



**Nutrition Survey in IDP Camps
Gulu District, Northern Uganda**

**Action Against Hunger (ACF-USA)
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TABLE OF CONTENTS

| | |
|---|----|
| 1. EXECUTIVE SUMMARY..... | 1 |
| 2. INTRODUCTION..... | 5 |
| 2.1 Northern Ugandan Context | 5 |
| 2.2 Gulu District IDP Camps | 5 |
| 2.3 ACF-USA Activities in Gulu District | 6 |
| 3. OBJECTIVES | 6 |
| 4. METHODOLOGY..... | 6 |
| 4.1 Survey Design..... | 6 |
| 4.2 Data Collection and Measurement Techniques | 7 |
| 4.2.1 Children from 6 to 59 months:..... | 7 |
| 4.2.2 Children less than 6 months:..... | 8 |
| 4.2.3 Mortality..... | 8 |
| 4.2.4 Food Distribution Coverage..... | 9 |
| 4.3 Cut-off Guidelines and Formulas Used..... | 9 |
| 4.3.1 Weight for Height Index..... | 9 |
| 4.3.2 Height for Age Index | 9 |
| 4.3.3 MUAC | 9 |
| 4.3.4 Mortality..... | 10 |
| 4.4 Data Analysis | 10 |
| 5. IMPLEMENTATION | 10 |
| 5.1 Resources | 10 |
| 5.1.1 Human..... | 10 |
| 5.1.2 Material..... | 10 |
| 5.2 Survey Implementation | 11 |
| 6. RESULTS | 11 |
| 6.1 Age and gender distribution of children 6 to 59 months..... | 11 |
| 6.2 Weight for Height Index (Acute Malnutrition)..... | 11 |
| 6.2.1 Acute Malnutrition in Z-scores | 12 |
| 6.2.2 Acute Malnutrition in Percentage of Median | 13 |
| 6.3 Height for Age Index (Chronic Malnutrition) in Z-scores | 13 |
| 6.4 MUAC analysis | 14 |
| 6.5 Measles Vaccination Coverage..... | 14 |
| 6.6 Mortality..... | 15 |
| 6.7 World Food Programme Distribution..... | 15 |
| 6.8 Nutrition Findings on Infants Under 6 months | 15 |
| 6.8.1 Evaluation of the prevalence of malnutrition | 16 |
| 6.8.2 Feeding practices | 16 |
| 7. DISCUSSION | 16 |
| 8. RECOMMENDATIONS | 19 |

LIST OF APPENDICES

| | |
|-------------|--|
| Appendix 1 | Cluster Selection |
| Appendix 2 | Local Calendar of Events |
| Appendix 3 | SFC and TFC Statistics |
| Appendix 4 | Anthropometric Questionnaire 6-59 months |
| Appendix 5 | Anthropometric Questionnaire < 6 months |
| Appendix 6 | Mortality Questionnaire |
| Appendix 7 | Verbal Questions to Determine Cause of Death |
| Appendix 8 | Training Schedule |
| Appendix 9 | Duties and Procedures |
| Appendix 10 | Survey Schedule |

List of Acronyms

| | |
|---------|--|
| ACF-USA | Action Against Hunger-USA |
| ACORD | Agency for Cooperation and Research in Development |
| AVSI | International Service Volunteers Organization |
| CCF | Christian Children's Fund |
| CHW | Community Health Workers |
| CI | Confidence Interval |
| CRS | Catholic Relief Services |
| DDHS | District Department of Health Services |
| EPI | Expanded Programme of Immunization |
| GAM | Global Acute Malnutrition |
| ICRC | International Committee of the Red Cross |
| IDP | Internally Displaced Persons |
| IOM | International Organization of Migration |
| LRA | Lord's Resistance Army |
| MOH | Ministry of Health |
| MUAC | Mid-Upper Arm Circumference |
| NGO | Non-Governmental Agencies |
| NRC | Norwegian Refugee Committee |
| NRM | National Resistance Movement |
| OCHA | United Nations Office for the Coordination of Humanitarian Affairs |
| RR | Relative Risk |
| SAM | Severe Acute Malnutrition |
| SFC | Supplementary Feeding Centers |
| SVC | Save the Children |
| TFC | Therapeutic Feeding Centers |
| UNICEF | United Nations Children's Fund |
| UPDF | Uganda People's Defense Force |
| URCS | Ugandan Red Cross Society |
| WFP | World Food Programme |
| WH | Weight for Height |
| WHO | World Health Organization |
| WV | World Vision |

1. EXECUTIVE SUMMARY

Objectives

- To evaluate malnutrition rates in children 6-59 months.
- To estimate the malnutrition in infants below 6 months.
- To evaluate the mortality rate for the total population and to determine the proportion of deaths in the under-five year population.
- To estimate the measles immunisation coverage among children 9 to 59 months.
- To make recommendations for programme implementation as may be necessary.

Methodology

The nutritional survey was conducted among the population living in the camps in Gulu district. The camps that were not accessible due to security reasons were excluded from the cluster selection. A two-stage cluster sample survey was implemented, which included 30 clusters of 30 children each. 900 children between 6 and 59 months constitute a proper sample to provide data that are representative of the overall population.

The infants below 6 months that were present in the household selected by the sampling methodology were measured, however there was no statistical limit of number of infants required.

Every household selected by the methodology was surveyed for the retrospective mortality questionnaire, even if there were no eligible children for the anthropometric survey.

Results

| | 6-59 months (n=1072) | 6-29 months (n=541) |
|--|-----------------------------------|------------------------|
| Global Acute Malnutrition (W / H <-2 Z-scores and/or oedema) | 4.6% (3.0% -6.8%) ¹ | 6.8% (4.2% - 10.7%) |
| Severe Acute Malnutrition (W / H <-3 Z-scores and/or oedema) | 0.8% (0.3% - 2.2%) | 1.1% (0.2% - 3.5%) |

Table 1: GAM and SAM by Age Group in Z-scores, Gulu District, Uganda. June 2004.

| | 6-59 months (n=1072) | 6-29 months (n=541) |
|--|--------------------------|--------------------------|
| Global Chronic Malnutrition (H / A <-2 Z-scores) | 35.8% (31.7% - 40.0%) | 40.0% (34.0% - 46.0%) |
| Severe Chronic Malnutrition (H / A <-3 Z-scores) | 12.7% (10.0% - 15.8%) | 14.2% (10.2% - 18.9%) |

Table 2: Chronic Malnutrition by Age Group in Z-scores, Gulu District, Uganda. June 2004.

According to the MUAC measurements:

- 0.3% of the children were detected as severely malnourished
- 0.7% were moderately malnourished

The mortality rate for the total population is **1.2/10,000/day**.

The proportion of total deaths that are under-5 years is **39.6%**.

The top two causes of death in the total population are fever (28%) and accidents (20%) while in the under-5 population it is overwhelmingly fever (47%).

Measles vaccination coverage is 47% (vaccination verified by a health card) and an additional 50% claimed vaccination but could not be proven by a health card.

91% of the children surveyed are beneficiaries of WFP food aid.

¹ Confidence interval at 95%.

Of the 70 infants under 6 months surveyed, 87% (n=61) received only breast milk as their nourishment while the remaining 13% (n=9) received breast milk and some other course of nourishment.

Discussion

Malnutrition rates have significantly improved over the past years six years. The results of the first ACF survey in 1998 presented a clear emergency situation. The surveillance in the years that followed has shown that there was a noticeable decline and stabilization of malnutrition rates within the international range indicating alert to emergency. The last year has shown a further decrease in malnutrition rates. In fact, the malnutrition rates for this 2004 survey are surprisingly low, especially if the decreased access to land and increased rebel activities (pillages of food stock) are taken into account.

| Wasting % | April 98 | | March 99 | | March 01 | | May-03 | June-04 |
|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------------|---------------------|
| | Gulu East camps | Gulu West camps | Gulu East camps | Gulu West camps | Gulu East camps | Gulu West camps | Gulu District camps | Gulu District camps |
| Global | 15.7 | 11 | 6.4 | 4.9 | 6.7 | 7.7 | 6.7 | 4.5 |
| 95% CI | 11.5-21.2 | 7.4-16 | 4.4-9.2 | 3.1-7.4 | 4.6-9.5 | 5.4-10.7 | 4.6-9.5 | 3.0-6.8 |
| Severe | 2.5 | 2.3 | 1.6 | 0.5 | 1 | 1.8 | 1.3 | 0.8 |
| 95% CI | 1.0-5.6 | 0.8-5.4 | 0.7-3.3 | 0.1-1.9 | 0.3-2.6 | 0.8-3.6 | 0.7-2.4 | 0.3-2.2 |

Table 18: Longitudinal Comparison of ACF survey wasting results in Z-scores, Gulu District, Uganda.

However, when taken in context, the decrease in the prevalence of malnutrition can be interpreted as a positive consequence of the extension of the ACF activities:

- ACF SFC coverage increased dramatically: in April 2003 (the time of last year ACF nutrition survey), there were six SFCs operating; by June 2004 (the time of the present survey) there were sixteen SFCs operating widely throughout Gulu District.
- An additional TFC had been opened in Anaka IDP camp in October 2003 servicing a geographic area that has trouble reaching the TFC in Gulu Municipality, thereby spreading and increasing the TFC coverage.
- A surveillance (home-visitors) program was implemented in October 2002 concentrating on active case findings and referrals throughout the camps ACF operates in.
- A passive screening has been operational in the District Health Centres since October 2003.
- Finally, most recently in May, a transportation re-imbursment policy was revised whereby referred malnourished children and their caretakers are reimbursed the cost of transportation money to the necessary TFC and for transportation back home for follow-up in the SFC. This policy has been a big success and has broken down one of the last barriers for effective coverage.

One of the results of the improved coverage and increase in the referral rate can be seen in the spike of admissions to SFCs and TFCs in May and June 2004. In June of 2003 there were 143 beneficiaries in charge in ACF SFCs and by May 2004 there were 2,290. This 16 times increase in beneficiaries is a clear indication that even if the needs were increasing dramatically, they were being dramatically met.

It is therefore probable that this increased activity over the course of the last year has assisted in reducing acute malnutrition rates, especially when compared to the rates from the survey in 2003.

Children between 6-29 months are three to four times more likely to be acutely malnourished than children 30-59 months and yet infants below 6 months in the sample are showing a proper nutritional status. In conjunction with this analysis it is important to note that most of the mothers seem to introduce other food than breast-milk in the infants diet after 4/6 months. The WHO recommends exclusive breastfeeding until 4 to 6 months old and 98% of the mothers surveyed follow this recommendation. Therefore the at risk 6-29 months age group encompasses children that are being weaned. This means that their intake of nutritious food has decreased (in most developing contexts the most nutritious food for young children is breast milk) and it also a period in which they are at increased risk of infection. The combination of an increase in illnesses and a reduced intake of important nourishment's (including macro and micro-nutrients) would be basis for increased risk of malnutrition. Nevertheless even with this holistic understanding of the situation an increased risk of

malnutrition of over three times is not within the normal limits. More attention needs to be focused on this vulnerable age group.

MUAC rates indicate that 1.0% of the under-5 population has been identified as malnourished while 0.3% are at high risk of mortality. These findings are in keeping with the severe acute malnutrition rate in percentage of the median of 0.5%.

The mortality rate was determined to be 1.2/10,000/day. According to internationally agreed upon standards, this is cause for alert, however it does not approach an emergency situation. Of the deaths that occurred within the population 39.6% were in the under-5 age group. Among deaths recorded, 46% are children below 6 months, while this age group represents only 25% of the sample.

Results from the survey concluded that the main causes of death among the population at large are fever (28%) and accident (20%). In the under-5 population fever (47%) is the overwhelming main cause of death with accidents and diarrhoea as subsequently important causes of death.

If attention is shifted, chronic malnutrition (stunting) rates expose a deeper layer of the larger picture. Chronic malnutrition rates are alarmingly high. Among the 659 months age group global chronic malnutrition rates are 35.8% and severe chronic malnutrition rates are 12.7%. The Z-score distribution also illustrates a situation for grave concern. The displacement of the sample population to the extreme left of the reference population indicates that a disturbingly large portion of the population is affected by chronic malnutrition. The severe chronic malnutrition rate among the 6-29 month group is 14.2% and this is cause for extreme concern. Since chronic malnutrition is a cumulative effect of malnourishment it is of concern that the younger age group also has such a high prevalence. This indicates that stunting occurs early and continues systematically through the developmental years. Similarly high stunting rates over the last 6 years support this hypothesis and also point to the fact that there is at least one decade of children that have been negatively affected by high stunting rates.

Approximately half (47%) of the eligible under-5 population has been vaccinated against measles with a health card as proof. This rate is low but another 50% of the parents claim their children are vaccinated without a card to prove it. This would bring the coverage to a satisfactory level.

Of the children surveyed 91% are beneficiaries of WFP food aid. This rate is high, but would ideally be 100%. Efforts have therefore to be done in order to update or to clarify the status of some households in the IDP camps. Presently the WFP ration is composed of maize, pulses and vegetable oil providing approximately 1650 kcals/person/day. This is only 80% of the minimum required daily kcal intake. In addition the ration is broken down into 13% protein and only 14% lipids, of which both levels are low. The fortified blended food that was previously included in the ration has been cut out due to severe pipe-line breaks subsequently the population has limited access to a micro-nutrient rich food source.

The nutritional status of the population surveyed in the camps is acceptable.

The results are compiled from camps that were accessible to the ACF teams; therefore, it has to be taken into account that the situation in inaccessible camps might be different since they are not able to regularly access services, have limitations in economic and farming opportunities, and are often more isolated. Examples of camps that may have a worse situation than those easily accessible camps are Awach, Patiko, Koch-Goma, Alero, Bibia and Atiak.

Increase in preventative and curative nutrition services might have decreased the acute malnutrition rate. The conflict in Gulu District has been a chronic conflict, stretching over 18 years. Point-in-time services may be able to affect indicators like acute malnutrition, however it is expected that chronic malnutrition rates will remain high until forcefully addressed.

Recommendations

Programmatic

- Continuation of the activities concerning treatment of severe and moderate acute malnutrition
- Continuation of surveillance activities which includes strengthening the home visitor program and health centre case finding program

- Reinforcement of community involvement in activities of detection and prevention of acute malnutrition
- Implementation of health and nutrition education by Community Health Workers and home visitors, with an emphasis on weaning practices in order to target the nutritional status of the particularly vulnerable 6-29 month age group.
- Continuation of nutrition surveillance through annual nutrition surveys, and strengthen the existing surveillance system to identify areas of higher acute malnutrition concentrations and target interventions appropriately
- Promotion of balanced diet and kitchen gardens among the Feeding Center beneficiaries through activities such as distribution of gardens seeds, cooking demonstrations, and identification of diverse diets.
- Continuation of the water and sanitation activities in the camps to ensure better access to clean water and promote proper hygiene conditions in the camps in order to reduce morbidity and resulting malnutrition.
- Systematic monitoring of the food security situation in order to predict and prevent any change in living conditions that could damage the nutrition status of the population.

Non-Programmatic

- Dramatic chronic malnutrition rates support that there are negative nutrition outcomes related directly to the extended nature of the conflict. The effects of chronic malnutrition are not as easily identified in one point in time, but the cumulative negative effects of a stunted population are well documented and understood. Chronic malnutrition can be addressed through a number of strategies: i) increase advocacy with the MOH on the importance of addressing chronic malnutrition through mass nutrition education campaigns and micronutrient supplementation policies, ii) collaborate with WFP to ensure that fortified blended foods are included in the general food distribution ration so that the entire vulnerable under-5 population has access to a micronutrient rich food source, iii) implement nutrition education programs that focus on the importance of a diverse food intake, especially for children under-5.
- Promote inter-agency coordination with maternal and child health programs by sharing data and strategies in order to improve the health and nutritional status of the vulnerable under-5 population.

2. INTRODUCTION

2.1 Northern Ugandan Context

The war in Northern Uganda has been ongoing for eighteen years. Initially rooted in a popular rebellion against President Yoweri Museveni's National Resistance Movement (NRM) government, the conflict has since been transformed by Joseph Kony's Lord's Resistance Army (LRA) into a brutally violent war in which civilians in the northern districts are the main victims². Approximately 1.5 million people have been internally displaced.

The Acholi region of Uganda (Kitgum, Pader, and Gulu Districts) has seen an increase in the intensity of insurgency since 1996. This has resulted in people moving, spontaneously or under the direction of the Government, into camps protected by the Uganda People's Defence Forces (UPDF). According to the most recent 2002 census the total population of Gulu District is 468,407. At the time of this survey the population residing in officially recognised Internally Displaced Persons (IDP) camps in Gulu District was estimated to be around 355,000³. However, figures from May 2004 detail that 439,000 IDPs are present in Gulu District, with a displacement rate of 94%⁴.

The years between 1996 and 2002 were characterised by fluctuating insecurity. In June 2002 the security situation in Gulu District, and in most of Northern Uganda, drastically changed for the worse again as the LRA rebels flooded from Sudan en masse following the beginning of operation "Iron Fist" in March 2002. Iron Fist was designed by the Uganda military to chase the LRA from their strongholds in Southern Sudan. IDP camps were attacked, looted, and often burnt.

The situation in Northern Uganda worsened in 2003 with an unprecedented expansion of LRA attacks away from its traditional areas of operation.

The beginning of 2004 has seen an increase in the frequency and intensity of LRA attacks on IDP camps, ambushes, looting, and abductions. Due to persistent insecurity access to land has decreased and looting of food stocks has increased. The general atmosphere is one of heightened fear.

2.2 Gulu District IDP Camps

Water and Sanitation: General sanitation is poor and it is aggravated by the fact that people live in densely confined areas within the security of the camps. Access to safe water is good, however, the average number of people to a safe water source is much higher than the SPHERE standard of 250 persons per water point. Latrine coverage fluctuates among camps though in general there is need for improved services. This generally poor environmental situation is cause for concern, especially since morbidity, and then malnutrition, are correlated to quality of water and sanitation facilities.

*Food Security*⁵: Food eaten in most households is not diverse with most meals composed of World Food Programme (WFP) food rations. WFP has been distributing food aid to the IDP camps in 1996. Plot sizes for agriculture are reducing – on average 1.25 acres in 2003 compared to 2.2 acres in 2002. Estimated average incomes have reduced from US\$465 in 1999 to \$120 in 2003 while at the same time household expenditures for food are increasing. The majority of the IDP population experiences a hunger gap centred in May, June, and July due to the cultivation calendar and there is evidence that it has extended into August and beyond for some locations.

Humanitarian Assistance The conflict in Northern Uganda is often referred to as the forgotten war. Funding for relief and development activities has long not been proportional to needs. In the last one to two years though, an increase in international attention has served to increase the amount of international funds designated to projects in Gulu District, and other districts in Northern Uganda. Besides funding, the major factor restricting relief work in Gulu District is insecurity. Agencies are often unable to reach camps because of insecurity with some camps routinely cut-off from services.

² Behind the Violence: Causes, Consequences and the Search for Solutions to the War in Northern Uganda, Refugee Law Project Working Paper No.11, February 2004. Kampala, Uganda.

³ WFP Population Figures, Gulu, Uganda. April 2004.

⁴ Uganda Monthly Report, FEWS Net, May 2004.

⁵ Food Security Assessment in Gulu IDP Camps, ACF-USA, Gulu, Uganda. October 2003.

Travelling is recommended in convoy (always two cars travelling together) with or without military escort and work time is further limited because the UPDF leave their roadside posts between 3 and 4pm hence leaving the road insecure.

There are numerous humanitarian agencies working within Gulu District. The United Nations have a strong presence with the World Food Programme (WFP), Children's Fund (UNICEF), and the Office for the Coordination of Humanitarian Affairs (OCHA). A sampling of the international non-governmental organizations (NGO's) working in the area include Agency for the Cooperation and Research in Development (ACORD), International Service Volunteers Association (AVSI), CARITAS, Catholic Relief Services (CRS) Christian Children's Fund (CCF), International Organisation for Migration (IOM), Medecins sans Frontiers (MSF), Norwegian Refugee Council (NRC), Save the Children (SVC), World Vision (WV-Uganda), The Ugandan Red Cross Society (URCS) and the International Committee of the Red Cross (ICRC) are also operating in Gulu District.

2.3 ACF-USA Activities in Gulu District

ACF-USA has been operational in Gulu District since May 1997 implementing nutrition, water and sanitation programs. Currently ACFUSA supports 16 Supplementary Feeding Centres (SFCs) integrated in the Health Centres spread throughout the District, and 2 Therapeutic Feeding Centres (TFCs) – one in Gulu Municipality Hospital and one in Anaka camp Hospital.

A home visiting program has been developed in October 2003, for the active research of the malnutrition cases in the camps. In parallel, the Health Centres staff have been trained in the prevention and detection of malnutrition for the children coming for health consultation, and health/nutrition education is being provided at the community level by CHW in 9 of the camps. ACF has been monitoring the nutrition situation of the camp populations since 1998, and the present survey is part of this ongoing surveillance. The first ACF survey in 1998 measured alarmingly high malnutrition and mortality rates. The rates reduced in 1999 and since then have remained within a consistent range regarded as an alert situation by international standards (refer to Table 18).

3. OBJECTIVES

- To evaluate malnutrition rates in children 6 -59 months.
- To estimate the malnutrition in infants below 6 months.
- To evaluate the mortality rate for the total population and to determine the proportion of deaths in the under-five year population.
- To estimate the measles immunisation coverage among children 9 to 59 months.
- To make recommendations for programme implementation as may be necessary.

4. METHODOLOGY

4.1 Survey Design

A standard 30x30 cluster sample was used since there was no accurate residence by residence census listing, the total population was spread over a large geographic area, and the population exceeded 5,000. The sampling universe used for cluster selection was the listing of the officially recognized IDP camps in Gulu District. The primary sampling stage was the selection of clusters using the most recent population figures of IDP camps (provided by WFP in April 2004) as the sampling frame. The cluster is the geographical unit used to divide the population for survey purposes. The selection is done in such a way that every child has the same probability of being selected; therefore, the probability of the clusters being selected in a certain IDP camp is proportional to the population size of the camp. In order for a survey to be truly representative every member of that population must have an equal chance of being chosen.

Due to security constraints, it was acknowledged prior to initial cluster selection that six camps would remain completely inaccessible during the time of the survey. Therefore these six camps were excluded from the sampling universe in order to ensure that selection process using probability proportional to size was maintained for the remaining camps that were accessible, and also to ensure that the minimum required 30 clusters were accessible. In addition, there were a number of camps that routinely vacillated between being accessible and not accessible. Therefore, in order to ensure

that the required 30 clusters were completed for the survey an additional 10 clusters were added to the required 30 as a buffer zone. This meant that a total of 40 clusters were initially selected. (see Appendix 1).

The second sampling stage was household selection within the clusters. The survey team went to the centre of the defined cluster and, using the random walk method⁶ (popularised by the expanded program of immunisation (EPI) program). From that central point, a random direction was chosen in which to begin the data collection by spinning a pencil. In the direction selected, the number of houses between the central point and the edge of the cluster was counted and, using the random number table, the first house to be visited at random was selected. The direction of each successive house was selected according to which household is to the right when the surveyor stood with his back close to the entrance to the recently surveyed house. Houses that were empty were either revisited or messages were left with neighbours to inform the occupants to contact the survey team upon their return home.

In each household, the primary eligibility criterion for children was age, and not height. Every eligible child between 6-59 months in the selected households was included in the data collection in order to reduce the possibility of selecting a biased sample. If an eligible child was admitted in a Health Structure instructions were given to go and measure them at that location. If the thirty-second child of the cluster was measured in a selected household, but there remained an additional eligible child under 59 months in the household, the additional child was included in the data collection in order not to bias the sample. Therefore a few clusters had more than 32 children surveyed and recorded.

All the infants below 6 months that were encountered during the survey in the selected household were also measured. There was no defined number of infants to be included in the survey, when the anthropometric survey on the 6-59 months was completed, the data collection for less than 6 months ends as well, no matter how many infants are recorded.

Retrospective mortality data was collected from every household, including households that did not have any eligible children.

4.2 Data Collection and Measurement Techniques

Many body parameters can be used to assess the nutritional status however there are some standard measurements used to calculate anthropometric indices. The age, weight, and height are the most commonly measured for nutrition surveys. The mid upper arm circumference (MUAC), prevalence of bilateral oedema, and measles immunisation status will also be collected.

4.2.1. Children from 6 to 59 months:

- **Age:** Recorded in months.
If the mother/caretaker knows the birth date, determination of the age is simple and the stated age is recorded in the questionnaire. If the caretaker is unsure, the age can be determined by information from vaccination cards. In cases where documentation of the age of the child is not available, age (month and year of birth) is determined using a calendar of local events as reference (Appendix 2).
- **Gender:** Recorded as Male or Female.
- **Weight:** Recorded in kilograms to the nearest 0.1 kg.
Children are weighed by using a 25 kg hanging scale graduated by 0.1 kg. The scale is hooked to a stick held by the 2 surveyors with the frame of the scale at eye level. The child is undressed and placed in the weighing pants. When the child is steady, a surveyor reads and records the measurement to the nearest 100 grams.
- **Height:** Recorded in centimetres to the nearest 0.1 cm.

⁶ Sampling Guide, Robert Magnani. Food and Nutrition Technical Assistance (FANTA), December 1997

Children aged more than 2 years old (more or equal 85 cm) are measured standing using an ACF measuring board; the ones below this age/height are measured laying down. The child's shoes must be removed and they must be bareheaded. The child's head, shoulder blades, buttocks, calves and heels must touch the board while the child looks straight-ahead.

- **MUAC:** Recorded in centimetres to the nearest 0.1 cm.
MUAC is measured **on the left arm only**, at the mid-point between the elbow and the shoulder. The arm's muscles should be relaxed and the elbow bent. A special MUAC measuring tape is placed around the arm and, after gently tightening, the measurement is read in the window.
- **Oedema:** Recorded as present absent.
In order to determine the presence of oedema, normal thumb pressure is applied to the middle top of both feet for three seconds. If a shallow print persists on both feet once the pressure is removed then the child presents oedema. Due to the clinical definition of nutrition related oedema only children with bilateral oedema are recorded as having oedema for the purpose of a nutrition survey.
- **Measles Immunisation Status:** Recorded as "yes with a health card to prove it", "yes without card to prove it", and "no".
This data is collected only on children between 9 and 59 months, which is the vaccination period recommended by the national protocol.

4.2.2. Children less than 6 months:

The following data was recorded on a separate questionnaire.

- **Age:** Recorded in months.
- **Gender:** Recorded as Male or Female
- **Height:** Recorded as centimetres to the nearest 0.1 cm.
- **Weight:** Recorded as kilograms to the nearest 0.1 kg.
- **Feeding practices:** The feeding practices of infants can help explain the nutritional status of children less than 6 months. Important questions to ask the mother are whether the child is exclusively breast fed, having breast milk plus other kind of food/drinks (even just water) only weaning food, or only family meal rations.

The study of the nutritional status of children below 6 months helps complete the nutritional picture and adds information on low birth weight, from what age malnutrition may begin, and possible reasons why.

Note: *this survey of infants under 6 months is not to be analysed statistically, but will be used separately as an indicator of population status.*

4.2.3. Mortality:

The calculation of the mortality rate requires:

- the number of people living in the household at the day of the survey;
- the number of people alive in the household 3 months ago;
- the number of deaths in the household in the previous three months.
- for the ones who died within the recall period, the age and the presumed cause of mortality is recorded.
- the number of people who migrated out of the household within this recall period.

In order for mortality rate calculations to be valid the total number surveyed must be over 5000. In the case of a 30x30 nutrition survey, there are not enough children surveyed to make calculation of an Under 5 mortality rate statistically valid. The sample size taken of around 900-1200 children below 5

is not representative for this data. It is possible, however, to calculate the proportion of deaths among children under 5, as well as cause of death, in order to add detail to the understanding of the nutrition situation.

Since the total population in the survey area is around 5000 it is possible to estimate the mortality rate for the total population with enough confidence.

4.2.4 Food Distribution Coverage

For each child measured, it was recorded whether or not he/she was a beneficiary of the WFP food aid distributions. If not, the reason was recorded.

4.3 Cut-off Guidelines and Formulas Used

4.3.1. Weight for Height Index⁷

The weight for height index expressed the weight of a child in relation to height. It highlights any evidence of thinness or wasting in a child and is an indicator of the child's present and immediate nutritional status (acute malnutrition).

There are two main units for expressing malnutrition rates in a population: Z-score or percentage of the median. The percentage of the median method is used for admission to nutritional centres, while Z-scores are the internationally recognised expression for the results of nutritional surveys, since it is more statistically precise. The results will be presented in both Zscores and percentage of median, and compared with the internationally recognised reference population standard⁸.

| | Z-scores | % of Median |
|------------------------------|----------------------|----------------|
| Acute Malnutrition | <-3 z-scores | <70% |
| Moderate Malnutrition | <-2 and >=3 z-scores | <80% and >=70% |
| Global Malnutrition | <-2 z-scores | <80% |

Table 3: Acute Malnutrition cut-offs for definition of population nutritional status.

4.3.2. Height for Age Index

The height for age index expresses the height of a child in relation to age. It highlights any evidence of growth failure at a given age, and is an indicator of a child's long-term nutritional status (chronic malnutrition). Since chronic malnutrition is not used for nutrition centres only z-scores are reported:

| | Z-scores ⁹ |
|--------------------------------------|-----------------------|
| Acute Chronic Malnutrition | <-3 z-scores |
| Moderate Chronic Malnutrition | <-2 and >=3 z-scores |
| Global Chronic Malnutrition | <-2 z-scores |

Table 4: Chronic Malnutrition cut-offs for definition of population nutritional status.

4.3.3. MUAC

MUAC can be used without reference to age or height between 6 and 59 months, and is a particularly successful way in identifying children with a high mortality risk. The standards used by ACF are:

| | MUAC ¹⁰ |
|----------------------------|--------------------|
| Severe Malnutrition | <110mm |

⁷ SPHERE, Project. Minimum Standards in Nutrition in Nutrition and Food Aid. Humanitarian Charter and Minimum Standards in Disaster Response. Geneva, 2002.

⁸ NCHS: National Centre for Health Statistics (1977) NCHS growth curves for children birth-18 years. United States. Vital Health Statistics. 165, 11-74.

⁹ SPHERE, Project. Minimum Standards in Nutrition in Nutrition and Food Aid. Humanitarian Charter and Minimum Standards in Disaster Response. Geneva, 2002.

¹⁰ MUAC Index and Cut-offs, ACFUSA Guidelines and Protocols, 2004.

| | |
|------------------------------------|--------------------|
| Moderate Malnutrition | >=110mm and <120mm |
| At risk of malnutrition | >=120mm and <125mm |
| Adequate Nutritional Status | >=125 mm |

Table 5: MUAC cut-offs for definition of malnutrition status.

4.3.4. Mortality

The calculation of the death rate is as follow:

$$\text{Death rate (DR)} = \frac{n}{[(n+N+M)+N]/2}$$

where: n= the number of deaths in the recall period
 N= the number of people alive at the day of the survey
 M= the number of people who migrated within the recall period.

Mortality rate (MR) = (DR x 10,000)/number of days in the recall period
 MR is expressed per 10,000 per day.

| | Total Population | Population Under 5 years |
|------------------|-------------------------|---------------------------------|
| Alert | 1/10,000/day | 2/10,000/day |
| Emergency | 2/10,000/day | 4/10,000/day |

Table 6: Mortality rate cut-offs for definition of status of the population¹¹.

For this survey the recall period was three months; therefore, the number of days in the recall period was 90 days (3 months).

4.4. Data Analysis

The statistical analysis was completed used the EPI 5 software package, including EPED, EPI-INFO, EPINUT, and EPI-NUT2.

5. IMPLEMENTATION

5.1 Resources

5.1.1 Human

The survey was designed, managed, and coordinated by an ACF Nutritionist. Data collection was conducted by 4 teams, each composed of three members: a supervisor/recorder, and two measurers. For each team, the supervisor was an ACF-USA Gulu Nutrition Team staff member, while the two measurers were recruited in the community. A two-day training was done, including overview of methodology, measurement techniques, a standardisation of measurement exercise and a pilot survey. A data entry person was also hired to facilitate with the transferral of the raw data into EPI-INFO.

5.1.2 Material

Each team was equipped with:

- Anthropometric Data Collection Form 6-59 months (1)
- Anthropometric Data Collection Form under 6 months (1)
- Mortality Data Collection Form total population (1)
- Verbal Questions Form to determine Cause of Death (1)
- Weight For Height Index Chart (1)
- Random Number Table (1)
- Reference pictures for Anthropometric Measurement (1 of each=4 total)
- TFC/SFC referral forms (10)
- MUAC Tapes (3)

¹¹ SPHERE Project. Humanitarian Charter and Minimum Standards in Disaster Response. Geneva, 2002.

- Height board (1)
- Scale (1)
- Weighing Pants (3)

5.2 Survey Implementation

The survey was conducted from June 2-18, 2004 with a total of 12 field days of data collection. It was implemented in 18 of the 33 recognised IDP camps.

6. RESULTS

6.1 Age and gender distribution of children 6 to 59 months

The total sample size was 1,120. After flagging and cleaning bad data the measurements for 1,072 children were included in analysis.

| AGE CLASS | GIRLS | | BOYS | | TOTAL | | SEX RATIO |
|-----------|-------|-------|------|-------|-------|--------|-----------|
| | N | % | N | % | N | % | |
| 06-17 | 117 | 49.2% | 121 | 50.8% | 238 | 22.2% | 0.97 |
| 18-29 | 159 | 52.5% | 144 | 47.5% | 303 | 28.3% | 1.10 |
| 30-41 | 140 | 56.5% | 108 | 43.5% | 248 | 23.1% | 1.30 |
| 42-53 | 102 | 50.7% | 99 | 49.3% | 201 | 18.8% | 1.03 |
| 54-59 | 31 | 37.8% | 51 | 62.2% | 82 | 7.6% | 0.61 |
| TOTAL | 549 | 51.2% | 523 | 48.8% | 1072 | 100.0% | 1.05 |

Table 7: Age and Gender Distribution 6-59 months, Gulu District, Uganda. June 2004.

The distribution of sex shows a slight imbalance with more boys than girls; however, the sex ratio equals to 1.05, which maintains that selection was done randomly.

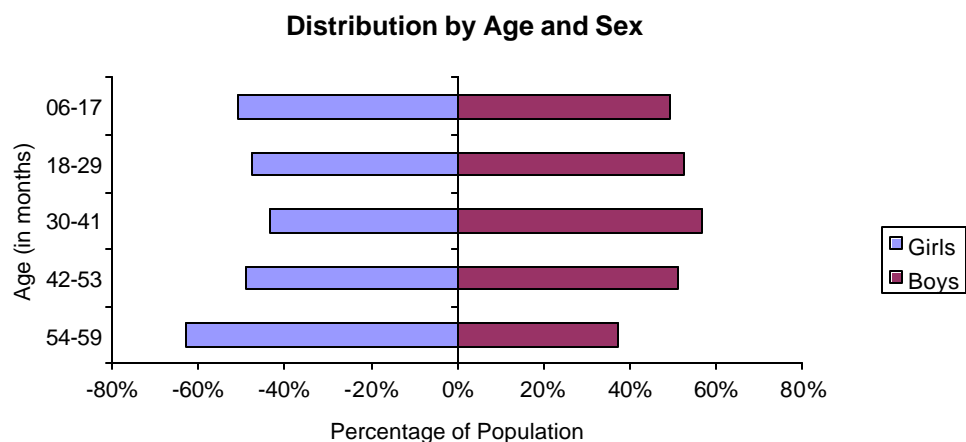


Figure 1: Demographics of Survey Sample (Age and Sex), Gulu District, Uganda. June 2004.

The age distribution by sex shows some significant imbalances, in particular with the 54-59 month group. One reason could be that the LRA practice of abducting children as young as five years causes some parents to send their children away to more secure areas (such as Gulu Municipality) for safety reasons.

Nevertheless, the period intervals within the age groups used in the standard analysis are not equal, and therefore, the lower representation of children is an artefact.

6.2. Weight for Height Index (W/H) or Acute Malnutrition

6.2.1 Acute Malnutrition in Z-scores

| Age (months) | N | Severe Malnutrition | | | | Moderate Malnutrition W/H ≥ -3 and < -2 Z-score | | Adequate Nutrition W/H ≥ -2 Z-score | |
|--------------|-------------|---------------------|------------|--------------------|------------|---|------------|---|-------------|
| | | Oedema | | W/H < -3 Z-score | | N | % | n | % |
| | | N | % | N | % | | | | |
| 06-17 | 238 | 0 | 0.0 | 2 | 0.8 | 17 | 7.1 | 219 | 92.0 |
| 18-29 | 303 | 0 | 0.0 | 4 | 1.3 | 14 | 4.6 | 285 | 94.1 |
| 30-41 | 248 | 0 | 0.0 | 2 | 0.8 | 4 | 1.6 | 242 | 97.6 |
| 42-53 | 201 | 1 | 0.5 | 0 | 0.0 | 3 | 1.5 | 197 | 98.0 |
| 54-59 | 82 | 0 | 0.0 | 0 | 0.0 | 2 | 2.4 | 80 | 97.6 |
| Total | 1072 | 1 | 0.1 | 8 | 0.7 | 40 | 3.7 | 1023 | 95.4 |

Table 8: Weight for Height Distribution by Age in Z-scores, Gulu District, Uganda. June 2004.

| | 6-59 months (n=1072) | 6-29 months (n=541) |
|----------------------------------|-------------------------------------|------------------------|
| Global Acute Malnutrition | 4.6% (3.0% - 6.8%) ¹² | 6.8% (4.2% - 10.8%) |
| Severe Acute Malnutrition | 0.8% (0.3% - 2.2%) | 1.1% (0.2% - 3.5%) |

Table 1: GAM and SAM by Age Group in Z-scores, Gulu District, Uganda. June 2004.

For both severe and moderate acute malnutrition the younger age groups of 6-17 months and 18-29 months were the most malnourished. This correlates with the statistical finding that **children 6-29 months were three times more likely to be malnourished than the children 30-59 months** [RR=2.87 (1.55, 5.32), with a 95% confidence interval].

There is no significant relationship ($p > 0.05$) between sex and malnutrition as classified by weight for height in Z-scores.

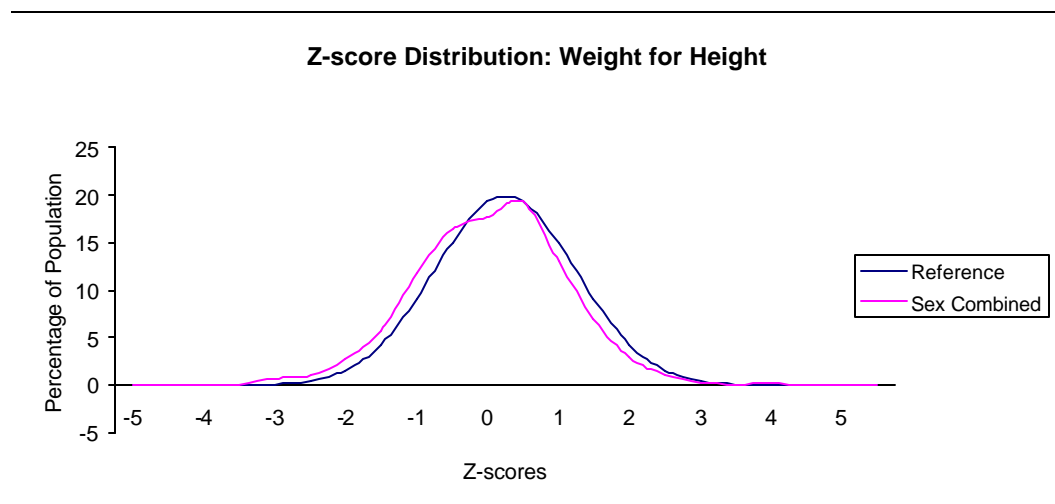


Figure 2: Weight for Height Distribution (6-59mths) in Z-scores, Gulu District, Uganda. June 2004.

There is a slight displacement of the sample population curve to the left of the reference curve indicating that the nutritional status of the under-5 population is only slightly less well off than an adequately nourished population. The mean Z-score of -0.21 (-0.28, -0.15) statistically confirms the graphical results. The standard deviation is 1.05, which shows that the distribution is satisfactory, and the data are representative of the population

¹² Confidence interval at 95%.

6.2.2. Acute Malnutrition in Percentage of Median

| Age (months) | N | Severe Malnutrition | | | | Moderate Malnutrition W/H >=70% and <80% | | Adequate Nutrition W/H >=80% | |
|--------------|-------------|---------------------|------------|-----------|------------|---|------------|---------------------------------|-------------|
| | | Oedema | | W/H < 70% | | n | % | n | % |
| | | n | % | N | % | | | | |
| 06-17 | 238 | 0 | 0.0 | 1 | 0.4 | 16 | 6.7 | 221 | 92.9 |
| 18-29 | 303 | 0 | 0.0 | 2 | 0.7 | 9 | 3.0 | 292 | 96.4 |
| 30-41 | 248 | 0 | 0.0 | 1 | 0.4 | 4 | 1.6 | 243 | 98.0 |
| 42-53 | 201 | 1 | 0.5 | 0 | 0.0 | 0 | 0.0 | 200 | 99.5 |
| 54-59 | 82 | 0 | 0.0 | 0 | 0.0 | 2 | 2.4 | 80 | 97.6 |
| Total | 1072 | 1 | 0.1 | 4 | 0.4 | 31 | 2.9 | 1036 | 96.6 |

Table 9: Weight for Height Distribution by Age in Percentage of Median, Gulu District, Uganda. June 2004.

For moderate malnutrition the younger age groups of 6-17 months and 18-29 months were the most malnourished while the age group 42-59 months seems unaffected by severe acute malnutrition (except for one case of oedema).

| | 6-59 months (n=1072) | 6-29 months (n=541) |
|----------------------------------|-----------------------|-----------------------|
| Global Acute Malnutrition | 3.4% (2.0% - 5.4%) | 5.2% (2.9% - 8.8%) |
| Severe Acute Malnutrition | 0.5% (0.1% - 1.6%) | 0.6% (0.0% - 2.7%) |

Table 10: GAM and SAM by Age Group in Percentage of Median, Gulu District, Uganda. June 2004.

Statistically there is a significant difference between malnutrition rates of children 6-29 months and 30-59 months ($p < 0.05$). When classified by percentage of median, children 6-29 months were three times more likely to be malnourished than children 30-59 months [RR=3.16 (1.51, 6.62)]. If confidence intervals are observed there is cause of alarm because potentially the likelihood of malnutrition in the age group 6-29 months could be quite extreme.

6.3. Height for Age Index (Chronic Malnutrition) in Z-scores

| | 6-59 months (n=1072) | 6-29 months (n=541) |
|------------------------------------|--------------------------|--------------------------|
| Global Chronic Malnutrition | 35.8% (31.7% - 40.0%) | 40.0% (34.0% - 46.0%) |
| Severe Chronic Malnutrition | 12.7% (10.0% - 15.8%) | 14.2% (10.2% - 18.9%) |

Table 2: Chronic Malnutrition by Age Group in Z-scores, Gulu District, Uganda. June 2004.

The high rates of chronic malnutrition are cause of alarm and in particular the extremely high rates of severe chronic malnutrition are worrying. 12.7% of the under -5 population is severely stunted however, 14.2% of the 6-29 month population is also severely stunted. This means that stunting occurs early and continues systematically throughout the developmental years of the children.

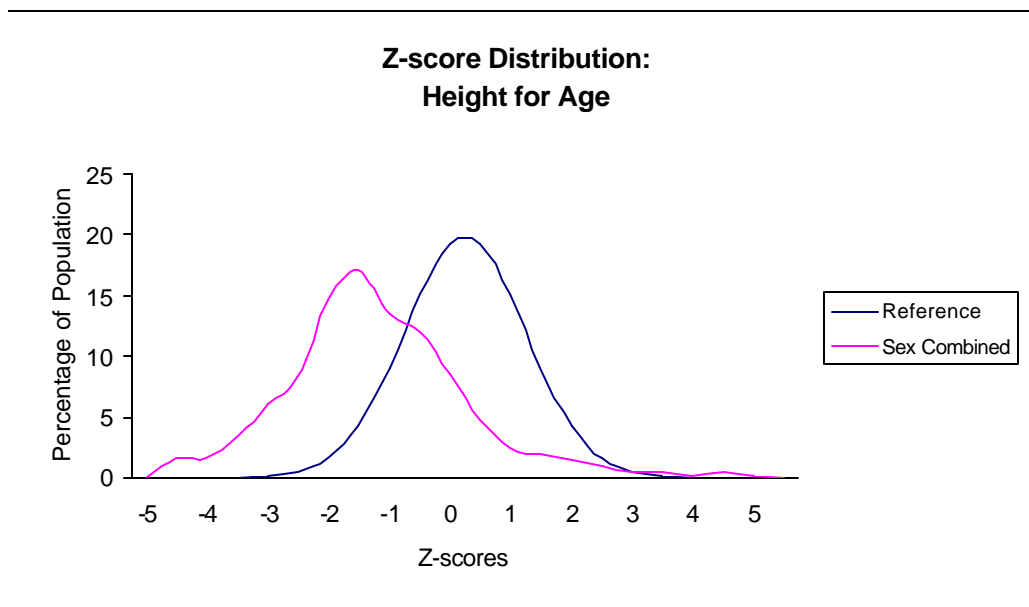


Figure 3: Height for Age Distribution (6-59mths) Z-scores, Gulu District, Uganda. June 2004.

There is an extreme displacement of the sample population curve to the left of the reference population indicating that chronic malnutrition of the under-5 population is an issue of real concern. The mean Z-score of -1.47 (-1.56, -1.38) confirms that the sample population suffers from ongoing malnutrition. Indeed if the graph is analyzed it is apparent that the majority of children are placed below -1 z-scores (with a disturbingly large portion in the <-3 z-scores range) which indicates that chronic malnutrition is a population based problem.

6.4. MUAC analysis

The MUAC analysis is done on children more than 75.0 cm height. The sample counts 822 children.

| MUAC | Height >= 75 cm and < 90 cm | | Height >= 90 cm | | Total |
|------------------|-----------------------------|-------------|-----------------|-------------|-------------|
| | N | % | N | % | % |
| <110mm | 2 | 0.4% | 0 | 0.0% | 0.3% |
| >=110 and <120mm | 6 | 1.3% | 0 | 0.0% | 0.7% |
| >=120 and <125mm | 14 | 2.9% | 3 | 0.9% | 2.1% |
| >=125mm | 453 | 95.4% | 344 | 91.9% | 96.9% |
| Total | 475 | 100% | 347 | 100% | 100% |

Table 11: MUAC distribution in under-5 population, Gulu District, Uganda. June 2004.

According to the MUAC measurements, 0.3% of the children are at high risk of mortality. The malnutrition cases represents 1.0% of the sample.

6.5. Measles Vaccination Coverage

The analysis is done on children more than 9 months, which represents 1007 children.

| Status | Method | N | % |
|--------|--|-----|-----|
| Yes | Vaccinated and proven by health card | 471 | 47% |
| No | Not vaccinated | 27 | 3% |
| Unsure | Vaccinated but not proven by health card | 508 | 50% |

Table 12: Measles Vaccination Coverage, Gulu District, Uganda. June 2004.

Approximately half (47%) of the eligible under-5 population has been vaccinated against measles with a health card as proof.

6.6. Mortality

| | |
|--|--|
| Total population at the day of the survey: | 4916 |
| Total population 3 months before the survey: | 4914 |
| Number of migration: | 143 |
| Number of deaths: | 53 |
| Mortality rate: | $[53 / ((4916+4914)/2)] * 10000 / 90 = 1.2/10,000/day$ |

According to calculations using the previously detailed formula, the mortality rate for the total population is **1.2/10,000/day**.

| | |
|---------------------|------|
| Under-5 population: | 1278 |
| Number of deaths: | 21 |

| | |
|---|--------------|
| % of under five in the population: | 26.0% |
| % of deaths in total population that are under five: | 39.6% |

| Presumed cause of death | <5 years | | ≥5 years | | Total Population | |
|------------------------------|------------|-----------|-------------|-----------|------------------|-----------|
| | % | n | % | n | % | n |
| Fever | 47 | 10 | 15 | 5 | 28 | 15 |
| Accident¹³ | 14 | 3 | 25% | 8 | 20% | 11 |
| Diarrhoea | 14 | 3 | 12% | 4 | 13% | 7 |
| Bloody Diarrhoea | 14 | 3 | 6% | 2 | 9% | 5 |
| Tuberculosis | 0 | 0 | 9% | 3 | 5% | 3 |
| Unknown | 4 | 1 | 6% | 2 | 5% | 3 |
| Lower RTI | 0 | 0 | 6% | 2 | 3% | 2 |
| Malnutrition | 0 | 0 | 3% | 1 | 1% | 1 |
| Other | 4 | 1 | 16% | 5 | 11% | 6 |
| Total | 100 | 21 | 100% | 32 | 100% | 53 |

Table 13: Cause of Death, Gulu District, Uganda. June 2004.

Other for under-five: Malaria

Other for over-five: Poisoning (2), Childbirth, Killed in Fire, Killed by rebels

The high rate of accidents requires further investigation, especially when compared to the significantly lower accident rates determined in the 2003 ACF survey.

6.7. World Food Programme Coverage

91% (n=1072) of the children surveyed are beneficiaries of WFP food aid. This figure cannot be considered as the distribution coverage, as most of the children have brothers and sisters also included in the survey.

Of those who are not beneficiaries the reasons are summarised in the table below.

| Reason Given | % of Respondents |
|-----------------------------------|------------------|
| Not registered | 65 |
| Unclear reasoning | 12 |
| New Arrival | 9 |
| Problem with registration process | 8 |
| Name cancelled from list | 3 |

Table 14: Reasons for not being a WFP Food Aid Beneficiary, Gulu District, Uganda. June 2004

6.8. Nutrition Information on Infants under 6 months

¹³ 'Accident' includes car accident, fall, drowning, poisoning, burn, bite, sting, or other accidental injury. Violent deaths are included in 'other'.

6.8.1. Evaluation of the prevalence of malnutrition

70 infants are included in the analysis.

2 of them are less than 49.0 cm height, and therefore, their nutritional index cannot be calculated (the standards start at 49.0 cm), and they are considered as malnourished. Here are the details regarding those children:

| Age (month) | Weight (kg) | Height (cm) |
|-------------|-------------|-------------|
| 1 | 2.2 | 44.4 |
| 1 | 2.6 | 48.5 |

Table 15: Infants whose height is below 49.0 cm, Gulu District, Uganda. June 2004

Age and gender distribution of the 68 other infants:

| Age | Boys | Girls | Total |
|--------------|-----------|-----------|-----------|
| 0 –1 months | 6 | 3 | 9 |
| 1 –2 months | 5 | 6 | 11 |
| 2 –3 months | 5 | 12 | 17 |
| 3 –4 months | 9 | 11 | 20 |
| 4 - 5months | 8 | 3 | 11 |
| Total | 33 | 35 | 68 |

Table 16: Age and gender distribution of infants more than 49.0 cm height, Gulu District, Uganda. June 2004

The sex ratio is 1.06 (compare to sex ratio of 1.05 for 6-59mths) indicating that the sample selection was done randomly.

Anthropometric analysis:

| | Z-score | % of the median |
|----------------------------------|---------|-----------------|
| Global acute malnutrition | 0.0% | 0.0% |
| Severe acute malnutrition | 0.0% | 0.0% |

Table 17: Prevalence of acute malnutrition among infants more than 49.0 cm height, Gulu District, Uganda. June 2004.

On the 70 infants surveyed, 2 (2.8%) are presenting acute malnutrition criteria (although it should be noted they are the children <49cm). In addition, these two aforementioned infants were twins and typically twins exhibit a lower birth weight and height. Therefore extra caution should be used when including them in the acute malnutrition criteria. The sample used is not representative of the total population of infants of the age group. Therefore, no confidence interval can be calculated.

6.8.2. Feeding practices

The mothers of the infants surveyed have been questioned on the diet of their infants.

- 70 of them were lactating. The rate of breastfeeding is 100%
- 61 of them were not providing any other food than breast milk. The rate of exclusive breast feeding is 87%
- Among the 9 children who receive milk and another food/drink, 1 is 2 months old, 5 are 4 months old, and 3 are 5 months old.

7. DISCUSSION

Malnutrition rates have significantly improved over the past years six years. The results of the first ACF survey in 1998 presented a clear emergency situation. The surveillance in the years that followed has shown that there was a noticeable decline and stabilization of malnutrition rates within the international range detailing emergency to alert. The last year has shown a further decrease in malnutrition rates. In fact, the malnutrition rates for this 2004 survey are surprisingly low, especially if the decreased access to land and increased rebel activities (pillages of food stock) are taken into account.

| Acute Malnutrition (%) | April 98 | | March 99 | | March 01 | | May-03 | June-04 |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------------|---------------------|
| | Gulu East camps | Gulu West camps | Gulu East camps | Gulu West camps | Gulu East camps | Gulu West camps | Gulu District camps | Gulu District camps |
| Global | 15.7 | 11 | 6.4 | 4.9 | 6.7 | 7.7 | 6.7 | 4.6 |
| 95% CI | 11.5-21.2 | 7.4-16 | 4.4-9.2 | 3.1-7.4 | 4.6-9.5 | 5.4-10.7 | 4.6-9.5 | 3.0-6.8 |
| Severe | 2.5 | 2.3 | 1.6 | 0.5 | 1 | 1.8 | 1.3 | 0.8 |
| 95% CI | 1.0-5.6 | 0.8-5.4 | 0.7-3.3 | 0.1-1.9 | 0.3-2.6 | 0.8-3.6 | 0.7-2.4 | 0.3-2.2 |

Table 18: Longitudinal Comparison of ACF survey acute malnutrition results in Z-scores, Gulu District, Uganda.

However, when taken in context, the decrease in the prevalence of malnutrition can be interpreted as a positive consequence of the extension of the ACF activities:

- ACF SFC coverage increased dramatically: in April 2003 (the time of last year ACF nutrition survey), there were six SFCs operating; by June 2004 (the time of the present survey) there were sixteen SFCs operating widely throughout Gulu District.
- An additional TFC had been opened in Anaka IDP camp in October 2003 servicing a geographic area that has trouble reaching the TFC in Gulu Municipality, thereby spreading and increasing the TFC coverage.
- A surveillance (home-visitors) program was implemented in October 2003 concentrating on active case findings and referrals throughout the camps ACF operates in.
- A passive screening has been operational in the District Health Centres since October 2003.
- Finally, most recently in May, a transportation re-imbursment policy was revised whereby referred malnourished children and their caretakers are reimbursed the cost of transportation money to the necessary TFC and for transportation back home for follow-up in the SFC. This policy has been a big success and has broken through one of the last obstruction for effective coverage.

One of the results of the improved coverage and increase in the referral rate can be seen in the spike of admissions to SFCs and TFCs. In June of 2003 there were 143 beneficiaries in charge in ACF SFCs and by May 2004 there were 2,290 (see Appendix 3). This 16 times increase in beneficiaries is a clear indication that even if the needs were increasing dramatically, they were being dramatically met.

It is therefore probable that this increased activity over the course of the last year has assisted in reducing acute malnutrition rates, especially when compared to the rates from the survey in 2003.

Children between 6-29 months are three to four time more likely to be acutely malnourished than children 30-59 months and yet infants below 6 months in the sample are showing a proper nutritional status. In conjunction with this analysis it is important to note that most of the mothers seem to introduce other food than breast-milk in the infants diet after 4/6 months. The WHO recommends exclusive breastfeeding until 4 to 6 months old and 98% of the mothers surveyed follow this recommendation. Therefore the at risk 6-29 months age group encompasses children that are being weaned. This means that their intake of nutritious food has decreased (in most developing contexts the most nutritious food for young children is breast milk) and it also a period in which they are at increased risk of infection. The combination of an increase in illnesses and a reduced intake of important nourishment's (including macro and micro-nutrients) would be basis for increased risk of malnutrition. Nevertheless even with this holistic understanding of the situation an increased risk of malnutrition of over three times is not within the normal limits. More attention needs to be focused on this vulnerable age group.

MUAC rates indicate that 1.0% of the under-5 population has been identified as malnourished while 0.3% are at high risk of mortality. These findings are in keeping with the severe acute malnutrition rate in percentage of the median of 0.5%.

The mortality rate was determined to be 1.2/10,000/day. According to internationally agreed upon standards, this is cause for alert, however it does not approach an emergency situation. Of the deaths that occurred within the population 39.6% were in the under-5 age group. Among deaths recorded, 46% are children below 6 months, while this age group represents only 25% of the sample. Results from the survey concluded that the main causes of death among the population at large are fever (28%) and accident (20%). In the under-5 population fever (47%) is the overwhelming main cause of death with accidents and diarrhoea as subsequently important causes of death.

If attention is shifted, chronic malnutrition (stunting) rates expose a deeper layer of the larger picture. Chronic malnutrition rates are alarmingly high. Among the 659 months age group global chronic malnutrition rates are 35.8% and severe chronic malnutrition rates are 12.7%. The Z-score distribution also illustrates a situation for grave concern. The displacement of the sample population to the extreme left of the reference population indicates that a disturbingly large portion of the population is affected by chronic malnutrition. The severe chronic malnutrition rate among the 6-29 month group is 14.2% and this is cause for extreme concern. Since chronic malnutrition is a cumulative effect of malnourishment it is of concern that the younger age group also has such a high prevalence. This indicates that stunting occurs early and continues systematically through the developmental years. Similarly high stunting rates over the last 6 years support this hypothesis and also point to the fact that there is at least one decade of children that have been negatively affected by high stunting rates.

Approximately half (47%) of the eligible under-5 population has been vaccinated against measles with a health card as proof. This rate is low but another 50% of the parents claim their children are vaccinated without a card to prove it. This would bring the coverage to a satisfactory level.

Of the children surveyed 91% are beneficiaries of WFP food aid. This rate is high, but would ideally be 100%. Efforts have therefore to be done in order to update or to clarify the status of some households in the IDP camps. Presently the WFP ration is composed of maize, pulses and vegetable oil providing approximately 1650 kcals/person/day. This is only 80% of the minimum required daily kcal intake. In addition the ration is broken down into 13% protein and only 14% lipids, of which both levels are low. The fortified blended food that was previously included in the ration has been cut out due to severe pipe-line breaks, subsequently the population has limited access to a micro-nutrient rich food source.

The nutritional status of the population surveyed in the camps is acceptable.

The results are compiled from camps that were accessible to the ACF teams; therefore, it has to be taken into account that the situation in inaccessible camps might be different since they are not able to regularly access services, have limitations in economic and farming opportunities, and are often more isolated. Examples of camps that may have a worse situation those easily accessible camps are Awach, Patiko, Koch -Goma, Alero, Bibia and Atiak.

Increase in preventative and curative nutrition services might have decreased the acute malnutrition rate. The conflict in Gulu District has been a chronic conflict, stretching over 18 years. Point-in-time services may be able to affect indicators like acute malnutrition, however it is expected that chronic malnutrition rates will remain high until forcefully addressed.

8. RECOMMENDATIONS

Programmatic

- Continuation of the activities concerning treatment of severe and moderate acute malnutrition
- Continuation of surveillance activities which includes strengthening the home visitor program and health centre case finding program
- Reinforcement of community involvement in activities of detection and prevention of acute malnutrition
- Implementation of health and nutrition education by Community Health Workers (CHWs) and home visitors, with an emphasis on weaning practices in order to target the nutritional status of the particularly vulnerable 6 -29 month age group.
- Continuation of nutrition surveillance through annual nutrition surveys, and strengthen the existing surveillance system to identify areas of higher acute malnutrition concentrations and target interventions appropriately
- Promotion of balanced diet and kitchen gardens among the Feeding Center beneficiaries through activities such as distribution of gardens seeds, cooking demonstrations, and identification of diverse diets.
- Continuation of the water and sanitation activities in the camps to ensure better access to clean water and promote proper hygiene conditions in the camps in order to reduce morbidity and resulting malnutrition.
- Systematic monitoring of the food security situation in order to predict and prevent any change in living conditions that could damage the nutrition status of the population.

Non-Programmatic

- Dramatic chronic malnutrition rates support that there are negative nutrition outcomes related directly to the extended nature of the conflict. The effects of chronic malnutrition are not as easily identified in one point in time, but the cumulative negative effects of a stunted population are well documented and understood. Chronic malnutrition can be addressed through a number of strategies: i) increase advocacy with the MOH on the importance of addressing chronic malnutrition through mass nutrition education campaigns and micronutrient supplementation policies, ii) collaborate with WFP to ensure that fortified blended foods are included in the general food distribution ration so that the entire vulnerable under-5 population has access to a micronutrient rich food source, iii) implement nutrition education programs that focus on the importance of a diverse food intake, especially for children under-5.
- Promote inter-agency coordination with maternal and child health programs by sharing data and strategies in order to improve the health and nutritional status of the vulnerable under-5 population.

Appendix 1: WFP Population Figures (April '04) for Cluster Selection

| County | Camp Location | WFP population | estimated pop <=59 mo | cummulative pop<=59 mo | assigned numbers | cluster |
|--------|---------------|----------------|-----------------------|------------------------|------------------|----------------------|
| Aswa | Oroko | 1,818 | 364 | 364 | 1-364 | |
| | Paicho | 14,154 | 2831 | 3195 | 365-3195 | 1,2 |
| | Patiko | 14,177 | 2836 | 6031 | 3196-6031 | 3,4 |
| | Cwero | 7,890 | 1578 | 7609 | 6032-7609 | |
| | Unyama | 13,281 | 2657 | 10266 | 7610-10266 | 5,6 |
| Kilak | Amuru | 33,798 | 6760 | 17026 | 10267-17026 | 7,8,9,10 |
| | Awer | 18,848 | 3770 | 20796 | 17027-20796 | 11,12 |
| | Olwal | 12,547 | 2510 | 23306 | 20797-23306 | 13 |
| | Pabbo | 55,511 | 11103 | 34409 | 23307-34409 | 14,15,16,17,18,19,20 |
| | Pagak | 11,305 | 2261 | 36670 | 34410-36670 | 21 |
| | Parabongo | 11,688 | 2338 | 39008 | 36671-39008 | 22 |
| Nwoya | Agung | 2,022 | 405 | 39413 | 39009-39413 | |
| | Anaka | 27,972 | 5595 | 45008 | 39414-45008 | 23,24,25,26 |
| | Aparanga | 2,345 | 469 | 45477 | 45009-45477 | |
| | Olwiyo | 2,071 | 415 | 45892 | 45478-45892 | |
| | Purongo | 9,733 | 1947 | 47839 | 45893-47839 | 27 |
| | Wii -Anaka | 2,024 | 405 | 48244 | 47840-48244 | |
| | Wii- Nono | 2,422 | 485 | 48729 | 48245-48729 | 28 |
| Omoro | Acet | 25,195 | 5039 | 53768 | 48730-53768 | 29,30 |
| | Awere | 21,336 | 4268 | 58036 | 54769-58036 | 31,32,33 |
| | Lalogi | 19,049 | 3810 | 61846 | 58037-61846 | 34,35 |
| | Ongako | 8,954 | 1791 | 63637 | 61847-63637 | 36 |
| | Opit | 25,581 | 5117 | 68754 | 63638-68754 | 37,38,39 |
| | Palenga | 10,726 | 2146 | 70900 | 68755-70900 | 40 |
| | Total | 354,447 | 70890 | | | 40 |

Sample size: 900
 Clusters needed: 40
 Sampling interval: 1,772
 Random number: 687

Appendix 3:

Compiled S FC Statistics for June 2003 – May 2004

| | In Charge beginning of the month | Total Admissions for the month |
|--------------|---|---|
| June | 143 | 446 |
| July | 631 | 421 |
| August | 1057 | 681 |
| September | 1523 | 726 |
| October | 1822 | 379 |
| November | 1587 | 536 |
| December | 1512 | 636 |
| January | 1589 | 426 |
| February | 1640 | 1003 |
| March | 1827 | 843 |
| April | 1983 | 832 |
| May | 2290 | 1240 |
| Total | 17604 | 8169 |

Compiled TFC Statistics for June 2003- May 2004

| | In Charge beginning of the month | Total Admissions for the month |
|--------------|---|---|
| June | 24 | 31 |
| July | 32 | 34 |
| August | 37 | 49 |
| September* | 46 | 51 |
| October | 40 | 45 |
| November | 39 | 51 |
| December | 45 | 54 |
| January | 39 | 43 |
| February | 31 | 31 |
| March | 32 | 47 |
| April | 34 | 32 |
| May | 24 | 62 |
| Total | 333 | 530 |

*Anaka TFC opened, joining already operational Gulu TFC

Appendix 4: Anthropometric Data Collection form 6-59months

Anthropometric Data Collection Form

6-59 months

CAMP NAME:

CLUSTER Nb:

Zone:

Date of sampling:

TEAM Nb:

Supervisor Name:

| N° | Age | Sex | Weight | Height | W/H | Oedema | MUAC | Measles | Receive WFP food dist. | | SFC |
|----|--------|------------|--------|--------|-----|---------------|------|-------------------------------------|------------------------|---|-------------------------------------|
| | months | M=1 F=2 | kg | cm | % | No=2 Yes=1 | cm | No=N Yes w/Card=Y Unsure=H | No=N Yes=Y | If yes, state when If no, state reason | No=N Yes w/card=Y Unsure=H |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |
| 32 | | | | | | | | | | | |

9 = Unknown or No Response

Appendix 5: Anthropometric Data Collection Form less than 6 months

Anthropometric Data Collection Form

Less than 6 months

CAMP NAME:

CLUSTER Nb:

Zone:

Date of sampling:

TEAM Nb:

Supervisor Name:

| N° | Age | Sex | Weight | Height | W/H | Oedema | Feeding Practices | SFC |
|----|--------|------------|--------|--------|-----|---------------|---|-------------------------------------|
| | months | M=1 F=2 | kg | cm | % | No=2 Yes=1 | Breast milk only=1 Breast milk+other=2 Weaning Foods only=3 Family Meal only=4 | No=N Yes w/card=Y Unsure=H |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| 26 | | | | | | | | |
| 27 | | | | | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |

****9 = Unknown or No Response****

Appendix 6: Mortality Data Collection Form

Mortality Data Collection Form Entire Population

Camp Name:

Cluster Nb:

Zone:

Date of sampling:

**Team
Nb:**

Supervisor Name:

| N° | N | N | N | N | N | N | N | N | Cause * | Cause * |
|----|-------------------------------|------------------------------------|-------------------------|------------------------------------|---|-----------------------------------|----------------------------------|-----------------------|-----------------------------------|-----------------------|
| | total household <i>NOW</i> | ³ 5 years <i>NOW</i> | < 5 years <i>NOW</i> | total household <i>3 months</i> | migrated out 3 months <i>3 months</i> | total deceased <i>3 months</i> | deceased ³ 5 years | deceased < 5 years | of death, ³ 5 years | of death, <5 years |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |

1 = diarrhoea,

2 = bloody diarrhoea

3 = measles

4 = fever

5 = lower respiratory tract infection

6 = malnutrition

7 =
accident

8 = other (specify)

9 = unknown

Appendix 7:

Verbal Questions to Determine Cause of Death

1. Did (deceased person) have liquid, watery, soft stools more than three times per day? Y=Diarrhoea

2. Did _____ have blood in the stool? Y= Bloody
Diarrhoea

3. Did _____ have measles (Anyo)? Y= Measles

4. Did _____ have fever OR hot body? Y= Fever

5. Did _____ have any episode associating fever and cough and at least one symptom of difficulty breathing, or expectoration, or chest pain? Y= Respiratory
Infection

6. Did _____ have bilateral oedema and/or severe weight loss (wasting)? Y=Malnutrition

7. Did _____ die from car accident, fall, drowning, poisoning, burn, bite, sting, or other accidental injury? Y= Accident

8. Did _____ die from injury from rebel attack, landmine, went missing, AIDS, childbirth, or any other incident? Y=other
(write reason)

Appendix 8:

ACF-USA Nutrition Survey Training Schedule May 31 and June 1

Monday May 31

0930-1000 **Welcome and Introduction**

1000-1015 **Administrative Overview**

Working hours, expectations, pay, transportation

1015-1030 **Break with refreshment**

1030-1130 **Overview of Survey and Objectives**

- *Purpose of Survey*
- *Sampling methodology – random selection of clusters and household selection*
- **Description of teams**
- *Description of job duties (supervisor, recorder, measurers)*
- **Questions**

1130-1215 **Data to be collected**

- *Anthropometry*
- *Mortality*
- *Additional questions: measles immunization coverage, food distribution coverage, feeding practices for under 6 months, supplementary feeding center (SFC) coverage*
- *Reviewing contents of additional questions*

1215-1300 **Measurement Techniques**

- *Description and demonstrations*
 - Equipment – scales, height boards**
 - Care of equipment*
 - Measurements – height, weight, MUAC, Oedema, Age**
- *Recording of data*
- *Anticipated difficulties*
- *Potential mistakes*

1300-1400 **Lunch Break (provided)**

1400-1500 **Standardization Exercise with children from SFC**

- *Measurement of 5 children by each team*
- *Discussion – Point out outlying data and discuss possible problems*

1500-1530 **Filling out forms**

- *Two Anthropometric Data Forms – 6-59 months and under 6 months*
- *Mortality Data Form*
- *Discussion of Standardization of Information Collection*

1530-1615 **Using Weight for Height Table and Referrals to TFCs and SFCs**

1615-1645 **Break with refreshment**

1645-1715 **Field Procedures**

Initial contact with camp leaders
Sample selection procedures (2nd stage)
Procedure for initial contact with household
Dealing with problems – i.e., unavailability of selected individuals or households

1715-1745 **Conclusion**

Tuesday June 1st

0830 **Arrive at ACFUSA Gulu office**

0830-0900 **Formation of Survey Teams**

0900-0930 **Collection of Materials needed per team**

0930- 1300 **Field Practice**

1300-1400 **Lunch Break (at training center)**

1400-1600 **Review of Field Practice and Data Collection Forms**

1600-1630 **Break with refreshment**

1630-1700 **Conclusion**

Grey Text indicates participation of ACF Supervisors

Appendix 9: Duties and procedures for Survey Team Members and Supervisors

Team Duties

1. Introduce the survey to the people in each new household and introduce each member of the survey team.
2. Ask the questions, make measurements, and record the answers on the data collection form.
3. Be sure that all questions have been asked and that all answers have been recorded.

Points to remember

1. The questions about the whole household (mortality collection) should be asked of the head of the household or another adult, such as an adult woman.
2. The questions about children less than 5 years of age should be asked of the mother of that child or the person who takes care of that child most of the time.
4. Ask the questions in the same order as they are written on the data collection form.
5. Ask all the questions even if the respondent has already answered one and you think you know the following answer.
6. Give the respondent enough time to respond. It may take some people a few moments to remember answers.
7. Many respondents will have difficulty determining their ages, ages of children, and dates when household members have died. Be sure to inquire carefully using the calendar of events.
8. Be sure you do not suggest answers to any question.
9. Do not leave a question unanswered unless the instructions say to skip that question. Always fill something in each space on the data collection forms. If the respondent does not know the answer fill in '9', the code for "Unknown." This way the supervisor and data entry person will know that you have asked every question on the data collection form.
10. Write down the answers to each question immediately after the respondent has given the answer.
11. Check the entire form for completeness at the end of the interview part and at the end of data collection for each household. Be sure to do this before leaving the household.

Supervisors Duties

1. Oversee all activities of the survey team members to be sure that all methods follow those demonstrated during the survey training.
2. Ensure the safety and working atmosphere for the survey team.
3. Inform the camp leaders of the purpose and methods of the survey. Perform the second stage of sampling at each selected camp (i.e.: cluster selection if necessary, and household selection within the cluster).
4. For each cluster, make sure the team number, supervisor's name, and cluster number are recorded on the data collection forms – this will help if we need to cross check data.
5. Clarify questions about methods for survey team members.
6. Review every data collection form for correctness and completeness after data collection is completed and before the team leaves the household.
7. Organize completed data collection forms before leaving the field in order to ensure everything is in order. When arriving at Gulu Base please return completed forms to Survey Leader (Leah) and ensure all equipment is properly stored in the ACF store room.

Points to remember

1. Data collection forms are often incompletely or unclearly completed, especially in the first few days of the survey before team members have practiced. Therefore, review of data collection forms before leaving the household is very important. Missing data can be collected or unclear answers can be clarified after the survey team has left the camp. Be sure all writing is legible.
2. Be sure the households have been selected according to the methods described in the training and in the sampling instructions. Refer to the copy of the methodology that should be in your carrying bag every time you travel to the field.
3. Be sure that every possible effort is made to locate children less than 5 years of age living in each selected household. If a child is not home, but nearby, send someone in the family to bring them for weighing and measuring. If a child will not be home before the team must move to the next household, there is no need to wait a long time. You can return to the household after the remaining households in the camp are completed.
4. Be sure that all procedures are being done in field as taught in the survey training. Supervisors should monitor:
 - a. Mortality data collection – be sure interviewers are reading the questions as written on the data collection form and accurately recording respondents' answers.
 - b. Anthropometric measurements – be sure all measurements are taken according to correct procedures and recorded clearly on the data collection form.

Appendix 10:

Schedule for Nut Survey

| | | |
|---------------|-------------------------|--------|
| Wed June 2 | Opit Palenga | 3 1 |
| Friday June 4 | Acet Lalogi | 2 2 |
| Sat June 5 | Unyama Acet (return) | 2 2 |
| Mon June 7 | Pabbo | 4 |
| Tues June 8 | Pabbo Parabongo | 3 1 |
| Wed June 9 | Holiday | |
| Thurs June 10 | Pagak Olwal | 1 1 |
| Fri June 11 | Opit (redo) Ongako 1 | 3 |
| Sat June 12 | Awer Palenga (redo) | 2 1 |
| Mon Jun 14 | Amuru | 4 |
| Tues June 15 | Paicho | 2 |
| Wed June 16 | Anaka | 4 |
| Thurs June 17 | Wii-Nono Purongo | 1 1 |