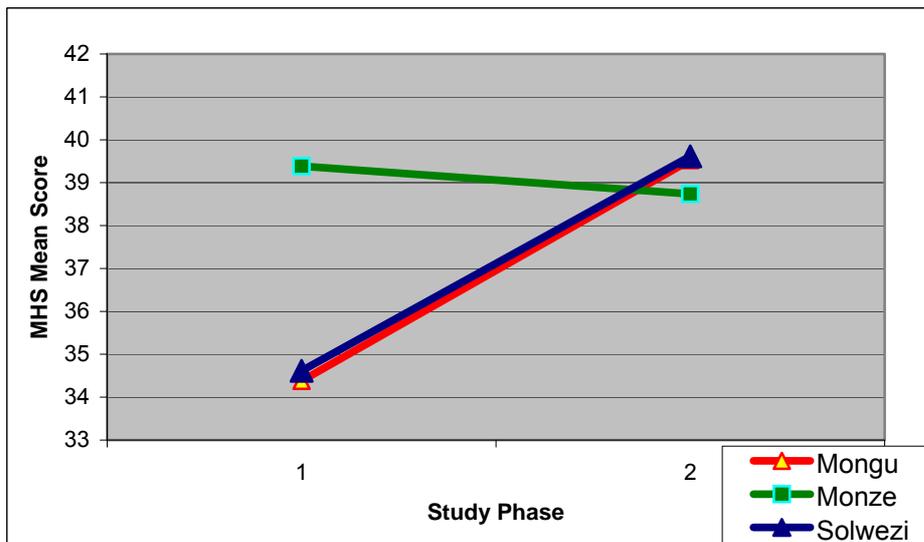
Sub Scale	Phase	Mongu				Monze				Solwezi			
		$\bar{X}_s$	[ 95% Conf Int]	$\Delta \bar{X}_s$	$\Delta (SD)$	$\bar{X}_s$	[ 95% Conf Int]	$\Delta \bar{X}_s$	$\Delta (SD)$	$\bar{X}_s$	[ 95% Conf Int]	$\Delta \bar{X}_s$	$\Delta (SD)$
General Health Perception	Baseline	23.9	(19.2, 28.6)	12.6	1.2	27.1	(23.3, 30.9)	1.8	0.0	21.3	(18.1, 24.5)	15.7	4.7
	End line	36.5	(31.5, 41.5)	Significant		28.9	(25.1, 32.7)			37.0	(32.9, 41.1)	Significant	
Physical Functioning	Baseline	49.4	(44.1, 54.7)	11.7	-0.9	57.5	(53.1, 61.9)	-5.4	-1.5	51.4	(47.0, 55.8)	6.5	1.0
	End line	61.1	(56.0, 66.2)	Significant		62.8	(58.2, 67.4)			57.9	(53.3, 62.5)		
Role Functioning	Baseline	41.9	(30.4, 53.4)	32.4	-5.7	38.4	(29.3, 47.5)	10.7	1.4	41.2	(32.2, 50.2)	7.6	0.8
	End line	74.3	(64.1, 84.5)	Significant		49.1	(39.7, 58.5)			48.7	(39.6, 57.8)		
Social Functioning	Baseline	52.0	(43.6, 60.4)	5.1	-5.1	50.9	(44.7, 57.1)	2.5	-3.5	48.1	(43.0, 53.2)	9.5	1.5
	End line	57.1	(49.9, 64.3)			53.3	(47.7, 58.9)			57.6	(52.2, 63.0)		
Cognitive Functioning	Baseline	50.3	(44.9, 55.7)	6.1	-0.1	66.2	(61.5, 70.9)	-3.6	0.2	52.8	(48.3, 57.3)	9.0	0.4
	End line	56.4	(51.0, 61.8)			62.6	(57.9, 67.3)			61.8	(57.3, 66.3)		
Pain	Baseline	35.8	(30.0, 41.6)	15.1	-3.2	40.2	(35.3, 45.1)	1.3	-3.0	35.9	(31.6, 40.2)	16.1	-0.5
	End line	50.9	(45.8, 56.0)	Significant		41.5	(37.1, 45.9)			52.0	(47.8, 56.2)		
Mental Health	Baseline	46.8	(42.3, 51.3)	3.6	-3.6	55.2	(51.2, 59.2)	-2.0	-1.2	47.8	(44.5, 51.1)	3.7	-0.5
	End line	50.4	(46.8, 54.0)			53.3	(49.6, 57.0)			51.5	(48.3, 54.7)		
Energy/Fatigue	Baseline	42.3	(37.9, 46.7)	6.0	0.0	45.5	(41.4, 49.6)	-5.3	-1.2	46.3	(42.7, 49.9)	3.2	1.4
	End line	48.3	(43.9, 52.7)			40.2	(36.3, 44.1)			43.1	(39.7, 46.5)		
Health Distress	Baseline	44.3	(37.3, 51.3)	13.4	-6.4	62.3	(53.4, 63.6)	0.5	2.6	43.6	(39.1, 48.1)	14.6	2.2
	End line	57.7	(52.2, 63.2)	Significant		62.8	(54.9, 64.7)			58.2	(53.3, 63.1)		
Quality of Life	Baseline	37.8	(31.5, 44.1)	18.9	-5.3	39.0	(35.9, 45.1)	1.5	2.4	39.2	(34.3, 44.1)	11.8	-3.3
	End line	56.8	(51.7, 61.9)	Significant		40.5	(34.8, 43.2)			51.0	(46.7, 55.3)		
Health Transition	Baseline	64.5	(57.9, 71.1)	10.1	-7.9	59.8	(57.5, 68.1)	-1.3	1.1	56.5	(51.0, 62.0)	13.9	-3.5
	End line	74.7	(70.0, 79.4)			58.5	(57.5, 67.1)			70.4	(65.6, 75.2)	Significant	

The graphs below show the resultant change in the Physical Health Summary (PHS) score and the Mental Health Summary (MHS) score for all three arms of the evaluation (Figures 1 and 2). The differences in PHS and MHS scores between the two phases for the intervention sites are significant ( $p < 0.001$  for both PHS and MHS), while the change for the control group was not significant.

**Figure 1: QOL Physical Health Summary Score (1=baseline, 2=end line)**



**Figure 2: QOL Mental Health Summary Score**



**Table 23: Mean Values and Mean Changes in Quality of Life Measurement**

Diocese	Mean Baseline MHS	Mean End line MHS	Mean MHS Difference ( $X_2 - X_1$ )	Mean Baseline PHS	Mean End line PHS	Mean PHS Difference ( $X_2 - X_1$ )
Mongu n=73	34.38	39.53	5.14 (95% CI: 2.39, 7.90)	35.30	42.30	6.99 (95% CI: 4.29, 9.70)
Solwezi n=119	34.65	39.62	4.97 (95% CI: 3.21, 6.73)	35.02	39.91	4.89 (95% CI: 2.55, 7.23)
Monze n=112	39.38	38.74	-0.65 (95% CI: -2.76, 1.46)	36.79	37.11	-0.32 (95% CI: -2.03, 2.67)

# DISCUSSION

Nutrition and food security are fundamental components of comprehensive care, treatment and mitigation of HIV/AIDS. This targeted evaluation has shown that in food insecure households, not only can a modest nutritional supplement enhance the nutritional status of HIV positive home based care clients, but it also can improve their mental and physical health, reduce the amount of support needed from caregivers, improve their ability to do daily activities and decrease the number of risky coping strategies utilized by their household.

From the analysis, it was clear that nutritional supplements positively impact the physical and mental health of home based care clients. The impact of nutritional supplements on physical health remains significant even when controlling for tuberculosis treatment. In issue after issue, clients receiving supplements reported feeling better about life and themselves, having less physical symptoms and being able to perform more daily activities. The mental and physical improvements are so important to a client's life, for as we know, health is holistic and improvements in mental outlook and overall household food security status have a multiplier effect on all aspects of a client's life.

While the positive impact of the nutritional supplements on mental and physical health was well demonstrated, the effect on anthropometric measurements was not as definitive. As measured by MUAC, there was positive change shown in the intervention arm; using BMI, the trend was positive, but not great enough to be statistically significant. It was not surprising to see no statistical change in BMI, however, as anthropometrics are a trailing indicator and a six month intervention is too short a timeframe to see extensive changes in adult body size, particularly for a population that has increased energy needs due to HIV and AIDS and who are not on antiretroviral therapy. Also, BMI is quite a narrow scale, with normally nourished adults falling into a six and a half point range, therefore making it difficult to achieve significant change.

However, MUAC, measured in millimeters, has a broader range, is more sensitive to change, and therefore reflected statistically significant results. It is to be debated what a seven or eight millimeter increase in MUAC measurements means biologically and as pragmatic change in a client's life, but regardless, the fact that dry monthly rations of 600 and 1200 kcal had any detectable positive anthropometric impact is laudable, considering inter- and intra-household distribution issues, absorption and appetite difficulties and the 10-30 percent increased energy needs due to HIV and AIDS.

By conducting an evaluation with a control arm, it was also possible to show that when seasonality or other forces cause declines in food consumption, the nutritional supplement helps mitigate the impact on recipient households and prevent dramatic swings in diet quality and diversity.

While it would be desirable to speculate on the causes of various outcomes, this evaluation does not provide the reasons certain results occurred. Since the drought in Zambia arguably affected the intervention arms more than the control arm and all other economic and political characteristics of the three arms remained similar, it is assumed that the improvements and positive results recorded in HBC clients in the intervention arms are due to receipt of the nutritional supplements. As to why certain scores were slightly higher in one intervention

arm than the other or greatly lower in the control, it would only be speculation on the part of the researchers to provide answers. The questions raised by the results presented here, however, will hopefully serve as the basis of future research projects.

## **Limitations**

This targeted evaluation attempted to gather a great deal of information in a number of diverse areas such as anthropometrics, coping strategies and quality of life. This ambitious plan proved thorough and interesting yet cumbersome and time consuming given real world constraints. The development of an *a priori* analysis plan would have assisted this study greatly.

There are several limitations to the targeted evaluation which should be considered when interpreting the results. The most evident problem is that nearly two-thirds of end line questionnaires could not be used in the final analysis, mainly due to lack of verifiable information on HIV status. When designing the evaluation, various assumptions were made regarding what percentage of the population had already tested positive and how many people would access ARVs in the six-month targeted evaluation period. The evaluation should a lower percentage of clients' status was known, furthermore, in a country without mandatory testing it was quite difficult even with mobile testing teams visiting client homes to complete tests during the study period. Unexpectedly, numerous HBC clients (mostly controls) were not re-interviewed at end line, although they had completed the baseline due to logistical reasons. Due to the loss of data due to collection error, power to conduct other analyses was reduced.

Analysis will be done in a separate report on HBC clients in general including the negative and unknown status cases, which will represent impact on clients of a normal HBC program that admits clients without HIV test results but for whom a presumptive HIV diagnosis is plausible given other routinely collected data. Analysis does show that there were not significant differences in the demographic profile of cases included and those that were eliminated, but it is unclear how well the 328 people included in analysis represent the entire home based care program.

Another main concern is the accuracy of some of the data, particularly that of anthropometric measurements despite recent training of enumerators. Due to unavoidable circumstances, not all supervisory personnel were able to be in the field during the data collection, which is reflected in a large number of outliers and missing data in some variables. In addition, the limited availability of skilled numerators in under-resourced settings is acknowledged.

Another limitation was that monthly monitoring information, meant to be collected by HBC volunteer caregivers to control for seasonality issues and provide information on the pattern of change over time, did not materialize in Mongu or Monze and is patchy and yet to be analyzed for Solwezi. Although just a small percentage of clients died, and thus would not be expected to have a great impact on the results, the lack of monthly data made it impossible to include the months of contribution from clients who were deceased before the end of the evaluation, thus a survivor bias exists.

Lastly, precise verified medical information on stage of disease such as CD4 counts or total lymphocyte count was not available due to inadequate distribution of such equipment in rural

areas, so it is not clear if results hold to all stages of disease or are mainly attributable to specific sub-sets of HBC clients.

While it is important to consider data limitations when interpreting results, positive impact was documented in almost every area evaluated, for two different supplemental rations. Change was seen in the anticipated positive direction in the intervention arms and in a negative direction in the control arm. Poor quality data, if it exists, did not create any spurious unexplainable results. All of these factors lend credibility to the conclusions.

Treatment of active tuberculosis is acknowledged as a strong potential confounder especially since initial analysis has shown a diocesan difference in identification of tuberculosis and use of DOTS. Whether this represents a real difference in prevalence of tuberculosis amongst the intervention and control arms or whether it is related to other factors could be further explored. When controlling for site (diocese) as well as tuberculosis treatment, although a trend was noted, no significant differences in the most basic anthropometric measure of weight gain was found. Interestingly, the physical health summary score (as part of the QOL measure) did show a significant variance based on both diocese and type of nutritional supplement. Yet, when controlling for tuberculosis treatment no significant difference was found on the physical health summary score.

# CONCLUSIONS & RECOMMENDATIONS

The clear conclusion is that nutritional supplements had a positive impact on HIV positive home based care clients in several physiological and psychological ways. Not only do nutritional supplements have the potential to reduce malnutrition and improve the physical status of the client, they also can enhance clients' mental outlook, help them participate more in activities of daily living and reduce the number and severity of negative coping strategies their households are employing, thus enhancing the lives of the entire household and potentially preventing additional cases of HIV. To address the potential confounder of tuberculosis treatment, further analysis showed no significant concern in two areas, namely weight gain and the physical health portion of quality of life. The power of this targeted evaluation is that it reflects positive change in a real program, implemented by local partners, with all the constraints of funding, capacity restrictions and everyday problems of running a project in a resource poor setting.

While it would be easy to take the evaluation results as proof that food aid is *the* answer to meeting needs of PLWHA in resource poor settings, the reality of the level of impact and the limitations of the evaluation must be examined. It needs to be remembered, however, that this targeted evaluation was only six months, with two specific nutritional supplements, in three specific areas. It is not clear if impact would continue to increase or what would happen over time as a client's disease progresses further or if these results would be applicable in different environments. Furthermore, it is not suggested that food can replace ARVs for persons with AIDS, but it could enhance the quality of life for those awaiting eligibility for or access to ARVs.

For the future, it would be good to take the lessons learned in conducting this evaluation to replicate it with more scientific precision and hopefully less data loss. This targeted evaluation was ambitious in its exploration of a variety of tools and indices to measure impact. Further refinement of the most appropriate mix of survey tools is needed given real-world constraints with data collection. The issue of what supplements are the most desirable and in what quantities needs to be explored, not only on spreadsheets of nutritional analysts, but in field conditions where logistics, inter- and intra-household distribution decisions and cultural preferences all are incorporated. The issues of level of impact over a longer time period of distribution and how long impact is maintained after nutritional supplements are discontinued also are important to investigate in the future to inform programming.

It is hoped that this evaluation will help demonstrate that there is a real need for nutritional assistance among PLWHA in home based care programs, add to the limited body of evidence on nutrition and HIV and AIDS, and be useful for advocacy to donors to allocate sufficient funding to meet this need.

Since this targeted evaluation showed positive impact on the well-being of PLWHA, the following recommendations are proposed:

1. Increase funding and support for food and nutrition supplements for food insecure PLWHA to optimize the impact of home based care services.
2. Further study the impact of nutritional supplements using a larger sample size to confirm findings. Explore trends noted here and to further clarify potential

confounders such as tuberculosis treatment, seasonality, ration quality, quantity and duration.

3. Further consultation on an appropriate and feasible combination of assessment tools for wide scale monitoring and evaluation.

# ANNEXES



### *Allocation of scores in indicator categories*

#### **A. Medical**

Medical = (0-20 points)

#### **B. Social-Demographic (5\*6 = 30)**

Sex of client = 3-5

Sex of household head = 3-5

Age of client = 3-5

Age of household head = 3-5

Size of household = 2-5

Number of orphans in the household = 0-5

Marital status of client = 2-5

#### **C. Social Economic (5\*5 = 25 points)**

Household monthly income = 0-5

Average number of meals per day = 0-5

Source of household income/livelihood = 0-5

Receive support from other helping organization = 0-5

Main household assets = 0-5

#### **D. Total for all categories and indicators**

Medical (20 points) + Social Demographic (30 points) + Social Economic (25 points) = 75 points

### ***SUCCESS-HBC Beneficiary Qualifier and Scoring System***

The scores as suggested here are based on the 20 points maximum, so that the higher the value for each specific code the higher the score.

#### **(1) Medical Qualifiers: Possible Illness/Condition**

##### **A. ARC (AIDS Related Condition)**

1. TB case = 16 points. TB plus one other illness listed under 4 = 16. TB plus two or more illnesses listed under 4 = 20

2. TB plus confirmed HIV/AIDS = 20

3. TB plus other HIV/AIDS related condition(s); Kaposi's sarcoma, Herpes Zoster, oral thrash, PCP, K. meningitis =20

4. A combination of two or more HIV/AIDS related illnesses/conditions; chronic diarrhea and persistent fever, Chronic diarrhea and persistent cough, chronic diarrhea and persistent rash; spouse died of (or suspected) HIV/AIDS and chronic diarrhea or weight loss or persistent fever or persistent cough or persistent rash = 20.

Then weight loss and persistent fever, weight loss and persistent cough, weight loss and persistent rash, persistent rash and persistent fever, persistent rash and persistent cough = 20.

5. One strong HIV/AIDS related condition like Kaposi's Sarcoma, Herpes Zoster, oral thrash, PCP, K. meningitis =20

6. Confirmed HIV/AIDS client = 20

7. Client on ARVs = 20

8. Client with just one illness/condition such as persistent fever, diarrhea, rash, cough, weight loss= 8

**B. NARC (Non-AIDS Related Condition)**

1. Persistent/chronic NARC = 2
2. Non-Persistent/non-chronic NARC = 0

*For all these codes A-B, the scores should be mutually exclusive, so that the maximum score on the medical indicators is maintained at 20.*

**(2) Social Qualifiers****A. Sex of Client**

1. Male = 3
2. Female = 5

*Female clients get a higher score than their male counterparts. This is because the former are generally considered to be a vulnerable group. For a traditional, and especially a rural Zambian household females do more household work than males, such that if the former happens to be struck by a chronic illness it is likely to impact more heavily, on both the household and the patient. It has also been documented that the women folk contribute more than 50 percent labor in terms of food production by peasant/small scale farmers.*

**B. Sex of HH head**

1. Male = 3
2. Female = 5

*As in (A)*

**C. Age of client**

1. 1-14 = 4
2. 15-29 = 3
3. 30-59 = 5
4.  $\geq 60 = 4$

*The age of the client is likely to influence the level of vulnerability.*

*For those chronically ill clients aged five years or below, it is likely that they are living as orphaned children, having lost their parent(s), probably to a chronic illness as well, which might have even depleted their resources, in seeking medication. It is also highly likely that child clients got their illness from their parent(s). The same may apply to the other age group of 6-14. These should deserve higher scores therefore.*

*For the clients aged 15-19, it is likely that they are still attached to their households/families, where a certain level of support should normally be expected. The chronic illness for such clients may not be expected to have been acquired from parents, but other possible ways. The same should be true for the 20-29 age group, except that the latter may have already started assuming greater household/family responsibilities.*

*The age group of 30-59 is expected to have significant family responsibilities, such that the chronic illness for such a person is likely to very much affect the general welfare of both the patient and the household/family (dependants).*

**D. Age of HH head**

1. 14-22 = 5
2. 23-35 = 4

3. 36-45 = 3
4. 46-59 = 4
5.  $\geq 60 = 5$

*Child headed households (14-22 years) are likely to be very vulnerable because the children are still too young to head houses/families.*

*23-35 years age group may be heading households but still not very stable and experienced, such that the presence of a chronic illness in their own house may cause some remarkable disturbance.*

*36-45 are at least stable and experienced to head households, but still accumulating family responsibilities.*

*46-59 may be very stable and experienced in running and handling household/family circumstances, but they may have assumed a lot of family responsibilities, with a big drain on household resources. They are also getting advanced in age, and it should be an added burden for them to have a chronic illness to manage in their household.*

*Households headed by the aged ( $\geq 60$  years) are also likely to be vulnerable. They are already getting weakened by their advanced age and are likely to be keeping orphans. They may hence be labor poor.*

**E. Marital status (Only Mpika and Solwezi used the indicator so they should be scored and put zero for Mongu and Mansa)**

1. Widowed = 5
2. Single = 3
3. Married = 2
4. Divorced = 4
5. On separation = 3

*The widowed clients are generally expected to be the most vulnerable. They may even have been left with orphans (single). Their illness may also constitute a psychological condition, which may impair their reason to hope for any better future. On the all they are without a spouse unwillingly, having experienced a complementary kind of life, and now going it alone, fending for themselves.*

*Clients who are in marriage may be better off.*

*The single, divorced and separated may struggle somehow, but they should be somewhere in between.*

**F. HH size**

1. 1-3 = 2
2. 4-7 = 3
3. 8-11 = 4
4.  $>11 = 5$

*The size of a household is very crucial when it comes to matters of consumption and general welfare.*

*The larger the household, the more constrained in terms of resources. However, this should also be dependant on the dependence ratio, because if it is a large sized household with a good number of members contributing to the labor and income sourcing, then this particular household is not as disadvantaged. The other advantage of a larger household, compared to a smaller sized one is the sharing of household labor/responsibilities.*

*If it is a large sized household with a big number of orphans or younger children, the dependency ratio should be expected to be particularly high.*

### **G. Number of orphans in HH**

1. 3 or more = 5
2. 1-2 = 3
3. 0 = 0

*Household churning tends to constrain the resources of a household taking up the responsibility. It becomes some kind of a burden for this household, such that the higher the number of orphans, the greater the impact. The orphaned children would need all the normal needs of a human being, and a child for them to grow up normally.*

*In an orphan-harboring household where there is also a chronically ill patient, the situation is likely to be very saddening.*

### **(3) Economic Qualifiers**

#### **A. Monthly HH income**

1. <K50000 = 5
2. K50000-K100000 = 2
3. >K100000 = 0
4. Not sure = 4

*Numerous studies on the needs of a human being have revealed that the major pre-occupation of a destitute household would be food. It is only after satisfying such a need that they would search up in the hierarchy of human needs.*

*An amount of K50,000 would afford an average family (5-6) a bag of mealie meal to at least take them somewhere near the month end.*

*Earning less than K50 000 per month would entail very dangerous levels of welfare, and transfers to supplement this household's consumption needs would be recommended.*

*Some households may not be in a position to know how much money comes into the household. Mainly these lead a hand to mouth kind of life, without proper knowledge of where the next meal/income will come from.*

*For food related programs which support large populations, the kind of support given is only supplementary, because it should be expected that there is still some survival instinct/strategy which could sustain a good number of them, especially in a non disaster situation (like war, floods, etc).*

#### **B. Number of meals per day**

1.  $\geq 3$  meals = 1
2. 2 meals = 2
3. 1 meal = 5

*The less the income level for a household, in relation its size, the less the number of meals per day. Under normal circumstances, a household is supposed to eat three meals per day. Anything less, or far less than this becomes a threat to the survival of this particular household.*

#### **C. Source of HH income/livelihood**

*If they mention two sources of livelihood score the average. But if it is more than two livelihood sources score zero points.*

1. Farming = 3
2. Formal job = 0
3. Relatives = 2
4. Begging = 5
5. Business = 2
6. Work for others = 3
7. Not sure = 4

*The major source of income for the majority of HBC clients is self-employment, and since the bulk of them are rural based, their self-employment occupation is farming. This kind of farming is small scale and in most cases, very small scale indeed. So when a household is hit by a chronic illness, this whole survival arrangement becomes derailed.*

*They may resort to begging or rely on relatives or some available formal welfare transfers.*

*Begging is very unreliable as compared to relatives' support. The support by relatives tends to foster family solidarity and brings more hope to the patient.*

#### **D. Receive support from other helping organization for the stated problem**

1. Yes + Food = 0
2. Yes + Agro-inputs = 1
3. Yes + Money = 0
4. Yes + Material support (e.g., clothes, blankets etc)=3
5. Yes + Medical support = 3
6. Yes + Educational support = 3
7. Yes + Other = 1
8. No other helping organization = 5

*If the client receives support from another organization, they should be considered to be better off. This will however depend on the kind of help they receive.*

#### **E. Main HH assets**

*If they mention two or more assets, score the value of the most valuable of those assets only, e.g., Vehicle (0), Farm tools (3) and TV (2), you score zero (0).*

1. High asset level: (>5) = 0; (Vehicle/Car, Hammer mill)
2. Asset better-off: (4-5) = 1; (Cattle, Radio, Oxcart, Canoe, Sewing Machine)
3. Average asset level: (3-4) = 2; (Bicycle, Goats, Pigs, TV, Radio, Land/Field, Furniture)
4. Asset poor: (2-3) = 3; (Farm tools)
5. Asset very poor: (0-1) = 4; (Nothing)

*Having assets entails that the household has or may have something to fall on in time of economic shock/crisis. Also, instead of helping only at economic shocks, assets can continuously assist in the daily survival needs, e.g., leasing/renting out a house, bicycle, an oxcart, a canoe, etc., to earn income for the household.*



## Annex B: Targeted Evaluation Questionnaire

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### SUCCESS PROGRAM NUTRITIONAL SUPPLEMENTATION TARGETED EVALUATION QUESTIONNAIRE

Questionnaire Number \_SOL\_\_\_\_\_

FDP Name: \_\_\_\_\_

Supervisor's name: \_\_\_\_\_

Enumerator's name: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
day month year

#### Result of interview

Interview Result 1= Complete  
(circle as 2= Refused  
appropriate) 3= Partially completed  
4= Others

Supervisor Approval

#### Guidance for introducing yourself and the purpose of the interview:

My name is \_\_\_\_\_ and I work for Diocese of \_\_\_\_\_.

1. Before we start, I want to make sure you signed the consent form. *(if no, send the client back to registration)*
2. Thank you very much for agreeing to participate in this study.
3. The survey is voluntary and you can choose not to take part at any time. The information that you give will be confidential. The information will be used to prepare reports, but will not include any specific names. There will be no way to identify that you gave this information.
4. This should take no more than 40 minutes. After you are finished here you will be asked to go over \_\_\_\_\_ where they will take your height, weight and circumference of your arm.

*NB to enumerator: DO NOT suggest in any way that household entitlements could depend on the outcome of the interview, as this will prejudice the answers*

*These first set of questions are about your whole household.*

I. Basic Household Information									
1. Marital Status (circle)		1=Married, 2=Divorced, 3=Widowed, 4=Single, 5=Separated			2. Total number of people in the household				
HOUSEHOLD DEMOGRAPHICS									
A	A2	A3	A4	A5	A6	A7	A8	A9	
	Please give me the first name of each HH member, starting with you.	What is (NAME) relationship to head of household? SEE CODES	Is (NAME) male or female? <i>Male = 1</i> <i>Female = 2</i>	How old is (NAME)? (IN YEARS IF < 1, WRITE 0)	What is your health status? SEE CODES	0-17 YEARS OLD ONLY, ELSE GO TO A8 What is (NAME) parental status? SEE CODES	6-20 YEARS ONLY, ELSE GO TO B1 School status SEE CODES What is the main reason for (NAME) absenteeism/ dropped out/ never enrolled? SEE CODES		
1									
2									
...									
16									
A3 – Relationship		A6 – Health status		A7 – Parental status		A8 – School enrollment		A9 – Primary Reason for Absent, Not Enrolled or Dropped Out	
1 = Head		1 = Good		1 = Both parents alive		1 = Enrolled without absences or few absences		1 = Illness	
2 = Head spouse		2 = Ill for <3 months		2 = Mother alive, father dead		2 = Enrolled but absent > 1 week in past 30 days		2 = Working	
3 = Child		3 = Ill for 3 months or more		3 = Father alive, mother dead		3 = Dropped out primary this school year		3 = Help with HH work	
4 = Father/mother		4 = Physically or mentally disabled		4 = Both parents dead		4 = Dropped out primary before this school year		4 = Care for ill member/younger sibling	
5 = Brother/sister						5 = Dropped out secondary this school year		5 = Not interested in school	
6 = Other relative (grand parents, uncle, auntie, cousin)						6 = Dropped out secondary before this school year		6 = Distance to school far	
7 = Grandchild, niece, nephew						7 = Secondary complete		7 = Hunger	
8 = Adopted/foster or step child						8 = Never enrolled		8 = Expensive/no money	
9= No relation								9 = Child considered too young	
10 = In Laws								10= Pregnancy/marriage	
								11=School not available	
								12=Did not qualify to next grade	
								88 = other	
B. Current Food Sources									
						B1 (1=Yes, 2=No)	B2-SEE CODES		

<b>B1</b> In the past 30 days, where did your household get food? <b>B2</b> What proportion of food came from those sources?	Food aid					
	Gift from community members				CODES for B2	
	Gift from family				1 = 0%	
	Market purchases				2 = 1-25%	
	Gathering wild food				3 = 25-50%	
	Begging				4 = 51 - 75%	
	Credit/borrowing				5 =	
	Production/Farming				>75%	
Other _____						
<b>In the past 30 days, how frequently did your household use the following strategies to access food:</b>						
<b>C. COPING STRATEGIES</b>		<b>Never</b>	<b>Seldom (&lt; 1 day a week)</b>	<b>Once in a while (1-2 days a week)</b>	<b>Pretty often (3-5 days/ week)</b>	<b>Almost every day</b>
<b>C1</b>	Rely on less preferred food or less expensive food?	1	2	3	4	5
<b>C2</b>	Borrow food, or rely on help from friends and/or relatives?	1	2	3	4	5
<b>C3</b>	Purchase food on credit or take a loan to purchase food?	1	2	3	4	5
<b>C4</b>	Rely more on wild food?	1	2	3	4	5
<b>C5</b>	Harvest immature crops?	1	2	3	4	5
<b>C6</b>	Send HH members to eat elsewhere?	1	2	3	4	5
<b>C7</b>	Send HH members to beg?	1	2	3	4	5
<b>C8</b>	Limit portion sizes at mealtime?	1	2	3	4	5
<b>C9</b>	Restrict consumption by adults so children can eat?	1	2	3	4	5
<b>C10</b>	Reduce the number of meals eaten in a day?	1	2	3	4	5
<b>C11</b>	Skip entire days without eating?	1	2	3	4	5
<b>C12</b>	Rely on casual labour for food?	1	2	3	4	5
<b>D. Nutrition Supplement Questions</b>						
<b>D1</b> Did you receive food aid in the last 30 days? 1=Yes, 2=No		(if no, skip to next section)				
<b>D2</b> What quantity of ration did you receive?	Bulgar (kg)					
	Pinto beans (kg)					
	Oil (Ltrs)					
	HEPS (kg)					
	Other Foods			If Yes, please specify: _____		
Other Foods			If Yes, please specify: _____			
From the food aid you received:						
<b>D3</b> How many kg are remaining?						
<b>D4</b> How much did you exchange for other food or goods?						
<b>D5</b> How much did you give away to other households?						
<b>D6</b> How much went bad?						

<b>E1. What is Main Source of Household Income?</b>							
	Formal Job	1					
	Small scale farming/sale of produce	2					
	Remittances	3					
	Small scale business (non-farming)	4					
	Petty Trade	5					
	Fishing	6					
	Informal labor	7					
	Begging	8					
	Other (Specify) _____	9					
<b>E2. What is the Average HH Monthly Income?</b>							
	< K50, 000	1					
	K51, 000 - K100, 000	2					
	K101, 000 - K150, 000	3					
	K151, 000 - K200, 000	4					
	> 200, 000	5					
	Not Sure	6					
<b>INDIVIDUAL RESPONSE SECTION</b>							
<i>This section refers only to the HBC client, not to the household.</i>							
<b>F. Health Status</b>							
<b>F1</b>	How many times were you admitted to the hospital in last year for at least an overnight stay?						
<b>F2</b>	What is the distance to nearest health facility with beds (km)?						
<b>F3</b>	Have you been sick in the past 30 days?					1=Yes 2=No	
	Could you please tell me if you suffer from any of these conditions?					1=Yes 2=No	
<b>F4</b>	Weight loss >10% from normal/regular weight						
<b>F5</b>	Generalized lymph node enlargement						
<b>F6</b>	Skin infections						
<b>F7</b>	Non resolving herpes simplex						
<b>F8</b>	Herpes Zoster within the last 5 years						
<b>F9</b>	Recurrent upper respiratory infection						
<b>F10</b>	Unexplained chronic diarrhea (> 30 days)						
<b>F11</b>	Unexplained prolonged fever (intermittent or consistent > 30 days)						
<b>F12</b>	Oral thrush						
<b>F13</b>	TB						
<b>F14</b>	Pneumonia						
<b>F15</b>	Karposi's sarcoma						
<b>F16</b>	Meningitis						
<b>F17</b>	Persistent confusion/Dementia						
<b>G. Performance</b>							
<b>G1</b>	What is your physical activity level? (Please circle one)						
<b>Grade</b>	<b>Definition</b>						
1	Fully active, able to carry on all pre-disease activities with restriction						
2	Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature						
3	Ambulatory and capable of all self-care but unable to carry out any work activities. Out of bed > 50%						
4	Capable of only limited self-care, confined to bed or chair > 50% waking hours						
5	Completely disabled, cannot carry on any self-care, totally confined to bed or chair						

H. Medical Treatment				
				1=YES 2=NO
H1. Are you currently receiving any of the following medical treatments?	DOTS/TB Drugs		Date started:	
	ARVs		Date started:	
	Seprin/Cotrimoxazole			
	Other antibiotics			
	Traditional medicines		Please Specify:	
	Multi-vitamins			
	Other (specify)		Please Specify:	
I. Support				
External Support	I1. Do you receive support for your illness from any helping agency besides this HBC program? (1=Yes, 2=No)			
	I2. If yes, what is the name and type of program?			
Internal Support	I3. What percentage of the time do you require a caregiver or assistance from a family member to help you during the day? CODE 1=<25%, 2=25-50%, 3=50-75%, 4=75-100%			
J. General Physical and Mental Health (PLEASE CIRCLE)				
J1. In general, would you say your health is:	Excellent/Very good		1	
	Good		2	
	Fair		3	
	Poor/Bad		4	
J2. How much <i>bodily</i> pain have you generally had during the past thirty days?	None		1	
	Slight/Mild		2	
	Moderate		3	
	Severe		4	
J3. This pain you just described, how much did it interfere or disturb your normal work, including both work outside the home and housework?	Not at all		1	
	Once in a while		2	
	Most of the time		3	
	All the time		4	
J4. The following questions are about activities that a person might do during a typical day. How has your health restricted your ability to do:	<b>Yes, limited a lot</b>	<b>Yes, limited a little</b>	<b>No, not limited at all</b>	
	a. <i>The kinds or amounts of vigorous activities you can do like digging, fetching water, carrying a big bunch of firewood, pounding grain, splitting firewood, fishing, or plowing.</i>	1	2	3
	b. <i>The kinds or amounts of moderate activities you can do like washing clothes, cooking, gardening, cleaning the house or moving a jerrican of water or moving a bundle of firewood from one place in the house to another.</i>	1	2	3
	c. <i>Walking a flat distance, like the length of a football pitch, about 100 meters</i>	1	2	3
	d. <i>Bending, lifting light objects or kneeling.</i>	1	2	3
	e. <i>Eating, dressing, bathing or using the latrine.</i>	1	2	3

<b>J5.</b> Does your health <i>keep</i> you from working at a job or doing work around the house? (1=Yes, 2=No)						
For each of the following questions, please tell me the answer that comes closest to the way you have been feeling in the past thirty days						
	<b>All of the time</b>	<b>Most of the time</b>	<b>Half of the time</b>	<b>A little bit of the time</b>	<b>None of the time</b>	
<b>J6.</b> How much of the time, during the past thirty days, has your health limited your social activities, like visiting with friends or family?	1	2	3	4	5	
<b>17.</b> How much of the time, during the past thirty days:						
a. <i>Have you been a very nervous person?</i>	1	2	3	4	5	
b. <i>Have you felt calm and peaceful?</i>	1	2	3	4	5	
c. <i>Have you felt depressed?</i>	1	2	3	4	5	
d. <i>Have you been a happy person?</i>	1	2	3	4	5	
<b>18.</b> How often during the past thirty days:						
a. <i>Did you feel full of life and energy?</i>	1	2	3	4	5	
b. <i>Did you feel totally without energy?</i>	1	2	3	4	5	
c. <i>Did you have enough energy to do the things you wanted to do?</i>	1	2	3	4	5	
d. <i>Were you discouraged by your health problems?</i>	1	2	3	4	5	
e. <i>Did you feel despair/hopeless over your health?</i>	1	2	3	4	5	
f. <i>Are you afraid because of your health?</i>	1	2	3	4	5	
<b>19.</b> How often during the past thirty days:						
	<b>All of the time</b>	<b>Most of the time</b>	<b>Half of the time</b>	<b>A little bit of the time</b>	<b>None of the time</b>	
a. <i>Did you have difficulty reasoning and making decisions, for example, making plans or learning new things?</i>	1	2	3	4	5	
b. <i>Did you forget things that happened recently, for example, where you put things or when you had appointments?</i>	1	2	3	4	5	
c. <i>Did you have trouble keeping your attention on any activity for long?</i>	1	2	3	4	5	
d. <i>Did you have difficulty doing activities involving concentration and thinking?</i>	1	2	3	4	5	
<b>J10.</b> How has the quality of your life been during the <i>past thirty days</i> ? That is, how have things been going for you?	Very well; could hardly be better				1	
	Pretty good				2	
	Pretty bad				3	
	Very bad; could hardly be worse				4	
<b>J11.</b> How would you rate your physical health and emotional condition now compared to thirty days ago?	Much better				1	
	A little better				2	
	About the same				3	
	A little worse				4	
	Much worse				5	
<b>K. Food Consumption</b>						
<b>K1.</b> In the past 24 hours, how many meals did you eat?						

<b>K2.</b> In the past 24 hours, which of the following items did you consume as part of a meal or snack?							
<i>Maize (e.g., nshima, whole corn cob, porridge)</i>	1= Yes	2=No	<i>Fish</i>	1= Yes	2=No		
<i>Sorghum</i>	1= Yes	2=No	<i>Chicken</i>	1= Yes	2=No		
<i>Millet</i>	1= Yes	2=No	<i>Eggs</i>	1= Yes	2=No		
<i>Rice</i>	1= Yes	2=No	<i>Fat/oil</i>	1= Yes	2=No		
<i>Other cereals</i>	1= Yes	2=No	<i>Milk, Cheese, Yogurt</i>	1= Yes	2=No		
<i>Beans</i>	1= Yes	2=No	<i>Sugar</i>	1= Yes	2=No		
<i>Cassava</i>	1= Yes	2=No	<i>Salt</i>	1= Yes	2=No		
<i>Other tubers (yam, sweet potato)</i>	1= Yes	2=No	<i>Tea</i>	1= Yes	2=No		
<i>Meat (beef, pork, lamb, game)</i>	1= Yes	2=No	<i>Coffee</i>	1= Yes	2=No		
<i>Nuts/Groundnuts</i>	1= Yes	2=No	<i>Beer</i>	1= Yes	2=No		
<i>Green leafy vegetables</i>	1= Yes	2=No	<i>Other beverages (specify)</i>	1= Yes	2=No		
<i>Other vegetables (pumpkins, cucumbers)</i>	1= Yes	2=No	<i>Other food (specify)</i>	1= Yes	2=No		
<i>Fruits</i>	1= Yes	2=No					
<b>L. Consumption of Target Ration</b>							
<b>Solwezi</b>							
<b>L1.</b> Have you consumed HEPS in the last 30 days? 1=Yes, 2=No							
<b>L2.</b> If yes, how many days during the past 30 days did you eat HEPS?							
<b>M. Anthropometrics</b>							
<b>M1. WEIGHT</b>	[ ]		<b>M3. MUAC</b>	[ ]			
	kg			mm			
<b>M2. HEIGHT</b>	[ ]	cm	<b>M4. Oedema</b>	1=Yes 2=No			

## **Annex C: HBC activities/services provided in common by Solwezi, Mongu and Monze Dioceses during the time of the survey**

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- a. Trainings for caregivers (CGs) in HBC, basic Psycho-social support (PSS), annual refresher trainings, and specialty trainings as needed
- b. Home visits: daily if bed-ridden client or if needed, minimum once a week if client is ambulatory, using CG basic kit
- c. Basic nursing care: skin and mouth care, bathing of client, basic medications including low level analgesics and ORS, DOTS, Nurse Care Plans, assessment, nutritional counseling, PSS, spiritual counseling, household chores, environmental hygiene
- d. Clinical referrals for opportunistic infections (OIs) and /or other complications
- e. Other referrals to: GRZ social services, paralegal support, Nurse provided medications, HIV testing after pre-test counseling
- f. ART referral
- g. Networks – DHMTs, referral to OVC care and support



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