

Rwanda refugee operation

**A Joint Nutrition Survey Report Conducted in Kiziba, Nyabiheke and Gihembe
refugee camps - May 2012**



Photo from refugee children in Kiziba refugee camp taken during the nutrition survey / May 2012

Coordinated by:

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Acronyms and Abbreviations

ADRA	Adventist Development and Relief Agency
AHA	Africa Humanitarian Action
ARC	American Refugee Council
ARI	Acute respiratory infection
CDR	Crude Death Rate
C.I	Confidence Intervals
CMR	Crude Mortality Rate
CSB	Corn Soy Blend
ENA	Emergency Nutrition Assessments
EPI	Expanded Program for Immunization
GAM	Global Acute Malnutrition
GFD	General Food Distribution
HFA	Height for Age
HAZ	Height-for-Age z-score
HH	Household
JRS	Jesuit Refugee Services
LLITN	Long Lasting Insecticide Treated Net
MIDIMAR	Ministry of Disaster Management and Refugee Affairs
MUAC	Mid Upper Arm Circumference
NCHS	National Centre for Health Statistics
NFIs	Non Food Items
NGOs	Non Government Organizations
OTP	Out-Patient Therapeutic Programme
PEM	Protein Energy Malnutrition
PHAST	Participatory Hygiene and Sanitation Transformation
PRRO	Protracted Relief and Recovery Operation
SAM	Severe Acute Malnutrition
SFC/P	Supplementary Feeding Centre / Programme
SMART	Standardized Monitoring and Assessment of Relief and Transitions
TFP	Therapeutic Feeding Programme
U5	Under 5 years
U5DR / 0-5DR	Under 5 Years Death Rate / 0-5 Years' Deaths
UNICEF	United Nations Children Fund
WASH	Water, Sanitation and Hygiene
WFP	World Food Programme
WFH	Weight-for-Height
WHZ score	Weight-for-Height Z-score
WHO	World Health Organization

Acknowledgement

UNHCR in close collaboration with other stakeholders working in the refugee camps in Rwanda jointly prepared and coordinated the surveys activities in the three refugee camps of Kiziba, Nyabiheke and Gihembe. The technical support was rendered by Carte NGO with regards to the use of the android mobile telephone and UNHCR Regional Office Nairobi. The author gratefully acknowledges the important contributions provided by many cooperates that made these surveys possible.

We would like to acknowledge all agencies involved in planning and executing the surveys. We thank MIDIMAR, WFP, ARC, AHA, ADRA and JRS for participating in different stages of the surveys. Exceptionally, we thank WFP Kigali for their immense logistical support for providing the most of the survey tools without which these surveys would have not happened timely. Thanks to the Heads of Field Offices, camp management, health and nutrition personnel's for organizing the logistics, equipment and printing for the surveys and for all the participants who engaged in data collection. Thanks to ONE UN for supporting this survey with the training room. Thanks to all drivers who safely provided for transportation during the survey. A complete list of names of people involved in this exercise is provided in **Annex 1**.

Finally, we thank members of the refugee population for consenting to participate.

Executive summary

The nutritional status of the Congolese refugees in Gihembe, Nyabiheke and Kiziba camps in Rwanda depicted mixed results over the number of years, while the 2012 findings on the prevalence of acute malnutrition were within the WHO acceptable cut off points <5%; the prevalence of stunting has remained critical since the 2008 results. The prevalence of anaemia among children under 5 years is far above the WHO very high cut off point of >40% .

This nutrition survey was led by UNHCR Rwanda; with the Regional Support Hub providing technical support. During the preparations MIDIMAR, WFP and its health and nutrition partners, ARC and AHA, carried out the information sensitization in the refugee camps. Nutrition surveys were later conducted in each of the three above mentioned camps. The UNHCR's newly developed Standardised Expanded Nutrition Survey (SENS) Guidelines for Refugee Populations and its questionnaires were used for training and data collection. The survey team members were recruited from 16th to 19th April 2012, followed by training that took place from 23rd to the 29th April 2012 while data collection started in Kiziba on the 30th April and ended in Gihembe on the 19th May 2012. Android technology was used to capture data from the field, and collected data were later downloaded directly into the computer. The main objectives of the survey were to determine the general health and nutrition status of refugee children aged 6-59 months, anaemia prevalence among non pregnant women of reproductive age (15-49 years) and children 6-59 months, and the population's retrospective mortality rates in the three refugee camps in Rwanda. Other objectives included; water and sanitation, mosquito nets possession and use, infant and young child feeding practices, morbidity, supplementation of vitamin A, measles vaccination, coverage of selective feeding programme, and food security where access to the general food ration was studied.

Data analysis was done using the Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology for the anthropometry and mortality data, whereas Epi Info was used to analyze the other indicators. The recently updated UNHCR population and demographic data derived from the ProGres provided the sampling frame for sample calculations. Simple random sampling methodology was used to calculate the samples within the inbuilt interface in SMART software.

The sample sizes for each camp were 422, 440 and 422 households for Kiziba, Nyabiheke and Gihembe camps respectively. The calculated numbers of children aged 6 – 59 months old were 282 in Kiziba, 353 in Nyabiheke and 331 in Gihembe. There was no data entry because data were captured in the field using Android mobile technology.

Surveyed area	Camps			Classification of public health significance or target (where applicable)
	Kiziba	Nyabiheke	Gihembe	
Date of survey	May 2 nd -5 th	May 7-12 th	May 14-18 th	
Camp Statistics				
No of household selected	442	440	422	
Actual number obtained	400	389	377	
% response rate	90.4%	88.4%	89.3%	
Children (6 – 59 months) % (95% C.I)				
Acute Malnutrition (WHO 2006 Growth Standards)				
N	261	336	257	Critical if ≥ 15%
Global Acute Malnutrition (GAM)	3.2 % (1.6 - 6.1)	3.0 % (1.7 - 5.5)	2.4 % (1.1 - 5.1)	
Moderate Acute Malnutrition (MAM)	2.8 % (1.3 - 5.6)	3.0 % (1.7 - 5.5)	2.4 % (1.1 - 5.1)	
Severe Acute Malnutrition (SAM)	0.4 % (0.1 - 2.2)	0.0 % (0.0 - 1.2)	0.0 % (0.0 - 1.5)	
Oedema	0.0%	0.0 %	0.0%	
Stunting (WHO 2006 Growth Standards)				
Prevalence of stunting	38.4 % (32.7 - 44.5)	36.3 % (31.3 - 41.6)	36.9 % (31.2 - 43.1)	Critical if ≥ 40%
Moderate Stunting	25.1 % (20.2 - 30.8)	26.2 % (21.8 - 31.2)	27.3 % (22.2 - 33.2)	
Severe stunting	13.3 % (9.7 - 18.1)	10.1 % (7.3 - 13.8)	9.6 % (6.6 - 13.9)	
Mid upper arm circumference (MUAC)				
Prevalence of global malnutrition (<12.5)	5.4 % (3.2 - 8.8)	3.0 % (1.6 - 5.4)	5.1 % (3.0 - 8.5)	
Moderate malnutrition (11.5-12.4 cm)	4.2 % (2.4 - 7.4)	2.1 % (1.0 - 4.2)	3.5 % (1.9 - 6.5)	
Severe malnutrition (<11.5 cm)	1.1 % (0.4 - 3.3)	0.9 % (0.3 - 2.6)	1.6 % (0.6 - 3.9)	
History of illness in the past 2 weeks, % (95% C.I)				
Cough	60.4% (54.2-66.4)	45.2% (39.9-50.7)	75.5% (69.8-80.6)	
Diarrhoea	50.0% (43.8-56.2)	42.6% (37.2-48.1)	32.2% (26.5-38.2)	
Fever	45.4% (39.2-51.7)	37.2% (32.1-42.6)	53.5% (47.2-59.7)	
Coverage of selective feeding programme for children aged 6 – 59 months % (95% C.I)				
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in therapeutic feeding programme	37.5% (21.7-53.3)	28.7% (21.7-37.3)	25% (21.7-53.3)	
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme	18.3% (10.9-25.6)	21.3 % (16.9-25.6)	38.2% (29.1 - 47.6)	

Anaemia (6-59 months) HB adjusted for Altitude				
N	261	334	257	
Total Anaemia (Hb <11 g/dl)	41.2% (35.2-47.5)	43.4% (38.1-48.9)	52.9% (46.6-59.1)	High if ≥ 40%
Mild (Hb 10-10.9)	19.5% (14.8-24.8)	22.2% (17.9-27.1)	27.6% (22.3-33.4)	
Moderate (Hb 7-9.9)	21.8% (16.9-27.3)	21.0% (16.8-25.8)	23.8% (18.7-29.4)	
Severe (Hb<7)	0.0%	0.3% (0.0-1.9)	1.5% (0.4-3.9)	
Mean HB±SD	11.1±1.4	11.1±1.5	11.5±1.5	
Anaemia (6-23 months) Adjusted HB for Altitude				
N	85	114	83	
Total Anaemia (Hb <11 g/dl)	68.2% (57.2-77.9)	61.3% (51.5-70.4)	63.9% (52.6-74.1)	
Mild (Hb 10-10.9)	34.1% (24.2-45.2)	30.6% (22.2-40.1)	33.7% (23.7-44.9)	
Moderate (Hb 7-9.9)	34.1% (24.2-45.2)	30.6% (22.2-40.1)	30.1% (20.5-41.2)	
Severe (Hb<7)	0.0%	0.0%	0.0%	
Women 15-49 years % (95% C.I)				
Anaemia (non-pregnant women) Adjusted HB for Altitude				
N	158	194	207	
Total Anaemia (Hb <12 g/dl)	17.1% (11.6-23.9)	17.5% (12.5-23.6)	10.1% (6.4-15.0)	High if ≥ 40%
Mild (Hb 11-11.9)	15.2% (10.0-21.8)	11.9% (7.7-17.3)	9.1% (5.6-13.9)	
Moderate (Hb 8-10.9)	1.3% (0.2-4.5)	5.2% (2.5-9.3)	1.0% (0.1-3.4)	
Severe (Hb<8)	0.6% (0.0-3.5)	0.5% (0.0-2.8)	0.0%	
Mean HB±SD	13.3±1.3	13.1±1.4	13.6±1.3	
Prevalence of Infant and Young Child Feeding practices indicators, % (95% C.I)				
N	116	133	107	
Child Bottle Fed	22.4% (14.0-32.7)	40.7% (31.6-50.4)	24.1% (15.4-34.7)	
Child ever breastfed	96.5% (90.0-99.3)	99.1% (95.2-100.0)	98.8% (93.5-100.0)	
Child given infant formula	6.0% (2.0-13.3)	6.3% (2.5-12.5)	2.4% (0.3-8.4)	
Timely initiation of breastfeeding	64.6% (53.3-74.9)	60.7% (51.0-69.8)	70.7% (59.6-80.3)	
Diarrhoea in the last two weeks for children aged 0 – 23.9 months	61.9% (50.7-72.3)	56.6% (47.0-65.9)	49.4% (38.2-60.6)	
Exclusive Breast feeding under 6 months	86.7% (69.3-96.2)	73.7% (48.8-90.9)	69.6% (47.1-86.8)	
Continued Breast feeding at 1 year	94.4% (72.7-99.9)	96.0% (79.6-99.9)	100.0%	
Continued Breast feeding at 2 years	64.3% (35.1-87.2)	92.0% (74.0-99.0)	73.3% (44.9-92.2)	

Introduction of solid, semi-solid and soft foods	23.5% (6.8-49.9)	21.7% (7.5-43.7)	14.3% (3.0-36.3)	
Retrospective mortality				
Crude Death Rate (CDR) Deaths/10,000 /day (95% CI)	0.50 (0.26 – 0.94)	0.10 (0.03 – 0.37)	0.22 (0.09 – 0.56)	Very serious if ≥ 1
U5 Death Rate (U5DR) Deaths/10,000 /day (95% CI)	0.00 (0.00 – 1.40)	0.00 (0.00 – 0.86)	0.00 (0.00 – 1.74)	Very serious if ≥ 2
Food security of the general population, % (95% C.I)				
Total households surveyed for Food Security against the total household surveyed	199 (32.5%)	201 (32.8%)	213 (34.7%)	
Average number of days the food ration lasts out of 30 days (Standard deviation)	17.1 \pm 5.1	16.6 \pm 5.6	16.6 \pm 4.8	
Average duration (%) in relation to the theoretical duration of the ration	57.0%	55.3%	55.3%	
Proportion of households reporting that the food ration lasted: ($\leq 75\%$ of the cycle [less than 23days]) at 95% C.I.	95.3% (91.3-97.8)	91.2% (86.3-94.8)	93.3% (89.1-96.3)	
Proportion of households reporting that the food ration lasted: ($>75\%$ of the cycle [more than 23days]) at 95% C.I.	4.7% (2.2-8.7)	8.8% (5.2-13.7)	6.7% (3.7-10.9)	
Negative household coping mechanisms, , % (95% C.I)				
Proportion of households reporting using the following coping strategies over the past month:				
Borrowed cash, food or other items without interest	48.2% (41.1-55.4)	42.8% (35.8-49.9)	54.9% (48.0-61.7)	
Borrowed cash, food or other items with interest	60.3% (53.1-67.2)	66.7% (59.7-73.1)	55.4% (48.5-62.2)	
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	42.7% (35.7-49.9)	51.7% (44.6-58.8)	45.1% (38.3-52.0)	
Requested increase remittances or gifts as compared to normal	17.6% (12.6-23.6)	8.0% (4.6-12.6)	13.1% (8.9-18.4)	
Reduced the quantity and/or frequency of meals	88.4% (83.2-92.5)	85.1% (79.4-89.7)	89.7% (84.8-93.4)	
Begged	13.6% (9.1-19.1)	5.5% (2.8-9.6)	5.2% (2.6-9.1)	

Engaged in potentially risky or harmful activities	37.7% (30.9-44.8)	22.4% (16.8-28.8)	22.4(16.8-28.8)	
Water, sanitation and hygiene				
Household interviewed for WASH	198	201	214	
Main Source of Water, , % (95% C.I)				
Improved source	100%	100.0%	99.1% (96.7-99.9)	
Proportion of households that take less the 30min to collect their main drinking water at 95% C.I	99.0% (96.4-99.9)	84.6% (78.8-89.3)	72.0% (65.4-77.9)	
Proportions of household that said they are satisfied with the water supply at 95% C.I.	99.0% (96.4-99.0)	66.2% (59.2-72.7)	61.2% (54.3-67.8)	
Amount of liters of water used per person per day, % (95% C.I)				
Proportion of households that use:				
<10	30.4% (23.9-37.4)	51.0% (43.8-58.3)	36.4% (29.8-43.4)	
10-<15	22.0% (16.3-28.5)	32.5% (25.9-39.6)	(31.6% (25.3-38.4)	
15-<20	16.8% (11.8-22.8)	(5.2% (2.5-9.3)	(12.6% (8.4-17.9)	
≥20 liters	30.9% (24.4-38.0)	11.3% (7.2-16.7)	(19.4% (14.2-25.5)	
Safe excreta disposal of human faeces (95% C.I)				
Proportion of households using a communal toilet.	100.0%	100.0%	96.0%(92.3-98.3)	
The proportion of households with children under three years old that dispose of faeces safely.	90.1% (81.5-95.6)	98.0% (93.0-99.8)	89.8% (81.5 – 95.2)	
Proportion of Households using communal toilets	100.0%	100.0%	96.0%(92.3-98.3)	
Mosquito net utilization and in door residual spray				
Total households surveyed for mosquito nets	198	201	214	
Proportion of households owning at least one mosquito net of any type	76.3% (69.7 - 82.0)	57.2% (50.1-64.2)	62.1% (55.3-68.7)	
Proportion of household owning at least one LLIN	76.2% (68.6 – 82.7)	79.4% (70.5 – 86.6)	87.9% (80.8-93.1)	

Proportions of children under 5 years who slept under net of any type	51%	53.9%	45.1%	
Proportions of pregnant women who slept under net of any type	9.3%	8.7%	3.8%	
Proportions of children under 5 years who slept under LLIN	21.2% (15.0 – 28.6)	39.2% (25.1 – 59.4)	38.4% (24.8 -57.3)	
Proportions of pregnant women who slept under LLIN	6.6% (3.2 – 11.8)	6.1% (2.5 –12.1)	3.8% (1.2- 8.6%)	
Proportion of households covered by IRS	66.7% (59.6 - 73.2)	65.2%(58.2 – 71.7)	33.3% (27.0 – 40.1)	

1.0 INTRODUCTION

1.1 Background

Rwanda is home to a total of approximately 54,434 refugees whom majority of them are Congolese. The Congolese refugee situation has been an issue since early 1994 after the genocide against the Tutsis in Rwanda. The presence of Rwandan Hutu militia in Eastern Congo, forced many Kinyarwanda speaking Congolese to flee to Rwanda. Furthermore, in November 1996, during Kabila's struggle to oust Mobutu, more Congolese refugees started streaming into Rwanda. In 1998, Rwanda and Ugandan troops reinvaded Democratic Republic of Congo (DRC) in the widest interstate war in modern African history. Millions of Congolese became internally displaced or sought asylum in neighboring countries as in the case of Rwanda. These influxes of refugees in Rwanda led to creation of a number of refugee camps namely Kiziba, Gihembe and Nyabiheke.

1.2 The needs

Refugee households in Rwanda remain highly dependent on the protection and assistance provided by UNHCR. Lack of land (including for agricultural purposes) and income-generating activities as well as limits on access to employment and low skill levels all hinder self-reliance. Harsh living conditions in the camps are further exacerbated by poor soil, erosion-prone hillsides, inclement weather and crowded shelters. Food assistance is provided by WFP on a monthly basis; community based food distribution system is applied in the refugee camps in Rwanda.

In April / May 2011, a Pre-JAM (Joint Assessment Mission) Food Security and Nutrition survey was conducted in the three camps; the survey included anthropometric measurements, hemoglobin measurements for children aged 6 to 59 months, hemoglobin measurements for women of reproductive age, coverage of immunization, vitamin A supplementations, infant and young child feeding and food security related parameters.

UNHCR in collaboration with WFP, MIDIMAR, ARC and AHA jointly agreed to conduct a nutrition survey using the "Standardized Expanded Nutrition Survey" tools specifically designed for refugee camps. This survey included the following: Anthropometry and Health, Anemia, Infant and Young Child Feeding, Food Security, Water and Sanitation, and Mosquito Net Coverage. The findings from this survey provides baseline data to the recently introduced safety nets in the camps, provide measures of achievement of the ongoing programmes, and enable partners to assess progress and improve their ongoing interventions in 2012.

1.3 Humanitarian arrangements

The Ministry of Disaster Management and Refugee Affairs (MIDIMAR) is responsible for ensuring civilian characters, security and peace and order are maintained in the refugee camps. UNHCR plays a coordination role of all services accorded to the refugee population, monitoring and protection of refugees. According to the UNHCR/WFP global memorandum of understanding WFP is responsible in providing adequate general food ration that meets the minimum recommended human daily intake with at least 2100 kilocalories. In the refugee camps WFP is also providing the food based nutrition package in the management of moderately malnourished children, pregnant and lactating women through the supplementary feeding programmes. ARC and AHA implements the health and nutrition programmes including the recently introduced anaemia control, prevention and reduction programme. ARC on one side also implements the WASH programme while AHA supports food distribution in all camps.

1.4 Geographic areas and demography of the survey population

The three camps host Congolese refugees that originated from North and South Kivu in DRC. Gihembe refugee camp is situated on Gihembe hill in the outskirts of Byumba town, Gicumbi district in the Northern Province. It is situated at an elevation of 2274.73 meters above sea level with approximately 20,355 refugees, 4,011 under 5 years of age, 4,071 women of reproductive age and 814 lactating women. The camp is divided into 12 administrative units which are further subdivided into villages with approximately 50 houses each. Kiziba Camp is in the West Province located at an elevation of 1974.50 meters above sea level. In total this camp has about 18,921 refugees, 2,430 under 5 years of age, 3,784 women of reproductive age and 757 lactating women. The third camp, Nyabiheke is situated at an elevation of 1612.09 meters above sea level with a population of approximately 15,338 refugees, 4,376 under 5 years of age, 3,068 women of reproductive age and 614 lactating women.

1.5 Health services

The health information system is used to track all health related statistics. The health partners on a monthly basis submit to UNHCR the camp based reports. The 2011 annual health impact indicators demonstrated that the average crude mortality rate across the three camps (Gihembe, Nyabiheke and Kiziba) was 0.2 deaths / 1000 population / month which was within the set target of 0.75 deaths / 1000 population / month. The under 5 years mortality rate stood at 0.22 deaths / 1000 under 5 years / month. Overall the mortality rate was within the acceptable standards. The Sphere standards for mortality levels are defined with 1.32 deaths 1000 per month in Africa while the under 5 years mortality rate has been set at 3.42 deaths / 1000 / month. This is indicative of a relatively good health and nutrition situation and a testament to the effective provision of primary health care services. The refugee programme was able to reduce infant mortality rate from 5.1 deaths / 1000 live births / year in 2010 to 4.6 deaths / 1000 live births / year in 2011 against a UNHCR standard of (<60 per 1,000 live births/year).

1.6 Nutritional well being improved

As of the 31st December 2011 the supplementary feeding programmes (SFPs) had served an average of 1,674 moderate malnourished children, 535 severely malnourished children below 5 years and 1,154 pregnant and lactating women. In 2011 all camps reported zero deaths in TFP and SFP and 100% recovery rates in the TFPs and 99.3% in the SFPs, exceeding the Sphere standard indicator of >75%.

In the supplementary feeding programme moderately malnourished children received 200 grams of CSB, 20 grams of vegetable cooking oil and 15 grams of sugar in a premix form providing about 1037 kilocalories per day. The pregnant and lactating women received 300 grams of CSB, 20 grams of cooking oil and 15 grams of sugar in a premix form providing about 1437 kilocalories. The pre-JAM 2011 found that more than a quarter (26.7%) of women at reproductive age (15-49 years) tested for anaemia in the three camps was anaemic and 60% of children below 5 years were anaemic. High prevalence of anemia among refugee children aged 6 to 59 months continue to pose a public health concern. The nutrition and food security portfolio of activities encompasses the following programmes in the refugee camps in Rwanda:

- General food distribution that covers all registered refugees with ration cards
- Targeted supplementary feeding programme for moderate malnourished children, pregnant and lactating women

- Anaemia detection, treatment, reduction and control among children, pregnant and lactating women
- Vitamin A supplementation for children every 6 months and post natal women
- Measles vaccinations to children from 9 to 59 months
- Outpatient therapeutic feeding programme – transformed recently from the old therapeutic feeding programme
- Stabilization centre for individuals with severe acute malnutrition with medical complications
- Infant and young child feeding practices with particular attention to mother care groups
- Blanket supplementary feeding programme with CSB++ to all 6-23 months old children
- School feeding programme to begin in September 2012 targeting all children attending the basic primary education in refugee camps
- Poultry, small animal keeping and green vegetable growing attached to supplementary feeding programme

1.7 Infant and young child feeding practices

The pre-JAM nutrition survey of 2011 found that about 73.9% of lactating women initiated breastfeeding within 1 hour of birth while only 28% exclusively breastfed their children up to 6 months of age. The study also found that 45% of lactating women continued breastfeeding their children to beyond 18 months. However introduction of complementary foods at six months was very low (<37%); the lack of corn soy blend in the general food ration left many families without a suitable food for children below 2 years. Women are reported to sell part of their ration in order to purchase fresh vegetables and potatoes for their young children who have difficulty in consuming maize. Fresh foods especially vegetables diversify the family diets and provide micronutrients. The frequency of child feeding over the course of the day is often sub-optimal due to mothers spending the day working, looking for work or in the market and leaving young children with older siblings at home. This compromises optimal breastfeeding and care of children.

1.8 Food assistance

WFP have been working to ensure that refugees receive the agreed general food ration in order to address issues related to food security in the camps. In Rwanda the general food ration is expected to provide 2100 kilocalories. Food distribution in refugee camps in Rwanda is conducted monthly. The food pipeline has been stable since the beginning of the new PRRO in January 2012. The food basket is comprised of (per person per day):

- maize grain / maize meal 410 grams
- beans 120 grams
- vegetable cooking oil 30 grams
- iodized salt 5 grams

This ration provides the minimum recommended energy intake of 2103 kilocalories. The percentage of energy supplied by the different macronutrients from this ration composition is; 68% carbohydrates, 20% fats and 12% proteins. CSB was discontinued in the general food basket due to financial reasons since February 2010; however it has been maintained to beneficiaries in SFP.

1.9 Immunization and vitamin A supplementation programmes

The immunization programme aim to attain 100% coverage for measles vaccination among children aged 9-59 months in 2011. At the end of 2011 measles vaccination coverage was 98% and 100% for BCG and pentavalent vaccines as per HIS reports. Vitamin A supplementation had reached 88% among 6-59 months children compared to 83% in 2010, and the de-worming programme had reached 98% coverage among children aged 12 months and above compared to 91% in 2010.

1.10 HIV / AIDS prevention and treatment programme

Accurate information on the prevalence of HIV among refugees are lacking as a larger scale survey has not been conducted. At the end of 2011 there were 457 people living with HIV who were receiving nutrition support from the supplementary feeding programme. People Living With HIV / AIDS (PLWHA) in all three camps are supported by SFP in recognition of their enhanced nutritional needs and promoting healthy positive living. A nutritional supplement of 250g CSB, 15g sugar and 25g oil per person per day was provided until September 2011, after which time the CSB was reduced to 150g due to food pipeline rapture. Today additionally, malnourished children and PLWHA on Ant Retroviral Treatment (ART) are provided with weekly fresh fruits, vegetables, 2 eggs from the anaemia project and small dried fish to further supplement their diet and assist them nutritionally when taking medications.

1.11 Water services

Access to adequate amount of water is well maintained in Kiziba where in 2011 refugees received about 37 liters per person per day. In Nyabiheke and Gihembe the availability of water is not up to UNHCR standards; in 2011 the refugees received 14 and 7 liters of water per person per day in the two camps respectively. The number of persons per usable water tap is 92 people in Gihembe and 101 in Nyabiheke while is only 56 in Kiziba; the UNHCR standard is 80 people per usable tap. The percentage of population living within 200 meters from water points in Kiziba and Nyabiheke is 100% while in Gihembe is 60%.

The timing of water release is also a concern as in most cases most of the population in Gihembe has to spend several hours waiting for release of water. As such some of the refugees in Gihembe have had to pay for laborers to fetch water for their families from outside the camp. Safety and cleanness of water from outside the camps is not assured. Provisions of adequate safe and clean water to the refugee populations reduce the prevalence of water born diseases and improve hygiene among family members in the camps. The main usage of water in the camps are cooking of food, washing of cloths and utensils and bathing.

1.12 Sanitation services

Due to land scarcity communal latrines are used in Rwanda refugee camps as opposed to family latrines. According to the 2011 standard and indicators report the coverage of communal latrines in the three camps was; 18 persons per drop-hole in Gihembe, 23 persons in Kiziba and 27 persons in Nyabiheke. These rates are comparable to the international standards of 20 persons per communal latrines' drop hole.

The refugees have organized themselves to clean the communal latrines in both Kiziba and Gihembe; however, refugees in Nyabiheke camp would clean their communal latrines if they are paid with money or in kind incentives like portion of food ration. Most of the communal latrines are provided with water, however, shortage of water in some of the camps' latrines leaves refugees without sweeping there wastes after using the latrines and also do not wash their hands after using the toilets. PHAST trainings are planned to take place in 2012.

2.0 OBJECTIVES OF THE SURVEY

The main objectives of this survey was to determine the general health and nutrition status of refugee children aged 6-59 months, anaemia prevalence among non pregnant women of reproductive age (15-49 years) and children 6-59 months, and the population's retrospective mortality rates in the three refugee camps in Rwanda. Since the survey followed the UNHCR Standardised Expanded Nutrition Survey (SENS) guidelines the aim was to assess the following objectives within the targeted population in the three refugee camps in Rwanda:

1. To measure the prevalence of acute malnutrition and stunting in children aged 6-59 months.
2. To determine the coverage of measles vaccination among children aged 9-59 months.
3. To determine ownership and utilisation of mosquito nets (all types and long lasting) among refugee households.
4. To determine the coverage of vitamin A supplementation in the last six months among children aged 6-59 months.
5. To measure the prevalence of anaemia in children aged 6-59 months in refugee camps.
6. To measure the prevalence of anaemia in women of reproductive age between 15-49 years (non-pregnant).
7. To determine the population's access to, and use of, improved water, sanitation and hygiene facilities
8. To investigate infant and young child feeding practices among children aged 0-23 months
9. To explore the food security situation of the general population
10. To estimate the two-week period prevalence of fever, diarrhoea and cough morbidities among children aged x-x..
11. To assess crude and under-five mortality rates in the last three months.
12. To provide recommendations for appropriate response mechanisms.

3.0 SUBJECTS AND METHODOLOGY

3.1 Study population, survey design and sample size

Survey subjects were children below the age of five years. Children ranging between 6-59 months were subjected to anthropometric measurements, measles, vitamin A coverage and feeding programme assessment. For haemoglobin measurements a sub sample of children 6-59 months and adult (non-pregnant) women were drawn whereas for retrospective mortality heads of families and other family members were included. All children under-2 were assessed for IYCF practices. Households members were also the subjects for the food security, use of long lasting insecticides treated mosquito nets, water, sanitation and hygiene.

Sample size for anthropometric measurements and retrospective mortality for each camp was calculated by Standardized Monitoring and Assessment of Relief and Transitions (SMART ENA-Delta software Nov 1st 2011 version). In the design, the sample size was calculated using the upper confidence interval of GAM from 2008 survey. As this was the first survey to include mortality, the 'very serious' benchmark for defining mortality in crisis was used (1/10,000) to calculate the household sample size and population to be surveyed. The average family size was obtained from the UNHCR ProGres data. The sample size for anaemia in children aged 6-59 was estimated based on the sample size for the anthropometric measurements as per the UNHCR Standardized Expanded Nutrition Survey (SENS) guidelines when there is a requirement to carry out an impact assessment the reduction of anaemia based on the ongoing intervention. A precision of 3.5% was used to calculate the sample sizes in all camps. Sample sizes were adjusted for non-responses where 10% was estimated

due to refugee movements outside the camps. However, an unusual situation was experienced during the survey where the number of children aged 6-59 months in all camps was not achieved during data collection - a situation reflecting how mobile Congolese refugee households are in Rwanda. The number of individuals involved for the retrospective mortality survey were 1,880, 1,882, and 1,977 in Gihembe, Nyabiheke and Kiziba respectively, whereas children 6-59 months who were sampled were 377, 389 and 400 in Gihembe, Nyabiheke and Kiziba respectively.

Table 1: Sample size calculation for Kiziba, Nyabiheke and Gihembe refugee camps, Rwanda, June 2012

Camp	Estimated GAM	Design effect	Precision	Under 5 population	Average HH size	Non response rate (NRR)	Sample size children	Sample size households
Anthropometric								
Kiziba	10.6%	1.0	3.5	15.0%	5.5	10.0%	282	422
Nyabiheke	10.6%	1.0	3.5	15%	5.5	10.0%	353	440
Gihembe	10.6%	1.0	3.5	15%	5.5	10.0%	331	422
Mortality								Recall period
Kiziba	1.0	0.6	1	15%	5.5	1977		90
Nyabiheke	1.0	0.6	1	15%	5.5	2036		90
Gihembe	1.0	1.0	1	15%	5.5	1880		90

3.2 Sampling method: Selecting households and sample subjects

Simple random sampling was applied. The UNHCR updated demographic lists provided a sampling frame to establish the households that were surveyed. Within the “survey planning” interface of the ENA for SMART software the random number selection was done

The generated random numbers that were equivalent to the required sample sizes were further linked through Microsoft Access to the camp demographic lists for the subsequent random numbers to be automatically allocated to the households alongside the family addresses. These household lists with the allocated random numbers were sorted by quarters from the demographic lists, printed and given to teams for identifications and further surveys. Households were then allocated to each team based on the camp administration. Household numbering of addresses in these camps starts with quarters or blocks, villages and household plot numbers. Teams received a maximum of 25 houses every day, an average of 85 to 100 households in each camp. A total of 5 days were used to collect data in each camp, however, due to heavy rains and revisiting of absentees in all camps one more day was added. The refugee households were entirely randomly selected by chance; each house had an equal probability of being selected during the sampling process. Prior to starting the data collection in each camp, one day was used to determine the sampled households. This task was done jointly with the survey team, community health workers coordinated by the health and nutrition partners and refugee leaders under the guidance of MIDIMAR. Randomly selected households without evidence of occupation, i.e. demolished households, were excluded in the survey and were also not replaced.

3.4 Questionnaire, training and supervision

Questionnaires in the phones were in English and teams carried with a translated questionnaire in Kinyarwanda and interviews were conducted in Kinyarwanda. The survey team together with CHWs working in the camps participated in translating the questionnaires. The questionnaires were piloted before the survey and adjusted accordingly (Annex 6). The training lasted for 5 days and covered issues related to camp structures, survey norms, malnutrition, the objectives and methodology of the survey and techniques for anthropometric measurements. 25 survey team members were recruited and oriented on aspects of conducting this nutrition survey. Data recording sessions were undertaken with the navigation of android mobile telephone, energy saving technique, filling of questionnaires in the android telephone. The last day of the training was used for practical measurements on weight and height, use of android telephone, trouble shooting with digital weighing scales and HemoCue machines.

The most experienced supervisors were assigned to lead the teams, and these supervisors also had good precisions and accuracy during the standardization of measurements. Two UNHCR Nutrition and Food Security Consultants with experience from large scale nutrition surveys and one staff expert from CartONG facilitated the training and practical sessions. During the survey supervision was provided by the three UNHCR and CartONG facilitators, supervisors were shared by teams on a daily basis. Plausibility checks were run daily to appraise the quality of data for each team and feedback was provided by in the following morning.

3.5 Inclusion criteria of households and sampled individuals

In order to determine the nutritional status in the camps, children aged 6 to 59 months were assessed; parameters recorded included; sex, MUAC (mid upper arm circumference) measured to the nearest 0.1 cm, weight taken without clothes and measured to the nearest 0.1 kg, length/height measured to the nearest 0.1 cm, and children were checked for bilateral oedema. Children between the length/height of 65 and 110 cm were included and children with appropriate age who were either shorter or taller to their age were also included. Where a child's age was unknown, a seasonal and local events calendar was used to determine the age. Children < 87.0 cm were measured lying down and children with a height \geq 87.0 cm were measured in standing position. For IYCF children from 0 to 23 months were included in the assessment. All sampled children aged 6 to 59 months had their haemoglobin levels assessed. Also all women aged 15 to 49 years in households where children were sampled had their haemoglobin levels measured. Household members in all houses sampled were subjects for retrospective mortality survey, WASH, food security and possession and use of long lasting insecticide treated nets. The survey applied the 2006 WHO growth standards to report on anthropometric findings.

In order to establish the death rates the following information on household members were collected; all household members that lived during the recall period which were summarised into; total household size, total under 5 children in the household, joined the household, left from the households, births and finally deaths for both under five and above five years old. Regarding the recall period for the retrospective mortality, 90 days were for Kiziba, 86 days for Nyabiheke and 84 days for Gihembe. Information related to deaths at household was retrospectively collected to all households included in the survey; data were disaggregated by age groups (< 5 and \geq 5 years).

3.6 Case definitions, classification of public health problems and calculations

Household: A household was defined as a group of people living under same roof and sharing food from the same pot during their stay in the camp. Household members living in different houses and eating from same pot were considered as one household.

Diarrhoea in last 2 weeks in children 0-59 months: In this case diarrhoea was defined as three loose motions stools or more within 24 hours. Mothers or guardians were asked if their child had suffered diarrhoea in the last two weeks. Also were asked about the feeding practices when the child had diarrhoea.

Malnutrition in children 6-59 months: Malnutrition was defined as described in tables 3, 4, 5 and 6 below. Presentation of results in this report is based on WHO 2006 Growth Standards, while findings based on NCHS 1977 Growth Reference are reported in **Annex 5**.

Table 2: Definitions of acute malnutrition using weight-for-height and/or oedema in children 6–59 months

Categories of acute malnutrition	Percentage of median (NCHS Growth Reference 1977 only)	Z-scores (NCHS Growth Reference 1977 and WHO Growth Standards 2006)	Bilateral oedema
Global acute malnutrition	<80%	< -2 z-scores	Yes/No
Moderate acute malnutrition	<80% to \geq 70%	< -2 z-scores and \geq -3 z-scores	No
Severe acute malnutrition	>70%	> -3 z-scores	Yes
	<70%	< -3 z-scores	Yes/No

Table 3: Definitions of stunting using height-for-age in children 6–59 months

Categories of stunting	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Stunting	<-2 z-scores
Moderate stunting	<-2 z-score and \geq -3 z-score
Severe stunting	<-3 z-scores

Table 4: Definitions of underweight using weight-for-age in children 6–59 months

Categories of underweight	Z-scores (WHO Growth Standards 2006 and NCHS Growth Reference 1977)
Underweight	<-2 z-scores
Moderate underweight	<-2 z-scores and \geq -3 z-scores
Severe underweight	<-3 z-scores

Table 5: Classification of acute malnutrition based on MUAC in children 6 - 59 months (WHO)

Categories of Malnutrition	MUAC Reading
No Acute Malnutrition	> 13.5 cm
At risk of malnutrition	\geq 12.5 cm and <13.5 cm
Moderate malnutrition	\geq 11.5 cm and <12.5 cm
Severe malnutrition	< 11.5 cm

Prevalence of malnutrition children in 6 to 59 months old: Applying the UNHCR Strategic Plan for Nutrition and Food Security (2008-2012) nutrition target for the global acute malnutrition (GAM) for children aged 6 - 59 months is set at < 5% while for the severe acute malnutrition (SAM) is <1%. The WHO classifications on the severity of malnutrition among children aged 6 to 59 months were used in this report. Exclusion of z-scores from Observed mean SMART flags: WHZ -3 to 3; HAZ -3 to 3; WAZ -3 to 3

Table 6: Shows the severity of malnutrition based on the public health significance for children under 5 years of age (WHO 2000)

Prevalence %	Acceptable	Poor	Serious	Critical
Low weight-for-height	< 5	5-9	10-14	≥15
Low height-for-age	<20	20-29	30-39	≥40
Low weight-for-age	<10	10-19	20-29	≥30

Child enrolment in selective feeding programme for children 6-59 months: selective feeding programme coverage was assessed using the direct method as follows:

Coverage of SFP programme (%) =

$$100 \times \frac{\text{No. of surveyed children with MAM as per SFP admission criteria registered in SFP}}{\text{No. of surveyed children with MAM as per SFP admission criteria}}$$

Coverage of OTP programme (%) =

$$100 \times \frac{\text{No. of surveyed children with SAM as per OTP admission criteria registered in OTP}}{\text{No. of surveyed children with SAM as per OTP admission criteria}}$$

Infant and young child feeding practices were assessed among children aged 0 – 23 months old using the UNHCR - SENS **guidelines for refugee populations**

Table 7: Indicators for assessing infant and young child feeding practices

<p>Target group: Infant and young children aged < 24 months old</p> <p>Timely initiation of breastfeeding in children aged 0 – 23 months: Proportion of children born in the last 23.99 months who were put to the breast within one hour of birth. Children born in the last 24 months who were put to the breast within one hour of birth/ Children born in the last 23.99 months</p> <p>Exclusive breastfeeding under 6 months: Proportion of infants 0–5 months of age who were fed exclusively with breast milk: Infants 0–5.99 months of age who received only breast milk during the previous day/ Infants 0–5.99 months of age</p> <p>Continued breastfeeding at 1 year: Proportion of children 12–15 months of age who are fed breast milk. Children 12–15 months of age who received breast milk during the previous day/ Children 12–15 months of age</p> <p>Introduction of solid, semi-solid or soft foods: Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods. Infants 6–8.99 months of age who received solid, semi-solid or soft foods during the previous day/ Infants 6–8.99 months of age</p> <p>Continued breastfeeding at 2 years: Proportion of children 20–23 months of age who are fed breast milk. Children 20–23 months of age who received breast milk during the previous day/ Children 20–23.99 months of age</p> <p>Bottle feeding: Proportion of children 0-23 months of age who are fed with a bottle and nipple/teat Children 0–23 months of age who were fed with a bottle during the previous 24 hours/ Children 0–23.99 months of age</p>
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Anaemia in children 6 - 59 months and women of reproductive age, 15 - 45 years

The WHO classification on anaemia was used to define the anaemia levels of the study populations. UNHCR guideline on routine anaemia assessments excludes pregnant women due to difficulties related to determining the pregnancy gestational age as anaemia cut-offs for pregnant women should be adjusted depending on the gestational age.

Haemoglobin adjustment

The adjustment for altitude was based on the following equation:

$$\text{Hb adjustment} = 0.032 \times (\text{altitude} \times 0.0032808) + 0.022 \times (\text{altitude} \times 0.0032808)^2$$

The Hb adjustment is the amount subtracted from each individual's observed haemoglobin level. Use of the formula was preferred since it subtracted an exact amount of g/dl from the individual Hb based on the exact altitude rather than clumping a range of altitude's together and subtracting a value from the HB reading in individuals in that altitude range. The formula therefore subtracted 0.6, 0.4 and 1.0 g/dl from Kiziba, Nyabiheke and Gihembe refugee camps respectively.

Table 8: Definition of anaemia based on the WHO cut off (WHO 2000)

Age/Sex groups	Categories of Anaemia (Hb g/dL)			
	Total	Mild	Moderate	Severe
Children 6 - 59 months	<11.0	10.9 - 10.0	9.9 - 7.0	< 7.0
Non-pregnant adult females 15 - 49 years	<12.0	11.9 - 11.0	10.9 - 8.0	< 8.0

Anaemia data: UNHCR and Sphere standards aim to keep the prevalence of anaemia in children 6 - 59 months old (<11 g/dl haemoglobin) and women at reproductive age, 15 - 49 years (non pregnant <12.0 g/dl hemoglobin) that is below <20%. The severity of the public health situation applied in this study is based on the WHO criteria.

Table 9: WHO classification anaemia based on public health significance (WHO 2000)

Prevalence %	High	Medium	Low
Anaemia	≥40	20-39	5-19

Mortality

Crude Mortality Rate (CMR) was defined as an estimate of the rate at which members of the population die during a specified period. This is the number of deaths from all causes per 10,000 people per day.

Under Five Mortality Rate (U5MR) was defined as the number of deaths among children between birth and their fifth birthday expressed per 10,000 live births. This is the number of deaths from all causes per 10,000 of under five year old children per day.

$$\text{Crude death rate (CDR)} = 10,000/a * f / (b+f/2-e/2+d/2-c/2)$$

Where:

- a** = Number of recall days
- b** = Number of current household residents
- c** = Number of people who joined household during recall period
- d** = Number of people who left household during recall period
- e** = Number of births during recall period
- f** = Number of deaths during recall period

Table 10: Mortality benchmarks for defining crisis situations (NICS, 2010)

Crude death rate	Under 5 death rate	Definitions
> 1/10,000 / day	> 2/10,000 / day	‘very serious’
> 2 /10,000 /day	> 4 /10,000 /day	‘out of control’
> 5 /10,000 /day	> 10 /10,000 /day	major catastrophe’

Measles vaccination coverage: UNHCR and the Sphere standards recommend target coverage of 95% of children aged 9 to 59 months old in refugee camps.

Vitamin A supplementation coverage: UNHCR and the Sphere standards aim to reach at least 95% of the vitamin A supplementation coverage for children aged 6-59 months in refugee camps.

Diarrhoea in last 2 weeks in children aged 0 - 59 months old: An occurrence of diarrhoea was assessed based on three loose stools motions and above within a complete day. Mothers or guardians were asked if their child or children had diarrhoea in the past two weeks before the survey. They were also asked to explain the mode and practices including frequencies of feeding child or children when suffering from diarrhoea.

Water and Sanitation:

Table 11: UNHCR WASH Programme Standards

UNHCR Standard	Indicator
Average quantity of water available per person / day	≥ 20 liters
Latrine provision	20 people/latrine
Soap provision	> 250 g per person per month

3.7 Data analysis

Every day at the end of data collection, the supervisors verified all completed electronic data questionnaires in the android telephone. After verifications data were synchronized through a local server and downloaded in the laptop computer in excel. Data management was done using Epi-Info and ENA (Delta) SMART softwares. All outliers in anthropometry data were excluded from the analysis. The exclusion boundaries were based on the SMART flags as presented above from the observed results and means of WHZ, HAZ and WAZ were applied.

3.8 Survey ethics

A letter informing and seeking approval to conduct a nutrition survey was sent to MIDIMAR, the Ministry responsible for refugee affairs. Partners working in refugee camps were informed and series of preparatory meetings were conducted. Refugee leaderships in each camp were informed on the intent of the survey. Sensitizations sessions about the survey were conducted by CHW in each camp prior to the survey. The CHW explained the objectives of the survey, types of measurements and the importance of the survey to refugees whereas the camp management explained to refugee leaders who were further requested to pass the information to the refugees in their locations. Upon arrival at the household, the team leader introduced the team members, explained the purposes of the visit and finally sought consent to collect all data included in the survey. Where heads of households refused to participate in the survey, their decision was respected. Children aged 6-59 months with MUAC below 12.5cm were referred to the feeding centers for further assessments, children identified with bilateral oedema were verified by the supervisor prior referrals while those with haemoglobin concentrations below 7.0g/dL were referred to the feeding centres. Non pregnant women of reproductive age (15-49

years) with haemoglobin concentration below 8.0g/dL were also referred to the hospital for further management.

3.9 Limitations

- **Refugee movements outside the camps:** Households members move out of the camps in search of supplement activities. As the result not all 100% sampled households were actually interviewed however more than 88% of the target number of children was achieved which is acceptable according to UNHCR SENS Guidelines.
- **Questions on infant and young child feeding** particularly those referred to the “use of special nutritional products to reduce micronutrient deficiencies and malnutrition were not adequately responded because these products are not used in the operation yet. In the result presentations and discussions these indicators have been omitted. These questions should be omitted in future surveys where no special products are used.
- **Possession of vaccination cards:** Many children did not have their vaccination cards which would have used to confirm if children have received both vitamin A supplementation and measles vaccination shots. Now problem was even those that had their cards were not well documented / recorded. This may have affected the determination of the coverage for vitamin A supplementation and measles vaccinations.
- **Mortality:** During data collection phase it was deduced that no under 5 deaths was reported in all camps. It was not very clear to the survey teams if there had been no under5 year’s death. So it is likely that deaths may have been under reported, especially among children under-5.
- **Coverage of selective feeding programme:** Very small numbers of children enrolled in the selective feeding programme were sampled in the all camps. Due to poor documentations in children cards it was not possible to ascertain enrollments of children using cards. Therefore coverage was assessed by recall which may have affected responses by households’ members.
- **Food basket ration:** Very small proportion of households said that the monthly food ration distributed covers more than 75% of the intended distribution circle days. This question may be misrepresented because household members think that indicating low numbers of days may cause food to be increased.
- **Poor quality of age data for infant and young children, 0 – 59 months old:** The age records of the children are poor in the camps, no proper documentation of age, and birthdates in the three camps. Survey teams had to relay much on the recall responses to ascertain the age of the children. Teams used an age calendar to assists with age confirmation. Both weight for age and height for age results should be interpreted with cautions.

4.0 RESULTS GIHEMBE REFUGEE CAMP

The survey was conducted in three camps. Overall 1166 households were visited.

Table 12: Camp statistics for Kiziba, Nyabiheke and Gihembe camps, Rwanda, May 2012

Name of camp	Kiziba	Nyabiheke	Gihembe
Survey dates	May 2nd -5th	May 7-12th	May 14-18th
# of household selected	440	442	422
Actual # of household obtained	400	389	377
% response rate	90.9%	88.0%	89.30%

4.1 Anthropometric results (based on WHO standards 2006) presented at 95% Confidence Interval (C.I)

Table 13: Distribution of age and sex for Gihembe refugee camp, Rwanda, May 2012

AGE (mo)	Boys		Girls		Total		Ratio Boy: Girl
	no.	%	no.	%	no.	%	
6-17	26	45.6	31	54.4	57	22.1	0.8
18-29	27	52.9	24	47.1	51	19.8	1.1
30-41	31	50.0	31	50.0	62	24.0	1.0
42-53	28	43.8	36	56.3	64	24.8	0.8
54-59	17	70.8	7	29.2	24	9.3	2.4
Total	129	50.0	129	50.0	258	100.0	1.0

The age ratio of 6-29 months to 30-59 months: 0.72 slightly lower to the standard value of around 1.0. The age calculation was done by ENA upon entry of both the date of survey as well as the date of birth into the software. This implies therefore a more accurate exact date was obtained in months which can reliably be used to estimate the stunting and underweight prevalence.

Table 14: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Gihembe camp, Rwanda, May, 2012

Indicators	All n = 251	Boys n = 124	Girls n = 127
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(6) 2.4 % (1.1 - 5.1 95% C.I.)	(2) 1.6 % (0.4 - 5.7 95% C.I.)	(4) 3.1 % (1.2 - 7.8 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(6) 2.4 % (1.1 - 5.1 95% C.I.)	(2) 1.6 % (0.4 - 5.7 95% C.I.)	(4) 3.1 % (1.2 - 7.8 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 1.5 95% C.I.)	(0) 0.0 % (0.0 - 3.0 95% C.I.)	(0) 0.0 % (0.0 - 2.9 95% C.I.)

The prevalence of oedema is 0.0 %

Table 15: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema in Gihembe camp, Rwanda, May, 2012

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	53	0	0.0	2	3.8	51	96.2	0	0.0
18-29	49	0	0.0	1	2.0	48	98.0	0	0.0
30-41	61	0	0.0	2	3.3	59	96.7	0	0.0
42-53	64	0	0.0	1	1.6	63	98.4	0	0.0
54-59	24	0	0.0	0	0.0	24	100.0	0	0.0
Total	251	0	0.0	6	2.4	245	97.6	0	0.0

Table 16: Distribution of acute malnutrition and oedema based on weight-for-height z-scores in Gihembe camp, Rwanda, May, 2012

Indicator	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 0 (0.0 %)	Not severely malnourished No. 251 (100.0 %)

Figure 1: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population – Gihembe camp, Rwanda (May 2012)

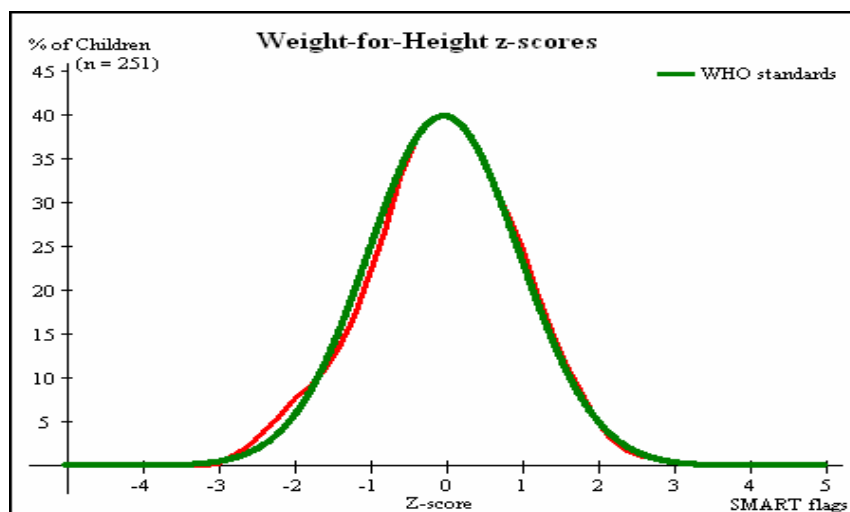


Table 17: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex in Gihembe camp, Rwanda, May, 2012

Indicator	All n = 257	Boys n = 128	Girls n = 129
At risk of malnutrition (≥ 125 mm and < 135 mm)	(13) 5.1 % (3.0 - 8.5 95% C.I.)	(6) 4.7 % (2.2 - 9.8 95% C.I.)	(7) 5.4 % (2.7 - 10.8 95% C.I.)
Moderate malnutrition (≥ 115 mm and < 125 mm)	(9) 3.5 % (1.9 - 6.5 95% C.I.)	(3) 2.3 % (0.8 - 6.7 95% C.I.)	(6) 4.7 % (2.1 - 9.8 95% C.I.)
Severe malnutrition (< 115 mm)	(4) 1.6 % (0.6 - 3.9 95% C.I.)	(3) 2.3 % (0.8 - 6.7 95% C.I.)	(1) 0.8 % (0.1 - 4.3 95% C.I.)

Table 18: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema in Gihembe camp, Rwanda, May, 2012

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (≥ 115 mm and < 125 mm)		Normal (≥ 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	57	4	7.0	6	10.5	47	82.5	0	0.0
18-29	51	0	0.0	3	5.9	48	94.1	0	0.0
30-41	61	0	0.0	0	0.0	61	100.0	0	0.0
42-53	64	0	0.0	0	0.0	64	100.0	0	0.0
54-59	24	0	0.0	0	0.0	24	100.0	0	0.0
Total	257	4	1.6	9	3.5	244	94.9	0	0.0

Table 19: Prevalence of underweight based on weight-for-age z-scores by sex in Gihembe camp, Rwanda, May, 2012

Indicator	All n = 254	Boys n = 125	Girls n = 129
Prevalence of underweight (< -2 z-score)	(39) 15.4 % (11.4 - 20.3 95% C.I.)	(14) 11.2 % (6.8 - 17.9 95% C.I.)	(25) 19.4 % (13.5 - 27.0 95% C.I.)
Prevalence of moderate underweight (< -2 z-score and ≥ -3 z-score)	(29) 11.4 % (8.1 - 15.9 95% C.I.)	(11) 8.8 % (5.0 - 15.1 95% C.I.)	(18) 14.0 % (9.0 - 21.0 95% C.I.)
Prevalence of severe underweight (< -3 z-score)	(10) 3.9 % (2.2 - 7.1 95% C.I.)	(3) 2.4 % (0.8 - 6.8 95% C.I.)	(7) 5.4 % (2.7 - 10.8 95% C.I.)

Table 20: Prevalence of underweight by age, based on weight-for-age z-scores in Gihembe camp, Rwanda, May, 2012

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	53	2	3.8	7	13.2	44	83.0	0	0.0
18-29	51	5	9.8	10	19.6	36	70.6	0	0.0
30-41	62	1	1.6	7	11.3	54	87.1	0	0.0
42-53	64	2	3.1	4	6.3	58	90.6	0	0.0
54-59	24	0	0.0	1	4.2	23	95.8	0	0.0
Total	254	10	3.9	29	11.4	215	84.6	0	0.0

Table 21: Prevalence of stunting based on height-for-age z-scores and by sex at 95% C.I in Gihembe camp, Rwanda, May, 2012

Indicator	All n = 249	Boys n = 126	Girls n = 123
Prevalence of stunting (<-2 z-score)	(92) 36.9 % (31.2 - 43.1)	(49) 38.9 % (30.8 - 47.6)	(43) 35.0 % (27.1 - 43.7)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(68) 27.3 % (22.2 - 33.2)	(38) 30.2 % (22.8 - 38.7)	(30) 24.4 % (17.7 - 32.7)
Prevalence of severe stunting (<-3 z-score)	(24) 9.6 % (6.6 - 13.9)	(11) 8.7 % (4.9 - 15.0)	(13) 10.6 % (6.3 - 17.2)

Table 22: Prevalence of stunting by age based on height-for-age z-scores in Gihembe camp, Rwanda, May, 2012

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	54	5	9.3	8	14.8	41	75.9
18-29	49	11	22.4	12	24.5	26	53.1
30-41	60	5	8.3	18	30.0	37	61.7
42-53	62	3	4.8	20	32.3	39	62.9
54-59	24	0	0.0	10	41.7	14	58.3
Total	249	24	9.6	68	27.3	157	63.1

Table 23: Mean z-scores, Design Effects and excluded subjects in Gihembe camp, Rwanda, May, 2012

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	251	-0.02±0.98	1.00	0	7
Weight-for-Age	254	-0.95±1.03	1.00	0	4
Height-for-Age	249	-1.59±1.10	1.00	0	9

* contains for WHZ and WAZ the children with oedema.

4.2 Mortality results (retrospective over 84 days prior to interview)

Table 24: Mortality rates in Gihembe camp, Rwanda, May, 2012

Demographic data	Numbers / Values
Number of HH surveyed	442
Observed average HH size	4.3
Observed % U5	13.9%
Retrospective mortality	
Number of current HH residents	1880
Total number U5	262
Number of people who joined HH / camp	33
Total number U5 who joined HH / camp	0
Number of people who left HH / camp	331
Total number U5 who left HH / camp	1
Number of births during recall	9
Number of deaths during recall	4
Total number U5 deaths during recall	0
Crude Death Rate (total deaths/10,000 people / day)	0.22 (0.09 - 0.56) at 95% C.I
U5 Death Rate (deaths in children under five/10,000 children under five / day)	0.00 (0.0 -1.63) at 95% C.I)

4.3 Children's morbidity

Three morbidity conditions were assessed in the last two weeks prior to the survey; diarrhoea, cough and fever, the three illnesses are linked with malnutrition.

Table 25: History of Illness based on symptom breakdown in the children in the last two weeks prior to interview at 95% C.I in Gihembe camp, Rwanda, May 2012

Illness	Frequency	6 - 59 months
Diarrhoea	194	75.5% (69.8-80.6)
Cough	83	32.2% (26.5-38.2)
Fever	138	53.5% (47.2-59.7)

4.4 Vaccination of measles and vitamin A supplementation results

The coverage of measles vaccinations among children aged 9 to 59 months and vitamin A supplementation to children aged 6 to 59 months in last 6 months were studied in the three camps.

Table 26: Vaccination coverage for measles for children 9 - 59 months old at 95% C.I (N =258) in Gihembe refugee camp, Rwanda, May, 2012

	Measles (with card)	Measles (with card or confirmation from mother)
YES	(174) 73.7 (67.6 – 79.2)	(233) 98.7% (96.3 – 99.7)

Table 27: Showing the Vitamin A supplementation coverage among children aged 6 - 59 months within last 6 months at 95% C.I (N =258) in Gihembe, Rwanda, May 2012

	Vitamin A supplementation (with card)	Vitamin A supplementation (with card or confirmation from mother)
YES	(47)18.4% (13.8 – 23.7)	(176) 68.8% (62.7 – 74.4)

4.5 Coverage of selective feeding programme

The survey also looked into the performance of the selective feeding programme, where mothers or guardians of the children were asked if their children were enrolled in the SFP or TFP. The survey wanted to deduce the coverage rates of the feeding programmes in the refugee camps.

Table 28: Nutrition treatment programme coverage based on all admission criteria (weight-for-height and oedema) at 95% C.I – Gihembe camp, Gihembe, May, 2012

	Number/Total	% (95% C.I.)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in therapeutic feeding programme*	13/52	25% (21.7-53.3)
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	36/94	38.2 (29.1 - 47.6)

* Weight for height flags were excluded

4.6 Prevalence of anaemia among under 6 -59 months old children and non-pregnant women at reproductive age (15-49 years)

Children aged 6 to 59 months and non pregnant women had their Hb assessed in this survey to determine prevalence of anaemia in the camps.

Table 29: Anaemia prevalence adjusted for altitude for children 6 to 59 months at 95% C.I in Gihembe refugee camp, Rwanda, May, 2012

Anaemia – Children aged 6 – 59 months old	N = 257
Total Anaemia (Hb <11 g/dl)	41.2% (35.2-47.5)
Mild (Hb 10-10.9)	19.5% (14.8-24.8)
Moderate (Hb 7-9.9)	21.8% (16.9-27.3)
Severe (Hb<7)	0.0%
Mean Hb±SD	11.1±1.4

Table 30: Prevalence of anaemia adjusted for altitude for children aged 6 to 23 months at 95% C.I in Gihembe refugee camp, Rwanda, May, 2012

Anaemia – Children aged 6 – 23 months old	N = 83
Total Anaemia (Hb <11 g/dl)	63.9% (52.6-74.1)
Mild (Hb 10-10.9)	33.7% (23.7-44.9)
Moderate (Hb 7-9.9)	30.1% (20.5-41.2)
Severe (Hb<7)	0.0%

Table 31: Women demographic characteristics in Gihembe refugee camp, Rwanda, May, 2012

Camp	N	Mean Age +_SD	Min	Max Age
Gihembe	219	28.3	15	49

Table 32: Prevalence of Infant and Young Child Feeding practices indicators at 95% C.I in Gihembe refugee camp, Rwanda, May 2012

Categories	N = 207
Total Anaemia (Hb <12 g/dl)	10.1% (6.4-15.0)
Mild (Hb 11-11.9)	9.1% (5.6-13.9)
Moderate (Hb 8-10.9)	1.0% (0.1-3.4)
Severe (Hb<8)	0.0%
Mean Hb	13.6±1.3

Table 33: Proportion of pregnant women enrolled in the Antenatal clinic received Iron-Folic acid tablets (15-49 years) at 95% C.I in Gihembe camp, Rwanda, May 2012

	Number/Total	% (95% CI)
Proportion of pregnant Women currently Enrolled in ANC program	5/10	50.0% (18.7-81.3)
Proportion of pregnant Women currently receiving Iron Folic tablets	5/10	50.0% (18.7-81.3)

4.7 Infant and young child feeding practices

Table 34: Prevalence of Infant and Young Child Feeding practices indicators at 95% C.I in Gihembe refugee camp, Rwanda, May 2012

	Age Range	N	Percent
Child Bottle Fed	0-23 Months	6/82	7.3% (4.9-9.7)
Child ever breastfed	0-23 Months	82	98.8% (93.5-100.0)
Child given infant formula	0-23 Months	2	2.4% (0.3-8.4)
Early initiation of breastfeeding	0-23 Months	58	70.7% (59.6-80.3)
Diarrhoea in the last two weeks (0-23.9 months) old children	0-23 Months	41	49.4% (38.2-60.6)
Exclusive Breast feeding	0-5 Months	16	69.6% (47.1-86.8)
Continued Breast feeding at 1 years	12-15 months	17/17	100.0%
Continued Breast feeding at 2 years	20-23 Months	11/15	73.3% (44.9-92.2)
Timely introduction of solid, semi-solid and soft foods	6-8 Months	3/21	14.3% (3.0-36.3)

4.8 Household level indicators on water, sanitation, hygiene and food security; Gihembe, Rwanda, May 2012

Sub sample of households were subjects for WASH and Food Security. Water, sanitation and hygiene have direct link with malnutrition while diet as a component of food security also have a direct link with malnutrition.

Table 35: The number and proportions of households interviewed for WASH in Gihembe refugee camp, Rwanda, May 2012

Camp	Number of Households
Gihembe	214

4.9 Water

Table 36: Main sources of water at 95% C.I in Gihembe refugee camp, Rwanda, May 2012

Main sources of water	Frequency	Percent
Improved water source	212	99.1% (96.7-99.9)
Unimproved water source	1	0.5% (0.0-2.6)

Table 37: The Amount of liters of water used per person per day at 95% C.I in Gihembe refugee camp, Rwanda, May 2012

Proportion of households that use	Households	Percent
<10	75	36.4% (29.8-43.4)
10-<15	65	31.6% (25.3-38.4)
15-<20	26	12.6% (8.4-17.9)
>20 liters	40	19.4% (14.2-25.5)

The table below shows, the main sources of water, possession of water containers by households, and the water quantities received or used by refugees.

Table 38: Water quantity and quality and utilization in Gihembe, Rwanda, May 2012

	Number/Total	% (95% CI)
Proportion of households that mentioned pipe water as their main source of drinking water	212/214	99.1% (96.7-99.9)
Proportion of households that say they have water containers to collect water	212/212	100%
Proportion of households that take less the 30min to collect their main drinking water	154/214	72.0% (65.4-77.9)
Proportions of household that said they are satisfied with the water supply	131/214	61.2% (54.3-67.8)

4.10 Sanitation and hygiene

Inadequate and poor sanitation facilities that are related to inadequate hygiene practices have been associated with prevalence of malnutrition. This survey assessed some households on using sanitation facilities and disposal human wastes at household level.

Table 39: Safe excreta disposal of human faeces at 95% C.I in Gihembe refugee camp, Rwanda, May 2012

Indicators	Number/total	% (95% C.I.)
Proportion of households using a communal toilet.	194/202	96.0%(92.3-98.3)
The proportion of households with children under three years old that dispose of faeces safely.	79/88	89.8% (81.5 – 95.2)

4.11 Food security

Table 40: The total number of households surveyed for food security in Gihembe camp, Rwanda, May 2012

Household data	Number of households surveyed
The total number of households surveyed for food security	213

Table 41: Ration card coverage and duration of general food ration at 95% C.I in Gihembe refugee camp, Rwanda, May 2012

Indicators	Number / Total	% (95% CI)
Proportion of households with a ration card	210/213	98.6% (95.9-99.7)
Proportion of households reporting that the GFD lasted >75% of the distribution cycle [23days or more]	14/213	6.7% (3.7-10.9)
Proportion of households reporting that the GFD lasted ≤75 of the distribution cycle [22days or less]	196/213	93.3% (89.1-96.3)
Average number of days the food ration lasts (Standard deviation or 95% CI)	16.6 days (range: min 11.8 days -max 21.4 days)	
Average duration (%) in relation to the theoretical duration of the ration*		55.3%

Table 42: The proportion of households reporting using the following coping mechanism strategies over the past month at 95% C.I in Gihembe camp, Rwanda, May 2012

	Number / total	% (95% CI)
Borrowed cash, food or other items without interest	117/213	54.9% (48.0-61.7)
Borrowed cash, food or other items with interest	118/213	55.4% (48.5-62.2)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	96/213	45.1% (38.3-52.0)
Requested increase remittances or gifts as compared to normal	28/213	13.1% (8.9-18.4)
Reduced the quantity and/or frequency of meals	191/213	89.7% (84.8-93.4)
Begged	11/213	5.2% (2.6-9.1)
Engaged in potentially risky or harmful activities	45/213	22.4(16.8-28.8)

4.12 Information on mosquito net ownership and utilization

Households' ownerships' of mosquito nets of all types and long lasting insecticide nets (LLINs) were studied. The other objective was to determine the utilization of nets of types and by the total population, children from age 0 to 59 months and pregnant women in the Gihembe camp. Also it aimed at determining the coverage of indoor residual spraying.

Table 43: Households surveyed on the mosquito net ownership and utilization in Gihembe camp, Rwanda, May 2012

Indicators	Percentages
Total households surveyed for mosquito nets	214
Proportion of households owning at least one mosquito net of any type	62.1% (55.3-68.7)
Proportion of household owning at least one LLIN	87.9%(80.8-93.1)
Proportions of children under 5 years who slept under net of any type	45.1%
Proportions of pregnant women who slept under net of any type	3.8%
Proportions of children under 5 years who slept under LLIN	38.4% (24.8 -57.3)
Proportions of pregnant women who slept under LLIN	3.8% (1.2- 8.6%)
Proportion of households covered by IRS	33.3% (27.0 – 40.1)

5.0 RESULTS NYABIHEKE REFUGEE CAMP

5.1 Anthropometric results (based on WHO standards 2006)

Table 44: Distribution of age and sex of sample in Nyabiheke camp, Rwanda, May 2012

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy:girl
6-17	45	57.7	33	42.3	78	23.2	1.4
18-29	24	34.3	46	65.7	70	20.8	0.5
30-41	32	41.0	46	59.0	78	23.2	0.7
42-53	29	42.0	40	58.0	69	20.5	0.7
54-59	18	43.9	23	56.1	41	12.2	0.8
Total	148	44.0	188	56.0	336	100.0	0.8

The age ratio of 6-29 months to 30-59 months: 0.79 slightly lower to the standard value of around 1.0. Age calculations was done for the three camps by the ENA software upon entry of the date of the survey and the date of birth, thereby giving more accurate age in months of the children. This can reliably be used for the determining the prevalence of stunting and underweight.

Table 45: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Indicators	All n = 330	Boys n = 143	Girls n = 187
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(10) 3.0 % (1.7 - 5.5)	(4) 2.8 % (1.1 - 7.0)	(6) 3.2 % (1.5 - 6.8)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(10) 3.0 % (1.7 - 5.5)	(4) 2.8 % (1.1 - 7.0)	(6) 3.2 % (1.5 - 6.8)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(0) 0.0 % (0.0 - 1.2)	(0) 0.0 % (0.0 - 2.6)	(0) 0.0 % (0.0 - 2.0)

The prevalence of oedema is 0.0 %

Table 46: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (>= -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	76	0	0.0	6	7.9	70	92.1	0	0.0
18-29	70	0	0.0	2	2.9	68	97.1	0	0.0
30-41	77	0	0.0	1	1.3	76	98.7	0	0.0
42-53	67	0	0.0	1	1.5	66	98.5	0	0.0
54-59	40	0	0.0	0	0.0	40	100.0	0	0.0
Total	330	0	0.0	10	3.0	320	97.0	0	0.0

Table 47: Distribution of acute malnutrition and oedema based on weight-for-height z-scores at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Indicator	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 0 (0.0 %)	Not severely malnourished No. 330 (100.0 %)

Figure 2: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population in Nyabiheke camp, Rwanda, May 2012

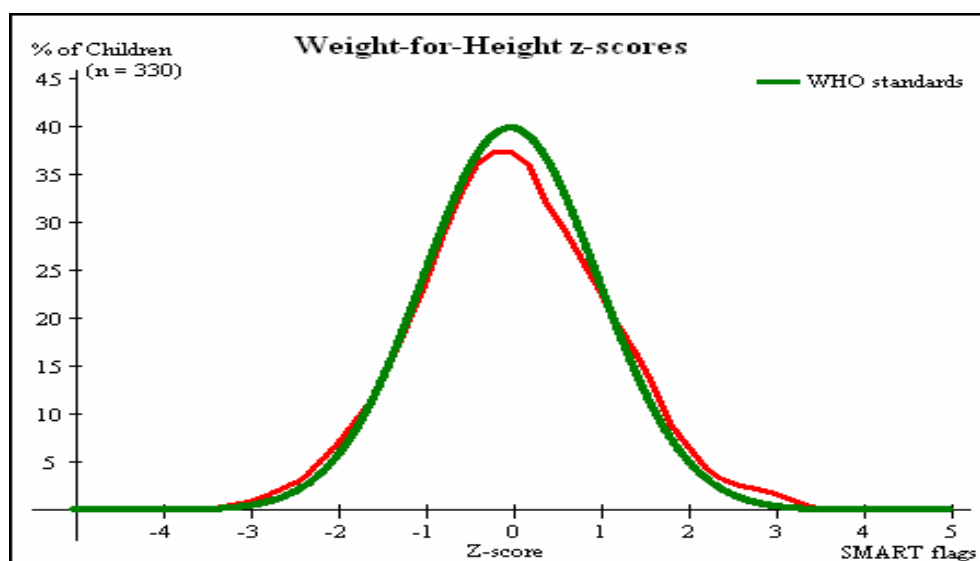


Table 48: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) and by sex at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Indicators	All n = 336	Boys n = 148	Girls n = 188
At risk of malnutrition (≥ 125 mm and < 135 mm)	(10) 3.0 % (1.6 - 5.4)	(1) 0.7 % (0.1 - 3.7)	(9) 4.8 % (2.5 - 8.8)
Moderate malnutrition (≥ 115 mm and < 125 mm)	(7) 2.1 % (1.0 - 4.2)	(1) 0.7 % (0.1 - 3.7)	(6) 3.2 % (1.5 - 6.8)
Severe malnutrition (< 115 mm)	(3) 0.9 % (0.3 - 2.6)	(0) 0.0 % (0.0 - 2.5)	(3) 1.6 % (0.5 - 4.6)

Table 49: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Age (mo) Total no.		Severe wasting (< 115 mm)		Moderate wasting (≥ 115 mm and < 125 mm)		Normal (≥ 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	78	3	3.8	4	5.1	71	91.0	0	0.0
18-29	70	0	0.0	2	2.9	68	97.1	0	0.0
30-41	78	0	0.0	1	1.3	77	98.7	0	0.0
42-53	69	0	0.0	0	0.0	69	100.0	0	0.0
54-59	41	0	0.0	0	0.0	41	100.0	0	0.0
Total	336	3	0.9	7	2.1	326	97.0	0	0.0

Table 50: Prevalence of underweight based on weight-for-age z-scores by sex at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Indicators	All n = 334	Boys n = 147	Girls n = 187
Prevalence of underweight (<-2 z-score)	(43) 12.9 % (9.7 - 16.9)	(18) 12.2 % (7.9 - 18.5)	(25) 13.4 % (9.2 - 19.0)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(37) 11.1 % (8.1 - 14.9)	(15) 10.2 % (6.3 - 16.2)	(22) 11.8 % (7.9 - 17.2)
Prevalence of severe underweight (<-3 z-score)	(6) 1.8 % (0.8 - 3.9)	(3) 2.0 % (0.7 - 5.8)	(3) 1.6 % (0.5 - 4.6)

Table 51: Prevalence of underweight by age, based on weight-for-age z-scores in Nyabiheke camp, Rwanda, May 2012

Age in months	Total numbers	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (>= -2 z score)	
		No.	%	No.	%	No.	%
6-17	77	2	2.6	10	13.0	65	84.4
18-29	69	0	0.0	7	10.1	62	89.9
30-41	78	1	1.3	9	11.5	68	87.2
42-53	69	1	1.4	9	13.0	59	85.5
54-59	41	2	4.9	2	4.9	37	90.2
Total	334	6	1.8	37	11.1	291	87.1

Table 52: Prevalence of stunting based on height-for-age z-scores and by sex at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Indicators	All; n = 328	Boys; n = 143	Girls; n = 185
Prevalence of stunting (<-2 z-score)	(119) 36.3 % (31.3 - 41.6)	(50) 35.0 % (27.6 - 43.1)	(69) 37.3 % (30.7 - 44.5)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(86) 26.2 % (21.8 - 31.2)	(34) 23.8 % (17.5 - 31.4)	(52) 28.1 % (22.1 - 35.0)
Prevalence of severe stunting (<-3 z-score)	(33) 10.1 % (7.3 - 13.8)	(16) 11.2 % (7.0 - 17.4)	(17) 9.2 % (5.8 - 14.2)

Table 53: Prevalence of stunting by age based on height-for-age z-scores at 95% C.I in Nyabiheke camp, Rwanda, May 2012

Age in months	Total number	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	75	6	8.0	14	18.7	55	73.3
18-29	69	7	10.1	25	36.2	37	53.6
30-41	77	13	16.9	22	28.6	42	54.5
42-53	67	4	6.0	17	25.4	46	68.7
54-59	40	3	7.5	8	20.0	29	72.5
Total	328	33	10.1	86	26.2	209	63.7

Table 54: Mean z-scores, Design Effects and excluded subjects in Nyabiheke camp, Rwanda, May 2012

Indicator	N	Mean z-scores \pm SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	330	0.00 \pm 1.07	1.00	2	4
Weight-for-Age	334	-0.85 \pm 1.02	1.00	0	2
Height-for-Age	328	-1.55 \pm 1.19	1.00	2	6

* contains for WHZ and WAZ the children with oedema.

5.2 Mortality results (retrospective over 86 days prior to interview)

Table 55: Demographic and retrospective mortality within camp in Nyabiheke camp, Rwanda, May 2012

Demographic data	Number / Values
Number of HH surveyed	442
Observed average HH size	4.6
Observed % U5	17.6%
Retrospective mortality	
Number of current HH residents	2036
Total number U5	360
Number of people who joined HH / camp	12
Total number U5 who joined HH / camp	1
Number of people who left HH / camp	283
Total number U5 who left HH / camp	0
Number of births during recall	9
Number of deaths during recall	2
Total number U5 deaths during recall	0
Crude Death Rate (total deaths/10,000 people / day)	0.10 (0.03-0.37) at 95% C.I
U5 Death Rate (deaths in children under five/10,000 children under five / day)	0.00 (0.00-1.19) at 95% C.I

5.3 Children's morbidity

Parents or guardians were asked if children have had episodes of either or all of the following three health conditions; diarrhoea, fever and cough in the past two weeks prior to the survey.

Table 56: History of Illness based on symptom breakdown in the children in the last two weeks prior to interview in Nyabiheke camp, Rwanda, May 2012

Illness	Frequency	6 - 59 months
Diarrhoea	152	45.2% (39.9-50.7)
Cough	143	42.6% (37.2-48.1)
Fever	125	37.2% (32.1-42.6)

5.4 Vaccination of measles and vitamin A supplementation results

Table 57: Vaccination coverage for measles for 9 - 59 months old children at 95% C.I, (N = 336) in Nyabiheke camp, Rwanda, May 2012

	Measles (with card)	Measles (with card or confirmation from mother)
YES	(152) 48.6% 942.9-54.2) (95% C.I.)	(292) 93.3% (89.8-95.7)

Table 58: Vitamin A supplementation coverage for 6 - 59 months old children with last 6 months at 95% C.I, (N = 336) in Nyabiheke camp, Rwanda, May 2012

	Vitamin A supplementation (with card)	Measles (with card or confirmation from mother)
YES	(77) 22.9% (18.6-27.9) (95% C.I.)	(204) 60.7% (55.3 – 66.0)

5.5 Coverage of selective feeding programme

Table 59: Nutrition treatment programme coverage based on admission criteria (weight-for-height and oedema) – Nyabiheke camp, Rwanda, May 2012

	Number /Total	% (95% C.I.)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in therapeutic feeding programme*	6/42	28.7 (21.7-37.3)
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	27/102	21.3 (16.9-25.6)

*Weight for height flags were excluded

5.6 Prevalence of anaemia among 6 – 59 months old and women at reproductive age (15-49 years)

Anaemia was assessed among children aged 6 – 59 months old and non pregnant women aged 15 to 49 years.

Table 60: Anaemia prevalence among children aged 6-59 months adjusted for altitude in Nyabiheke camp, Rwanda, May 2012

Anaemia – Children aged 6 to 59 months old	N = 334
Total Anaemia (Hb <11 g/dl)	43.4% (38.1-48.9)
Mild (Hb 10-10.9)	22.2% (17.9-27.1)
Moderate (Hb 7-9.9)	21.0% (16.8-25.8)
Severe (Hb<7)	0.3% (0.0-1.9)
Mean Hb±SD	11.1±1.5

Table 61: Prevalence of anaemia adjusted for altitude for 6 to 23 months old children in Nyabiheke refugee camp, Rwanda, May, 2012

Anaemia – Children aged 6 to 23 months old	N = 114
Total Anaemia (Hb <11 g/dl)	61.3% (51.5-70.4)
Mild (Hb 10-10.9)	30.6% (22.2-40.1)
Moderate (Hb 7-9.9)	30.6% (22.2-40.1)
Severe (Hb<7)	0.0%

Table 62: Women demographic characteristics in Nyabiheke camp, Rwanda, May 2012

Camp	N	Mean Age +_SD	Min	Max Age
Nyabiheke	213	28.1	15	48

Table 63: Antenatal clinic enrolment and iron-folic acid tablets coverage among pregnant women (15 - 49 years) in Nyabiheke camp, Rwanda, May 2012

Indicators	Number/Total	% (95% CI)
Proportion of Women currently Enrolled in ANC program	15/18	83.3% (58.6-96.4)
Proportion of Women currently receiving Iron Folic tablets	8/18	44.4% (21.5-69.2)

Table 64: Prevalence of anaemia adjusted for altitude for non-pregnant women of reproductive age 15 - 49 years in Nyabiheke camp, Rwanda, May 2012

Anaemia – Non-pregnant women of reproductive age 15 - 49 years	N = 194
Total Anaemia (Hb <12 g/dl)	17.5% (12.5-23.6)
Mild (Hb 11-11.9)	11.9% (7.7-17.3)
Moderate (Hb 8-10.9)	5.2% (2.5-9.3)
Severe (Hb<8)	0.5% (0.0-2.8)
Mean Hb	13.1±1.4

5.7 Infant and young child feeding practices

Table 65: Prevalence of Infant and Young Child Feeding practices indicators in Nyabiheke camp, Rwanda, May 2012

	Age Range	N	Percent
Child Bottle Fed	0-23 Months	9/113	7.9% (5.1-10.2)
Child ever breastfed	0-23 Months	112/113	99.1% (95.2-100.0)
Child given infant formula	0-23 Months	7/112	6.3% (2.5-12.5)
Early initiation of breastfeeding	0-23 Months	68/112	60.7% (51.0-69.8)
Diarrhoea in the last two weeks (0-23.9 months) old children	0-23 Months	64/113	56.6% (47.0-65.9)
Exclusive Breast feeding	0-5 Months	14/19	73.7% (48.8-90.9)
Continued Breast feeding at 1 years	12-15 months	24	96.0% (79.6-99.9)
Continued Breast feeding at 2 years	20-23 Months	23/25	92.0% (74.0-99.0)
Timely introduction of solid, semi-solid and soft foods	6-8 Months	5/23	21.7% (7.5-43.7)

5.8 Household-Level Indicators-Water, sanitation, hygiene and food security in Nyabiheke Refugee Camp, Rwanda, May 2012

Table 66: Total household interviewed for WASH in Nyabiheke camp, Rwanda, May 2012

Number of households interviewed for WASH	Number of households surveyed
Household data	201

5.9 Water

The table below shows, the main sources of water, possession of water containers by households, and the water quantities received or used by refugees.

Table 67: Main sources of water at 95% C.I in Nyabiheke refugee camp, Rwanda, May 2012

Main sources of water	Frequency	Percent
Improved water source	201	100%

Table 68: Water quantity and quality and utilization in Nyabiheke, Rwanda, May 2012

	Number/Total	% (95% CI)
Proportion of households that mentioned pipe water as their main source of drinking water	201	100.0%
Proportion of households that say they have water containers to collect water	201/201	100%
Proportion of households that take less the 30min to collect their main drinking water	170/201	84.6% (78.8-89.3)
Proportions of household that said they are satisfied with the water supply	133/201	66.2% (59.2-72.7)

Table 69: Water Quantity 1: Amount of liters of water used per person per day in Nyabiheke camp, Rwanda, May 2012

Proportion of households that access:	Number/Total	% (95% CI)
<10	99	51.0% (43.8-58.3)
10-<15	63	32.5% (25.9-39.6)
15-<20	10	5.2% (2.5-9.3)
>20 liters	22	11.3% (7.2-16.7)

5.10 Sanitation and hygiene

Table 70: Safe Excreta disposal in Nyabiheke refugee camp, Rwanda, May 2012

	Number/Total	% (95% CI)
Proportion of households using a communal toilet	201	100.0%
The proportion of households with children under three years old that dispose of feces safely.	99/101	98.0% (93.0-99.8)

5.11 Food security

Table 71: Households surveyed for food security in Nyabiheke camp, Rwanda, May 2012

Number of households interviewed for food security	Number of households surveyed
Household data	201

Table 72: Ration card coverage and duration of general food ration in Nyabiheke refugee camp, Rwanda, May 2012

	Number/Total	% (95% CI)
Proportion of households with a ration card	194/201	96.5% (93.0-98.6)
Proportion of households reporting that the GFD lasted >75% of the distribution cycle [23days]	17 / 201	8.8% (5.2-13.7)
Proportion of households reporting that the GFD lasted <75% of the distribution cycle [22days]	177 / 201	91.2% (86.3-94.8)
Average number of days the food ration lasts (Standard deviation or 95% CI)	16.6 days (range: min 11 -max 22.2) days	
Average duration (%) in relation to the theoretical duration of the ration*		55.3%

Table 73: Households reporting using the following coping strategies at 95% C.I over the past month in Nyabiheke camp, Rwanda, May 2012

	Number/Total	% (95% CI)
Borrowed cash, food or other items without interest	86/201	42.8% (35.8-49.9)
Borrowed cash, food or other items with interest	134 /201	66.7% (59.7-73.1)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	104 /201	51.7% (44.6-58.8)
Requested increase remittances or gifts as compared to normal	16/201	8.0% (4.6-12.6)
Reduced the quantity and/or frequency of meals	171 /201	85.1% (79.4-89.7)
Begged	11/201	5.5% (2.8-9.6)
Engaged in potentially risky or harmful activities	45 /201	22.4% (16.8-28.8)

5.12 Information on mosquito net ownership and utilization

Households' ownerships' of mosquito nets of all types and long lasting insecticide nets (LLINs) were studied. The other objective was to determine the utilization of nets of types and by the total population, children from age 0 to 59 months and pregnant women in the Nyabiheke camp. Also it aimed at determining the coverage of indoor residual spraying.

Table 74: Households surveyed on mosquito net ownership and utilization in Nyabiheke camp, Rwanda, May 2012

Indicators	Percentages
Total households surveyed for mosquito nets	201
Proportion of households owning at least one mosquito net of any type	57.2% (50.1-64.2)
Proportion of household owning at least one LLIN	79.4% (70.5 – 86.6)
Proportions of children under 5 years who slept under net of any type	53.9%
Proportions of pregnant women who slept under net of any type	8.7%
Proportions of children under 5 years who slept under LLIN	39.2%(25.1 – 59.4)
Proportions of pregnant women who slept under LLIN	6.1% (2.5 – 12.1)
Proportion of households covered by IRS	65.2%(58.2 – 71.7)

6.0 RESULTS KIZIBA REFUGEE CAMP

Table 75: Distribution of age and sex of sample in Kiziba camp, Rwanda, May 2012

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: Girl
6-17	27	46.6	31	53.4	58	22.2	0.9
18-29	25	44.6	31	55.4	56	21.5	0.8
30-41	27	45.0	33	55.0	60	23.0	0.8
42-53	30	50.0	30	50.0	60	23.0	1.0
54-59	15	55.6	12	44.4	27	10.3	1.3
Total	124	47.5	137	52.5	261	100.0	0.9

The age ratio of 6-29 months to 30-59 months: 0.78 slightly lower to the standard value of around 1.0. The age calculation was done by ENA upon entry of both the date of survey as well as the date of birth into the software. This implies therefore a more accurate exact date was obtained in months which can reliably be used to estimate the stunting and underweight prevalence.

6.1 Anthropometric results (based on WHO standards 2006)

Table 76: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex in Kiziba camp, Rwanda, May 2012

	All n = 253	Boys n = 119	Girls n = 134
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(8) 3.2 % (1.6 - 6.1)	(5) 4.2 % (1.8 - 9.5)	(3) 2.2 % (0.8 - 6.4)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(7) 2.8 % (1.3 - 5.6)	(4) 3.4 % (1.3 - 8.3)	(3) 2.2 % (0.8 - 6.4)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(1) 0.4 % (0.1 - 2.2)	(1) 0.8 % (0.1 - 4.6)	(0) 0.0 % (0.0 - 2.8)

The prevalence of oedema is 0.4 %

Table 77: Prevalence of acute malnutrition by age, based on weight-for-height z-scores and/or oedema in Kiziba camp, Rwanda, May 2012

Age (mo)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	56	0	0.0	5	8.9	50	89.3	1	1.8
18-29	55	0	0.0	1	1.8	54	98.2	0	0.0
30-41	58	0	0.0	0	0.0	58	100.0	0	0.0
42-53	58	0	0.0	0	0.0	58	100.0	0	0.0
54-59	26	0	0.0	1	3.8	25	96.2	0	0.0
Total	253	0	0.0	7	2.8	245	96.8	1	0.4

Table 78: Distribution of acute malnutrition and oedema based on weight-for-height z-scores 95% C.I in Kiziba camp, Rwanda, May 2012

Indicator	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 0 (0.0 %)	Not severely malnourished (100.0 No. 253 %)

Figure 3: Distribution of weight-for-height z-scores (based on WHO Growth Standards; the reference population is shown in green) of survey population compared to reference population – Kiziba camp, Rwanda, May 2012

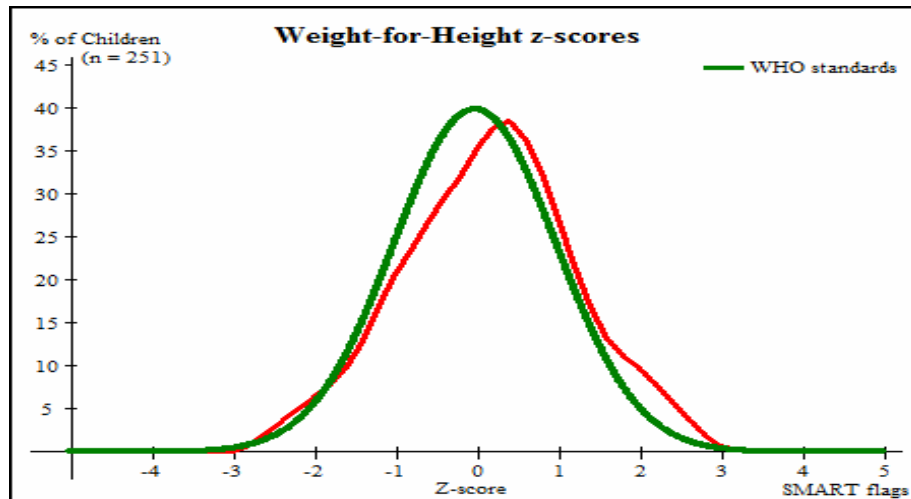


Table 79: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) 95% C.I and by sex in Kiziba camp, Rwanda, May 2012

Indicators	All; n = 261	Boys; n = 124	Girls; n = 137
At risk of malnutrition (≥ 125 mm and <135 mm)	(14) 5.4 % (3.2 - 8.8)	(5) 4.0 % (1.7 - 9.1)	(9) 6.6 % (3.5 - 12.0)
Moderate malnutrition (≥ 115 mm and <125 mm)	(11) 4.2 % (2.4 - 7.4)	(4) 3.2 % (1.3 - 8.0 95%)	(7) 5.1 % (2.5 - 10.2)
Severe malnutrition (< 115 mm)	(3) 1.1 % (0.4 - 3.3)	(1) 0.8 % (0.1 - 4.4)	(2) 1.5 % (0.4 - 5.2)

Table 80: Prevalence of acute malnutrition by age, based on MUAC cut off's and/or oedema 95% C.I in Kiziba camp, Rwanda, May 2012

Age (mo)	Total no.	Severe wasting (< 115 mm)		Moderate wasting (≥ 115 mm and < 125 mm)		Normal (≥ 125 mm)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	58	58	100.0	0	0.0	0	0.0	1	1.7
18-29	56	56	100.0	0	0.0	0	0.0	0	0.0
30-41	60	60	100.0	0	0.0	0	0.0	0	0.0
42-53	60	60	100.0	0	0.0	0	0.0	0	0.0
54-59	27	27	100.0	0	0.0	0	0.0	0	0.0
Total	261	261	100.0	0	0.0	0	0.0	1	0.4

Table 81: Prevalence of underweight based on weight-for-age z-scores 95% C.I by sex in Kiziba camp, Rwanda, May 2012

Indicators	All; n = 257	Boys; n = 122	Girls; n = 135
Prevalence of underweight (<-2 z-score)	(26) 10.1 % (7.0 - 14.4)	(10) 8.2 % (4.5 - 14.4)	(16) 11.9 % (7.4 - 18.4)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(18) 7.0 % (4.5 - 10.8 95)	(5) 4.1 % (1.8 - 9.2)	(13) 9.6 % (5.7 - 15.8)
Prevalence of severe underweight (<-3 z-score)	(8) 3.1 % (1.6 - 6.0)	(5) 4.1 % (1.8 - 9.2)	(3) 2.2 % (0.8 - 6.3)

Table 82: Prevalence of underweight by age, based on weight-for-age z-scores at 95% C.I. in Kiziba camp, Rwanda, May 2012

Age (mo)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	56	2	3.6	5	8.9	49	87.5	1	1.8
18-29	54	1	1.9	1	1.9	52	96.3	0	0.0
30-41	60	0	0.0	7	11.7	53	88.3	0	0.0
42-53	60	4	6.7	5	8.3	51	85.0	0	0.0
54-59	27	1	3.7	0	0.0	26	96.3	0	0.0
Total	257	8	3.1	18	7.0	231	89.9	1	0.4

Table 83: Prevalence of stunting based on height-for-age z-scores at 95% C.I and by sex in Kiziba camp, Rwanda, May 2012

Indicators	All n = 255	Boys n = 120	Girls n = 135
Prevalence of stunting (<-2 z-score)	(98) 38.4 % (32.7 - 44.5)	(43) 35.8 % (27.8 - 44.7)	(55) 40.7 % (32.8 - 49.2)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(64) 25.1 % (20.2 - 30.8)	(25) 20.8 % (14.5 - 28.9)	(39) 28.9 % (21.9 - 37.0.)
Prevalence of severe stunting (<-3 z-score)	(34) 13.3 % (9.7 - 18.1)	(18) 15.0 % (9.7 - 22.5)	(16) 11.9 % (7.4 - 18.4)

Table 84: Prevalence of stunting by age based on height-for-age z-scores at 95% C.I in Kiziba camp, Rwanda, May 2012

Age (mo)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (≥ -3 and <-2 z-score)		Normal (≥ -2 z score)	
		No.	%	No.	%	No.	%
6-17	58	5	8.6	11	19.0	42	72.4
18-29	53	4	7.5	21	39.6	28	52.8
30-41	58	11	19.0	17	29.3	30	51.7
42-53	59	9	15.3	12	20.3	38	64.4
54-59	27	5	18.5	3	11.1	19	70.4
Total	255	34	13.3	64	25.1	157	61.6

Table 85: Mean z-scores, Design Effects and excluded subjects at 95% C.I in Kiziba camp, Rwanda, May 2012

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	252	0.15±1.05	1.00	3	6
Weight-for-Age	257	-0.91±0.95	1.00	1	3
Height-for-Age	255	-1.74±1.11	1.00	1	5

* Contains for WHZ and WAZ and children with oedema.

6.2 Mortality results (retrospective over 90 days prior to interview)

Table 86: Demographic and retrospective mortality within camp in Kiziba camp, Rwanda, May 2012

Demographic data	Numbers / Values
Number of HH surveyed	440
Observed average HH size	4.4
Observed % U5	15.5%
Retrospective mortality	
Number of current HH residents	1977
Total number U5	307
Number of people who joined HH / camp	24
Total number U5 who joined HH / camp	0
Number of people who left HH / camp	387
Total number U5 who left HH / camp	2
Number of births during recall	16
Number of deaths during recall	9
Total number U5 deaths during recall	0
Crude Death Rate (total deaths/10,000 people / day)	0.46 (0.24 - 0.88) at 95% C.I)
U5 Death Rate (deaths in children under five/10,000 children under five / day)	0.00 (0.00-1.40) at 95% C.I)

6.3 Children's morbidity

Table 87: History of Illness based on symptom breakdown in the children in the last two weeks prior to interview at 95% C.I in Kiziba camp, Rwanda, May 2012

Illness	Frequency	6 - 59 months
Cough	157	60.4% (54.2-66.4)
Diarrhoea	130	50.0% (43.8-56.2)
Fever	118	45.4% (39.2-51.7)

6.4 Vaccination of measles and vitamin A supplementation results

Table 88: Vaccination coverage: measles for 9-59 months at 95% C.I in Kiziba camp, Rwanda, May 2012; N = 261

	Measles; (with card)	Measles; (with card or confirmation from mother)
YES	79.8% (74.1 – 84.6)	97.5% (94.7-99.1)

Table 89: The Vitamin A supplementation coverage among children aged 6 - 59 months within last 6 months at 95% C.I (N=261) in Kiziba refugee camp, Rwanda, May 2012

	Vitamin A; (with card)	Vitamin A; (with card or confirmation from mother)
YES	23.8% (18.8-29.5)	57.3% (51.0-63.4)

6.5 Coverage of selective feeding programme coverage

Table 90: Nutrition treatment programme coverage based on all admission criteria (weight-for-height and oedema) at 95% C.I - Kiziba camp, Rwanda, May, 2012

	Number/ Total	% (95% C.I.)
Proportion of children aged 6-59 months with severe acute malnutrition currently enrolled in therapeutic feeding programme*	12/32	37.5% (21.7-53.3)
Proportion of children aged 6-59 months with moderate acute malnutrition currently enrolled in supplementary feeding programme*	15/82	18.3% (10.9-25.6)

6.6 Prevalence of anaemia among 6 – 59 months old children and women at reproductive age (15-49 years)

Table 91: Prevalence of anaemia adjusted for altitude for children aged 6 to 59 months at 95% C.I in Kiziba camp, Rwanda, May 2012

Anaemia – Children aged 6 – 59 months old	N= 261
Total Anaemia (Hb <11 g/dl)	52.9% (46.6-59.1)
Mild (Hb 10-10.9)	27.6% (22.3-33.4)
Moderate (Hb 7-9.9)	23.8% (18.7-29.4)
Severe (Hb<7)	1.5% (0.4-3.9)
Mean Hb±SD	11.5±1.5

Table 92: Prevalence of anaemia adjusted for altitude for children aged 6 to 23 months at 95% C.I in Kiziba refugee camp, Rwanda, May, 2012

Anaemia – Children aged 6 – 23 months old	N = 85
Total Anaemia (Hb <11 g/dl)	68.2% (57.2-77.9)
Mild (Hb 10-10.9)	34.1% (24.2-45.2)
Moderate (Hb 7-9.9)	34.1% (24.2-45.2)
Severe (Hb<7)	0.0%

Table 93: Women demographic characteristics in Kiziba camp, Rwanda, May 2012

Camp	N	Mean Age _SD	Min	Max Age
Kiziba	171	28.1	15	49

Table 94: The prevalence of anaemia adjusted for altitude in non pregnant women in Kiziba camp at 95% C.I, Rwanda, May 2012

Non-pregnant women of reproductive age 15-49 years	N = 158
Total Anaemia (Hb <12 g/dl)	17.1% (11.6-23.9)
Mild (Hb 11-11.9)	15.2% (10.0-21.8)
Moderate (Hb 8-10.9)	1.3% (0.2-4.5)
Severe (Hb<8)	0.6% (0.0-3.5)
Mean Hb	13.3±1.3

Table 95: Antenatal clinic enrolment and iron-folic acid tablets coverage among pregnant women (15-49 years) at 95% C.I in Kiziba camp, Rwanda, May 2012

	Number/Total	% (95% CI)
Proportion of Women currently Enrolled in ANC program	10/14	71.4% (41.9-91.6)
Proportion of Women currently receiving Iron Folic tablets	4/14	28.6% (8.4-58.1)

6.7 Infant and young child feeding practices

Table 96: Prevalence of Infant and Young Child Feeding practices indicators at 95% C.I in Kiziba camp, Rwanda, May 2012

Feeding parameters	Age Range	N	Percent
Child Bottle Fed	0-23 Months	8/84	9.5% (6.3-11.2)
Child ever breastfed	0-23 Months	82/84	96.5% (90.0-99.3)
Child given infant formula	0-23 Months	5/84	6.0% (2.0-13.3)
Early initiation of breastfeeding	0-23 Months	53/82	64.6% (53.3-74.9)
Diarrhoea in the last two weeks (0-23.9 months) old children	0-23 Months	52/84	61.9% (50.7-72.3)
Exclusive Breast feeding	0-5 Months	26/30	86.7% (69.3-96.2)
Continued Breast feeding at 1 years	12-15 months	17	94.4% (72.7-99.9)
Continued Breast feeding at 2 years	20-23 Months	9/14	64.3% (35.1-87.2)
Timely introduction of solid, semi-solid and soft foods	6 – 8 months	4/17	23.5% (6.8-49.9)

6.8 Household-Level Indicators-Water, sanitation, hygiene and food security and in Gihembe Refugee Camp, Rwanda, May 2012

Table 97: The household interviewed for WASH in Kiziba camp, Rwanda, May 2012

Household data	Number of households surveyed
The total number of households surveyed for WASH	198

6.9 Water

Table 98: Main sources of water at 95% C.I in Kiziba refugee camp, Rwanda, May 2012

Main sources of water	Frequency	Percent
Improved water source	198	100%

The table below shows possession of water containers by households, and the water quantities received or used by refugees.

Table 99: Water quantity and quality and utilization

	Number/Total	% (95% CI)
Proportion of households that mentioned pipe water as their main source of drinking water	198/198	100%
Proportion of households that say they have water containers to collect water	198/198	100%
Proportion of households that take less the 30min to collect their main drinking water	196/198	99.0% (96.4-99.9)
Proportions of household that said they are satisfied with the water supply	196/198	99.0% (96.4-99.9)

Table 100: Water Quantity 1: Amount of liters of water used per person per day at 95% C.I in Kiziba camp, Rwanda, May 2012

Proportion of households that access:	Number/Total	% (95% CI)
<10	58/191	30.4% (23.9-37.4)
10-<15	42/191	22.0% (16.3-28.5)
15-<20	32/191	16.8% (11.8-22.8)
>20 liters	59/191	30.9% (24.4-38.0)

6.10 Sanitation and hygiene

Table 101: Safe Excreta disposal at 95% C.I in Kiziba refugee camp, Rwanda, May 2012

	Number/Total	% (95% CI)
Proportion of households using a communal toilet	152	100.0%
The proportion of households with children under three years old that dispose of feces safely.	73/81	90.1% (81.5-95.6)

6.11 Food security

Table 102: Total households surveyed for Food Security in Kiziba camp, Rwanda, May 2012

Number of households interviewed for food security	Number of households surveyed
Household data	199

Table 103: Ration card coverage and duration of general food ration at 95% C.I in Kiziba camp, Rwanda, May 2012

Indicators	Number/Total	Percent at 95% C.I
Proportion of households with a ration card	192/199	96.5% (92.9-98.6)
Proportion of households reporting that the GFD lasted >75% of the distribution cycle [23days]	9 / 199	4.7% (2.2-8.7)
Proportion of households reporting that the GFD lasted <75% of the distribution cycle [22days]	183 / 199	95.3% (91.3-97.8)
Average number of days the food ration lasts (Standard deviation or 95% CI)	17.1 days (range: min 12 -max 22.2) days	
Average duration (%) in relation to the theoretical duration of the ration*		57%

Table 104: Proportion of households reporting using the following coping strategies over the past month at 95% C.I in Kiziba camp, Rwanda, May 2012

Indicators	Number/Total	Percent at 95% C.I
Borrowed cash, food or other items without interest	96/199	48.2% (41.1-55.4)
Borrowed cash, food or other items with interest	120/199	60.3% (53.1-67.2)
Sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)	85/199	42.7% (35.7-49.9)
Requested increase remittances or gifts as compared to normal	35/199	17.6% (12.6-23.6)
Reduced the quantity and/or frequency of meals	176 /199	88.4% (83.2-92.5)
Begged	27 /199	13.6% (9.1-19.1)
Engaged in potentially risky or harmful activities (list activities)	75/199	37.7% (30.9-44.8)

6.12 Information on mosquito net ownership and utilization

Households' ownerships' of mosquito nets of all types and long lasting insecticide nets (LLINs) were studied. The other objective was to determine the utilization of nets of types and by the total population, children from age 0 to 59 months and pregnant women in the Kiziba camp. Also it aimed at determining the coverage of indoor residual spraying.

Table 105: Household interviewed on mosquito net ownership and utilization at 95% C.I in Kiziba camp, Rwanda, May 2012

Indicators	Percentages
Total households surveyed for mosquito nets	198
Proportion of households owning at least one mosquito net of any type	76.3% (69.7 - 82.0)
Proportion of household owning at least one LLIN	76.2% (68.6 – 82.7)
Proportions of children under 5 years who slept under net of any type	51.%
Proportions of pregnant women who slept under net of any type	9.3%
Proportions of children under 5 years who slept under LLIN	21.2%(15.0 – 28.6)
Proportions of pregnant women who slept under LLIN	6.6% (3.2 – 11.8)
Proportion of households covered by IRS	66.7% (59.6 – 73.2)

7.0 DISCUSSION

Overall 1,166 households were visited in the three refugee camps during the survey (400 Kiziba, 389 Nyabiheke and 377 Gihembe) the visited households were equivalent to 94.8%, 88.4% and 89.3% in Kiziba, Nyabiheke and Gihembe response rate respectively.

7.1 Anthropometric results (based on WHO standards 2006 at 95% C.I)

The global acute malnutrition rate (GAM) based on weight for height (WFH) Z - score for the three camps were below 5% denoting an acceptable prevalence based on the WHO cut off points of severity of malnutrition among under 5 years children despite the combination of food insecurity, unsafe environment and shortage of water, poor child care and infant and young child feeding practices (Table 10).

While acute malnutrition is within acceptable levels, the prevalence of stunting falls within a “serious” public health problem according to the WHO classifications of malnutrition levels (Table 10).

As it was anticipated malnutrition is seen to affect much younger children aged between 6 to 17 months. The prevalence of acute malnutrition tends to be higher among younger children across the camps. These findings supports the hypothesis that child care and infant and young child feeding coupled with inadequate complementary feeding in the camps may have some bearings to the poor nutritional status of youngest children.

The prevalence of underweight (<-2 z score) based on weight for age at 95% C.I is classified as “poor” based on the WHO public health significance for under 5 years of age. Comparing these findings from the 2008 underweight prevalence (z-scores) based on weight for age has significantly decreased in two camps of Nyabiheke and Kiziba.

Underweight denotes the complex interactions between acute malnutrition and chronic malnutrition in children below 5 years. It explains the role of acute malnutrition and the prolonged inadequate intake or ongoing hunger over a long time that affects linear growth of many children in the community.

The prevalence of global acute malnutrition based on mid upper arm circumference (MUAC) according to the findings were coherent with the weight for height Z – scores findings suggesting that MUAC can be used as an admission criterion in the feeding programme in Rwanda refugee camps.

7.2 Prevalence of anaemia in 6 – 59 months old and women aged 15 to 49 years

Anaemia is a micronutrient deficiency and the progression to anaemia is gradual over a long period of time. The anaemia rates in children are high exceeding the 40% WHO classification signifying a public health priority problem. It is important however to mention at this point that anaemia in women is below 20% and therefore of mild public health significance. As it was anticipated children have higher anaemia rates than non pregnant adult women. Based on the findings approximately 536 children were suffering from anaemia in all camps.

While the proportion of pregnant women (15-49 years) who were enrolled in the antenatal clinic at the time of the survey was relatively high in all camps, the proportion of women who were receiving “Iron Folic Acid” tablets were less than 50 percent in some of the camps. In one of the camp women who were receiving Iron and Folic Acid tablets at the time of the survey were even less than 30%, this challenges the efficiency of the Iron and Folic Acid tablets supplementation programme in these camps.

Findings on anaemia suggest that the youngest children are hard hit by anaemia. Affecting severely the cognitive development of the children, this further translates that children are deprived of fresh

food products especially vegetables and fruits. These levels of anaemia commands high attention to programmers in terms of food based interventions that are rich in vitamin A, C, B and hem iron.

Although the refugees in all the three camps have no access to land for farming, there are isolated cases of small backside gardening. However, it is worth noting that from our market visits in all the camps, refugees can access and afford to buy green vegetables that are iron rich. Similarly, seasonal fruits are available in the markets at relatively affordable prices. Vitamin C rich fruits are good media in the absorption of digested nutrients into the body and when this combine with iron rich vegetables, bioavailability of iron is assumed to improve.

The sale of food ration, fruits and vegetables were observed in the market as well which was assumed that although refugees sale / exchange their food relief with fresh locally available food commodities however the terms of exchange at the markets may be contributing to the reduced number of days of the food distribution circles.

Stunting is also a condition that commonly occurs among children under 2 years and become difficult to reverse after two years of age. Our assumption is that due to poor general feeding practices both stunting and anaemia in children develop. Infant and young child feeding practices seems to be poor with less than 70% of the children that are supposed to be on complementary feeding not being in timely complementary feeding of solid, semi solids and soft foods.

Another factor that we hypothesize to contribute to high anaemia level in children and not in women is that, women during pregnancy take benefit from the routine antenatal screening that manages to inform them of their haemoglobin status and treatment is provided if found to be anaemic, either through diet or therapy. The screening and mass iron therapy for women is not available in children below 5 years and a child will not be captured if he or she is anaemic unless they are severe and will require admission and transfusion.

On other hand, as explained in the methodology our anaemia results were adjusted for altitude. In high altitude there is high demand of oxygen supply to the tissue and this is compensated by production of more red blood cells that carries oxygen to the tissues. In high altitude areas, therefore people will exhibit high haemoglobin concentration and if this is not adjusted, then it becomes misleading. It is important to note that we compare the haemoglobin reading of these refugees with the international set cut-offs of haemoglobin concentration but little do we consider adjusting the cut off for altitude. The international cut offs are set based on haemoglobin readings at sea level. So in actual case, people who might be anaemic might end up not being captured as anaemic.

7.3 Retrospective mortality

Overall there were 15 deaths retrospectively reported by households surveyed in the last 90 days superseded the survey. However, households did not report any under 5 years death during the survey in all camps henceforth keeping the U5DR below the emergency thresholds of < 2 children U5 deaths per 10,000 per day. The survey did not look into the causes of these deaths; the place of deaths and whether medical services were sought before deaths because it is difficult to reliability collect that type of information in household-based surveys. On the other side, this study did not look into cultural believes related to discussing deaths with family members this is important particularly when all camps did not report any under5 death.

7.4 History of child morbidity based on symptoms

In this survey three illnesses were studied: diarrhoea, respiratory infections and fever, as these diseases are associated with malnutrition. Reported cases of cough, diarrhoea and fever in the last two weeks were alarmingly high in all the three camps. Overall, more than a third of all children had either one of the morbidity conditions studied. One of the contributing factors to the high reported morbidity

was the cold weather condition superseded the last two weeks prior and during the data collection period especially with cough and fever. Parents or guardians were asked if their children had suffered the above mentioned in the last two weeks superseded the survey, this was based on recall.

Although the proportion of household with children under 3 years that dispose faeces safely was very high, this assertions was challenged by the fact that more households reported that their children had episodes of diarrhoea two weeks prior the survey. High reported incidences of diarrhoea are supported by the communal sharing of toilets and inadequate water supplies at household level and at toilets which requires water to sweep the human wastes. On the other side water shortages in Gihembe camp is demonstrated with high reported cases of diarrhea, supporting the hypothesis that inadequate water supply and access to safe water could be one of the causes to poor hygiene practices.

It is likely that children stay in a state of illnesses with mild diarrhea, recurrent fever and respiratory tract infections for several weeks as a result there body nutrient requirement is increased to support the weak body immune functions. However poor child care and compromised infant and young child feeding too many of them have to stay for many weeks without adequately fed. Prolonged underfeeding may be responsible for the high stunting and underweight reported above.

7.5 Coverage of selective feeding programme

The coverage SPHERE standard recommend that the coverage of the TFP and SFP in refugee camps should be >90 per cent. During the month of May 2012, the Health Information System monthly reports indicated that TFP and SFP coverage rate based on admission criteria were 91% and 89% respectively across the camps. While the monthly coverage rates were impressive at the time of the survey, the survey found very low coverage rates in both TFP and SFP across the camps.

7.6 Measles vaccination coverage

This survey assessed measles vaccination coverage among children aged 9 – 59 months. Data were recorded from vaccination cards and through history or recall through parents or caregivers interviews.

Overall the coverage for measles vaccination in all camps is above the UNHCR set target in all camps. However, there were many children without cards or their cards were not recorded if they have receive measles vaccination with the result that a significant number of children had their measles vaccination confirmed by recall method. Recall responses are subject to bias in case the responded does not remember well or if the question is not properly asked. Therefore the high coverage of measles vaccinations reported in this report should be interpreted with caution.

7.7 Vitamin A supplementation

Vitamin A supplementation refers to the percentage of children ages 6-59 months old who received at least one high-dose vitamin A capsule in the previous six months. It is one of the derivatives of the ongoing child health programme in the camps. In the camps children aged 6-59 months receive high-dose of vitamin A at an interval of 6 months.

The findings indicate that vitamin A supplementation coverage has gone down compared to the Pre-JAM 2011 report. The camps coverage are even below 70% (an “effective coverage of vitamin A supplementation”).

The findings suggest that existing opportunities i.e. administration of measles vaccines to infants at around 9 months of age are not utilized to co-administer with the high single dose of vitamin A supplement to children. High coverage of measles vaccination above the 95% UNHCR target would have potentially benefited children if also vitamin A supplementation would have been administered at the same time with measles vaccination.

7.8 Infant and young child feeding practices

In this survey findings indicated that, the proportions of infants with early initiation of breastfeeding for children aged 0-23 months, which is children born in the last 24 months who were put to the breast within one hour of birth, did not exceed 75% across the camps. Monthly hospital deliveries are above 90% across the camps. This indicates that better efforts could be made by service providers to encourage mothers to immediately initiate breastfeeding while still in the health facilities in the camps.

Exclusive breastfeeding under 6 months, infants 0-5 months of age who received only breast milk during the previous day, was high only in Kiziba camp with 86.7%. Continued breastfeeding for children aged 12 months who actually had received breast milk during the previous day were impressively high ranging from 94.4% in Kiziba to 100 % in Gihembe. These high prevalence of continued breastfeeding among children under 1 year was also supported with high prevalence of children ever breastfed that were born in the last 24 months prior to this survey. An important findings from the study related to IYCF is that bottle feeding is widely practiced in the camps especially in Nyabiheke camp. Bottle feeding increases children morbidity and its subsequent mortality due to high possibilities of poor hygiene related to cleaning of the bottle and nipples. In the camps poor handling and disposals of children faeces below 3 years, absence of adequate water supplies in the communal latrines to wash after using the latrines and sweeping of the human waste after using the latrines increases the spread of fecal materials to human.

7.9 Household food security and coping mechanism

More than 95% of the refugee households that were interviewed for food security issues possesses a food ration card, and very few families (< 10.0%) reported that the food ration received lasts for more than 75% of the circle days (23 days or more). Refugees cited that the food ration was not enough to cover for the entire 30 days of the distribution circle. Food ration is given to relatives / neighbors who happen to run out of food with an understanding that they will give it back in the next distribution.

In order to cover for the remaining days before the next food distribution and also supplementing other non food items that are not regularly distributed in the general distributions, refugee households employ a variety of coping mechanisms. It was reported that the most frequently used coping mechanism in the camps was to reduce quantity and/or frequency of meals, followed by borrowing cash, food or other items without interest, and a high number of the refugees engage in potentially risky or harmful activities as one of their coping mechanisms. Other coping mechanisms reported included request to increase remittance or gifts as compared to normal and begging. Improved livelihood opportunities might be an ideal approach in solving / reducing these high levels of harmful coping mechanisms.

7.10 Water and sanitation

7.10. 1 Water

Almost all refugee households collect water from the piped water sources in the three camps. This implies that households “always” receive improved treated water (chlorinated) for domestic use and that majority of the households take less than 30 minutes to collect their main water for drinking. However, the proportion of households that uses ≥ 20 liters of water for domestic consumption in all camps were just one third in one camp while in the other two were less than one third. When households were asked to give their opinions on drinking water if they were satisfied, Nyabiheke and Gihembe had the lowest rates where only two third of the households were satisfied.

Although majority of the refugee households reported to collect their main water for drinking in less than 30 minutes, this assertion is not supported with the low proportions of households that uses ≥ 20 liters of water per day in the camps. Long queues and intermittent release of water were seen to

increase the waiting time at the water points, this was more critical in Gihembe followed by Nyabiheke. In Gihembe camp water trucking was also seen to be undertaken during the survey. In the three camps many water taps were found damaged, a situation that may contribute to long queues and increased waiting time. Long queues translates to inadequate water supplies and less water available for hygiene related usages.

7.10.2 Sanitation and Hygiene

Ideally, many of the communal latrines (dischargeable latrines) are designed in such a way that when someone uses the facility, he/she will be able to pour some water to the latrine to sweep away any human waste deposited. This was however not the case in many of the latrines visited during the survey as there were no water available to many of the communal latrines that were visited. It is therefore logical to assume that the sub-standard management and use of the latrine facilities, contributed to infection and contamination of food and water at the household levels. On the other hand, observations made in the camp suggest contrary to the findings that there is high proportion of household with children under 3 years old that dispose feces safely. Human wastes (feces) were seen in the camps, this suggested that many children defecate in the open despite interviewed households claiming that they dispose children's feces safely. The notion that feces of children are safe is likely to be one of the major causes of food and water contaminations with fecal materials in many households in the camps. During the survey period household members who participated in the focus group discussions were also informed that collecting and putting children feces in the latrines was one of the preferred safe disposal method that is likely to ensure protection of the household environment from fecal contamination.

7.11 Information on mosquito net ownership and utilization

The survey examined the retention rate and utilization of mosquito nets among households. Findings indicated that the proportions of households owning at least one mosquito net of any type ranged from 57.2% in Nyabiheke to 76.3% in Kiziba. About 50% of the proportions of children under 5 years sampled had slept under net of any type while below 40% of them had slept under LLIN across the camps. Pregnant women who had slept under the LLIN were less than 7% across the camps.

About in door residual spraying household, 66.7% and 65.2% in Kiziba and Nyabiheke reported that their households were sprayed against mosquito. In Gihembe only about 33.3% of the households reported to have been sprayed. Only one third of the houses in Gihembe reported to have been sprayed against mosquito, this number is very low when compared to the other camps. It is important to the service providers to investigate as to why Gihembe has very low IRS coverage. Future IRS exercises should workout better strategies in order to achieve an effective coverage of IRS in Gihembe camp.

8.0 CONCLUSION

The high prevalence of stunting (chronic malnutrition) and anaemia are evidence that “hunger” and absence of adequate complementary food with micronutrients are serious public health nutrition problems in the camps. Since stunting is linked to human poverty and reduced productivity, these high rates of chronic malnutrition informs also that refugees in these camps have had a dwindled livelihood opportunities. Stunting reflects the cumulative effects of inadequate food intake and poor health conditions that result from chronic poverty. Anaemia prevents mental development, interferes with linear and potential growth in young children and future human capitals.

Majority of the children below 2 years are hard hit by stunting and anaemia showing poor maternal nutrition and IYCF practices. Programme managers and decision makers are required to continue designing programs that will reverse the current levels of stunting. Stunting is correlated with poor dietary intake, poor services related to water, sanitation and hygiene that support high infections over burdening the already constrained health system in the camps. Since stunting is an intergenerational problem, from the mother to the new born baby it is also fair to agree that the current mothers in the camps are likely to have grown up in the camps where services and assistances related to water, sanitation, hygiene have never been met. In this refugee operation livelihood opportunities among refugee populace have remained low.

High prevalence of reported diarrhoea cases during breastfeeding period for children aged 6 -23 months is an indication that frequencies of breastfeeding are reduced when children are suffering from diarrhoea. It is therefore essential that exclusively breastfed infants / continued breastfed children with diarrhoea should be breastfed with increased frequency, which should often prevent dehydration. In event children suffering from diarrhoea become dehydrated, rehydration therapy may be required following the WHO recommendations.

Prevention of measles, the ongoing measles vaccination programme remains one of an essential programme in combating all forms of protein energy malnutrition and vitamin A deficiency. The provision of vitamin A supplements to children under 5 years at high risk of contracting measles (i.e. children in camps) and anaemia is recommended particularly in refugee populations where risks associated with micronutrient deficiencies are high. In this context, distribution of high single dose of vitamin A at the time of measles vaccination is particularly relevant; however from the findings this was not supported. Although this study did not look into the coverage of the de-worming programme it worth mentioning that refugee children are systematically de-wormed every six months. However, with the high prevalence of anaemia among children this programme need to be monitored in conjunctions with the above mentioned interventions.

Programme responses to prevent malaria continue to be essential in these camps although malaria is not a leading cause of morbidities. Malaria results into loss of red blood which in turn causes anemia. Programmes related to prevention of malaria and anaemia need to be intensified which may include prevention intestinal worms infestations and distribution of long lasting insecticide treated bed nets to children, pregnant and lactating women.

While the food pipeline has remained healthy since the beginning of the new PPRO, survey findings indicate that many refugee households are not satisfied with the food basket and the food does not cover the days of the food distribution circles. Implementation of the safety nets recommended in the 2011 WFP / UNHCR JAM may further support the household food security.

9.0 RECOMMENDATIONS

The recommendations provided herewith are prioritized into three levels:

Immediate recommendations

1. Maintain the current stability of the general food basket distributed monthly to the refugee population where population receives; 2103 kilocalories, with 68% of the energy supplied by carbohydrate, 12% by protein and 20% by fats
2. Improve the daily management and implementation of selective feeding programmes
3. Implement camp nutrition sentinel surveillance with identification of malnourished children through monthly MUAC screening of children aged 6 – 59 months old.
4. Promote, protect and support IYCF activities by increasing awareness among pregnant and lactating women, which includes the importance of exclusive breastfeeding and the negative consequences of bottle feeding; improve the performance of mother to mother group supports.
5. Improve routine preventive child health services especially provision of vitamin A supplementation and measles immunization and de-worming among children aged 6-59 months
6. Improve water supplies in Gihembe and Nyabiheke camps where the water per capita is below the UNHCR recommended water intake of 20 liters per person per day.
7. Train the health and nutrition staff on anaemia detection and treatment and ensure that measurement and testing materials for assessing anaemia are provided adequately.
8. Strengthen coordination, monitoring and evaluation activities related to nutrition and food security entities in the camps

Medium term recommendations

1. Strengthen the implementation of the anaemia strategy in the reduction, control and treatment of anaemia.
2. Scale up activities related to infant and young child feeding practices and child care in the camps
3. Investigate the causes of the high prevalence of anaemia, stunting and the low coverage of SFP and OTP and design sustainable nutrition interventions to reduce high prevalence of anaemia and stunting while also increasing the coverage of SFP and OTP.
4. Train the Community Nutrition Workers (Nutrition animators) on the feeding guidelines in order to improve their performance on the referrals through the outreach system of identified malnourished children and uptake of nutrition programme services by the refugee community.
5. Train the community nutrition workers on community based nutrition activities that includes: cooking demonstrations on the preparation of porridge from CSB ++, support families on child care and IYCF and kitchen gardening
6. Implement a consolidated information, education and communication interventions geared toward prevention and reduction of stunting and anaemia among children

Long term recommendations

1. Improve the quality of the general food ration of the population by re-instating fortified food item as part of the general ration; create sustainable livelihood opportunities where refugees will be self reliant hence access fresh food products.
2. Improve the sanitation through reducing toilet/ household ratio, and provision of in built water storage tanks at latrines to allow sweeping of human waste and provision of soap for hand washing.
3. Distribute basic non food items; distribute water containers and distribute long lasting insecticide treated nets and continue distributing firewood and kitchen utensils in order to meet the UNHCR recommended standards.

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11 Annexes

a) Annex 1 - Names of contributors

List of data collection teams

Team 1

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b) Annex 2: Plausibility check for: KIZIBA REFUGEE CAMP

WHO standards 2006

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	
(% of in-range subjects)			0	5	10	20	0 (2.3 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	0 (p=0.421)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	0 (p=0.971)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	2 (6)
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	
			0	2	4	10	2 (10)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	
			0	2	6	20	0 (1.05)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	0 (-0.06)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	0 (-0.25)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	
			0	1	3	5	0 (p=)
Timing	Excl	Not determined yet					
			0	1	3	5	
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	4 %

At the moment the overall score of this survey is 4 %, this is excellent.

Percentage of values flagged with SMART flags: WHZ: 2.3 %, HAZ: 2.3 %, WAZ: 1.2 %

Age ratio of 6-29 months to 30-59 months: 0.78 (The value should be around 1.0).

Statistical evaluation of sex and age ratios (using Chi squared statistic):

The data are expressed as observed number/expected number (ratio of obs/expect)

Overall sex ratio: p = 0.421 (boys and girls equally represented)

Overall age distribution: p = 0.971 (as expected)

Overall age distribution for boys: p = 0.877 (as expected)

Overall age distribution for girls: p = 0.940 (as expected)

Overall sex/age distribution: p = 0.623 (as expected)

Digit preference Weight:

Digit Preference Score: **6** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Digit preference Height:

Digit Preference Score: **10** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Digit preference MUAC:

Digit Preference Score: **36** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Evaluation of Standard deviation, Normal distribution, using the 3 exclusion (Flag) procedures

	no exclusion	exclusion from	exclusion from
	reference mean	observed mean	
	(WHO flags)	(SMART flags)	

WHZ

Standard Deviation SD: 1.22 1.17 1.05

(The SD should be between 0.8 and 1.2)

Prevalence (< -2)

observed: 3.9% 3.9% 2.8%

calculated with current SD: 3.8% 3.4% 2.0%

calculated with a SD of 1: 1.5% 1.6% 1.6%

HAZ

Standard Deviation SD: 1.35 1.20 1.11

(The SD should be between 0.8 and 1.2)

Prevalence (< -2)

observed: 35.4% 34.9% 35.4%

calculated with current SD: 39.5% 36.5% 37.5%

calculated with a SD of 1: 36.0% 34.0% 36.1%

WAZ

Standard Deviation SD: 1.02 1.02 0.95

(The SD should be between 0.8 and 1.2)

Prevalence (< -2)

observed: 8.9% 8.9% 8.9%

calculated with current SD: 12.1% 12.1% 12.1%

calculated with a SD of 1: 11.6% 11.6% 12.1%

c)Annex3: Plausibility check for: NYABIHEKE REFUGEE CAMP

Standard/Reference used for z-score calculation: WHO standards 2006

Overall data quality

Criteria	Flags*	Unit	Excl.	Good	Accept	Problematic	Score
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	
(% of in-range subjects)			0	5	10	20	0 (1.2 %)
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	4 (p=0.029)
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)			0	2	4	10	0 (p=0.802)
Dig pref score - weight	Incl	#	0-5	5-10	10-20	>20	
			0	2	4	10	2 (6)
Dig pref score - height	Incl	#	0-5	5-10	10-20	>20	
			0	2	4	10	4 (13)
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	
			0	2	6	20	0 (1.07)
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	0 (0.08)
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
			0	1	3	5	0 (0.02)
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	
			0	1	3	5	0 (p=)
Timing	Excl		Not determined yet				
			0	1	3	5	
OVERALL SCORE WHZ =			0-5	5-10	10-15	>15	10 %

At the moment the overall score of this survey is 10 %, this is good.

Percentage of values flagged with SMART flags: WHZ: 1.2 %, HAZ: 1.8 %, WAZ: 0.9 %

Age distribution: Age ratio of 6-29 months to 30-59 months: 0.79 (The value should be around 1.0).

Statistical evaluation of sex and age ratios (using Chi squared statistic):

The data are expressed as observed number/expected number (ratio of obs/expect)

Overall sex ratio: p = 0.029 (significant excess of girls)

Overall age distribution: p = 0.802 (as expected)

Overall age distribution for boys: p = 0.160 (as expected)

Overall age distribution for girls: p = 0.425 (as expected)

Overall sex/age distribution: p = 0.005 (significant difference)

Digit preference Weight: Digit Preference Score: **6** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Digit preference Height: Digit Preference Score: **13** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Digit preference MUAC: Digit Preference Score: **36** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Evaluation of Standard deviation, Normal distribution, using the 3 exclusion (Flag) procedures

	no exclusion	exclusion from	exclusion from
	reference mean	observed mean	
	(WHO flags)	(SMART flags)	

WHZ

Standard Deviation SD:	1.15	1.11	1.07
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	3.9%	3.9%	3.0%
calculated with current SD:	4.2%	3.8%	3.0%
calculated with a SD of 1:	2.3%	2.4%	2.3%

HAZ

Standard Deviation SD:	1.41	1.32	1.23
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	34.7%	34.8%	34.8%
calculated with current SD:	34.1%	33.8%	33.2%
calculated with a SD of 1:	28.2%	29.1%	29.6%

WAZ

Standard Deviation SD:	1.06	1.06	1.02
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	13.1%	13.1%	12.6%
calculated with current SD:	13.3%	13.3%	12.1%
calculated with a SD of 1:	11.9%	11.9%	11.7%

d) Annex 4: Plausibility check for: GIHEMBE REFUGEE CAMP

Standard/Reference used for z-score calculation: WHO standards 2006

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	Score
Missing/Flagged data	Incl	%	0-2.5	>2.5-5.0	>5.0-10	>10	
(% of in-range subjects)	0	5	10	20	5	(2.7 %)	
Overall Sex ratio	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)	0	2	4	10	0	(p=0.950)	
Overall Age distrib	Incl	p	>0.1	>0.05	>0.001	<0.000	
(Significant chi square)	0	2	4	10	0	(p=0.555)	
Dig pref score - weight	Incl	#	0-5	5-10	10-20	> 20	
	0	2	4	10	2	(7)	
Dig pref score - height	Incl	#	0-5	5-10	10-20	> 20	
	0	2	4	10	2	(10)	
Standard Dev WHZ	Excl	SD	<1.1	<1.15	<1.20	>1.20	
	0	2	6	20	0	(0.98)	
Skewness WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
	0	1	3	5	0	(-0.11)	
Kurtosis WHZ	Excl	#	<±1.0	<±2.0	<±3.0	>±3.0	
	0	1	3	5	0	(-0.09)	
Poisson dist WHZ-2	Excl	p	>0.05	>0.01	>0.001	<0.000	
	0	1	3	5	0	(p=)	
Timing	Excl		Not determined yet				
	0	1	3	5			
OVERALL SCORE WHZ =	0-5	5-10	10-15	>15	9	%	

At the moment the overall score of this survey is 9 %, this is good.

Percentage of values flagged with SMART flags: WHZ: 2.7 %, HAZ: 3.5 %, WAZ: 1.6 %

Age distribution: Age ratio of 6-29 months to 30-59 months: 0.72 (The value should be around 1.0).

Statistical evaluation of sex and age ratios (using Chi squared statistic):

The data are expressed as observed number/expected number (ratio of obs/expect)

Overall sex ratio: p = 0.950 (boys and girls equally represented)

Overall age distribution: p = 0.555 (as expected)

Overall age distribution for boys: p = 0.785 (as expected)

Overall age distribution for girls: p = 0.139 (as expected)

Overall sex/age distribution: p = 0.069 (as expected)

Digit preference Weight: Digit Preference Score: **7** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Digit preference Height: Digit Preference Score: **10** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Digit preference MUAC: Digit Preference Score: **38** (0-5 good, 5-10 acceptable, 10-20 poor and > 20 unacceptable)

Evaluation of Standard deviation, Normal distribution using the 3 exclusion (Flag) procedures

	no exclusion	exclusion from	exclusion from
		reference mean	observed mean
		(WHO flags)	(SMART flags)

WHZ

Standard Deviation SD: 1.18 1.13 0.98

(The SD should be between 0.8 and 1.2)

Prevalence (< -2)

observed: 4.3% 3.9%

calculated with current SD: 5.0% 4.1%

calculated with a SD of 1: 2.6% 2.5%

HAZ

Standard Deviation SD: 1.34 1.27 1.13

(The SD should be between 0.8 and 1.2)

Prevalence (< -2)

observed: 33.9% 33.3% 33.1%

calculated with current SD: 36.0% 34.1% 32.6%

calculated with a SD of 1: 31.5% 30.1% 30.5%

WAZ

Standard Deviation SD: 1.16 1.11 1.03

(The SD should be between 0.8 and 1.2)

Prevalence (< -2)

observed: 14.1% 13.7% 13.5%

calculated with current SD: 17.2% 15.6% 14.2%

calculated with a SD of 1: 13.6% 13.1% 13.4%

Annexes 5: Result Tables for NCHS growth reference 1977

Table 106: Prevalence of acute malnutrition based on weight for height z – scores (and / or oedema by sex NCHS growth reference 1977) at 95 % C.I in refugee camps in Rwanda, May 2012

		Gihembe	Kiziba	Nyabiheke
All	n	254	253	330
Prevalence of global acute malnutrition	(n) %	(7) 2.8 %	(9) 3.6 %	(10) 3.0 %
(<-2 z-scores and/or oedema)	(95%CI)	(1.4 - 5.7)	(1.9 - 6.6)	(1.7 - 5.5)
Prevalence of moderate acute malnutrition	(n) %	(6) 2.4 %	(7) 2.8 %	(10) 3.0 %
(<-2 and □-3 z-scores, no oedema)	(95%CI)	(1.1 - 5.1)	(1.3 - 5.6)	(1.7 - 5.5)
Prevalence of severe acute malnutrition	(n) %	(1) 0.4 %	(2) 0.8 %	(0) 0.0 %
(<-3 z-score and/or oedema)	(95%CI)	(0.1 - 2.2)	(0.2 - 2.8)	(0.0 - 1.2)

Table:107: Prevalence of underweight based on weight for age z-scores (and / or oedema and by sex - NCHS growth reference 1977)) at 95% C.I in refugee camps in Rwanda, May 2012

		Gihembe	Kiziba	Nyabiheke
All	n	252	256	333
Prevalence of underweight	(n) %	(34) 13.5 %	(23) 9.0 %	(42) 12.6 %
(<-2 z-scores)	(95%CI)	(9.8 - 18.3)	(6.1 - 13.1)	(9.5 - 16.6)
Prevalence of moderate underweight	(n) %	24) 9.5 %	(16) 6.3 %	(36) 10.8 %
(<-2 and □-3 z-scores)	(95%CI)	(6.5 - 13.8)	(3.9 - 9.9)	(7.9 - 14.6)
Prevalence of severe underweight	(n) %	(10) 4.0 %	(7) 2.7 %	(6) 1.8 %
(<-3 z-score)	(95% I)	(2.2 - 7.1)	(1.3 - 5.5)	(0.8 - 3.9)

Table 108: Mean z-score values (NCHS Reference 1977) in children aged 6-59 months, design effects and included and excluded subjects

	Camp	Total	Mean z-scores ± S.D.	Design Effect (z-score < -2)	z-scores not available	z-scores out of range
Weight-for-Height	Gihembe	249	-0.02±0.98	1	2	7
	Nyabiheke	330	0.00±1.07	1	2	4
	Kiziba	251	0.15±1.05	1	4	6
Weight-for-Age	Gihembe	252	-0.89±1.03	1	2	4
	Nyabiheke	333	-0.81±1.02	1	0	3
	Kiziba	256	-0.85±0.95	1	2	3
Height-for-Age	Gihembe	248	-1.49±1.13	1	1	9
	Nyabiheke	328	-1.46±1.23	1	2	6
	Kiziba	254	-1.64±1.11	1	1	6

Table 109: Prevalence of stunting based on height for age z-scores (and / or oedema and by sex- NCHS growth reference 1977)) at 95% C.I in refugee camps in Rwanda, May 2012

		Gihembe	Kiziba	Nyabiheke
All	n	248	254	328
Prevalence of stunting	(n) %	(82) 33.1 %	(90) 35.4 %	(114) 34.8 %
(<-2 z-scores)	(95%CI)	(27.5 - 39.1)	(29.8 - 41.5)	(29.8 - 40.1)
Prevalence of moderate stunting	(n) %	(63) 25.4 %	(59) 23.2 %	(82) 25.0 %
(<-2 and □-3 z-scores)	(95%CI)	(20.4 - 31.2)	(18.5 - 28.8)	(20.6 - 30.0)
Prevalence of severe stunting	(n) %	(19) 7.7 %	(31) 12.2 %	(32) 9.8 %
(<-3 z-score)	(95%CI)	(5.0 - 11.7)	(8.7 - 16.8)	(7.0 - 13.4)

Annex 6 : UNHCR Standardised Expanded Nutrition Survey (SENS) Questionnaire

Greeting and reading of rights: Indamukanyo no gusomerwa uburenganzira

THIS STATEMENT IS TO BE READ TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSE BEFORE THE INTERVIEW. DEFINE A HOUSEHOLD AS A GROUP OF PEOPLE WHO LIVE TOGETHER AND ROUTINELY EAT OUT OF SAME POT. DEFINE HEAD OF HOUSEHOLD AS MEMBER OF THE FAMILY WHO MANAGES THE FAMILY RESOURCES AND IS THE FINAL DECISION MAKER IN THE HOUSE.

IYI NYANDIKO IGOMBA GUSOMERWA UMUKURU W'INZU , CYANGWA YABA ADAHARI, IGASOMERWA UNDI MUNTU MUKURU MBERE YO KUBAZWA.

Hello, my name is _____ and I work with [organisation/institution]. We would like to invite your household to participate in a survey that is looking at the nutrition and health status of people living in this camp. **Muraho, nitwa..... nkaba nkorana na UNHCR/WFP. Twifuzaga gusaba inzu yanyu ko yakwitabira ibarura ku mirire n`ubuzima by`abantu baba muri iyi nkambi**

- UNHCR is sponsoring this nutrition survey.

Iri barura ku mirire riterwa inkunga na UNHCR

- Taking part in this survey is totally your choice. You can decide to not participate, or if you do participate you can stop taking part in this survey at any time for any reason. If you stop being in this survey, it will not have any negative effects on how you or your household is treated or what aid you receive.

Kuryitabira ni ubushake bwawe/amahitamo yawe. Ushobora guhitamo kutaryitabira, cg igihe uryitabiriye ushobora kubireka igihe icyari cyose kubwimpamvu iyariyo yose. Igihe uhagaritse kwitabira iri barura, ntangaruka zitari nziza bizakugiraho cg kuburyo mwitabwagaho cg ku mfashanyo mwabonaga.

- If you agree to participate, I will ask you some questions about your family and I will also measure the weight and height of all the children in the household who are older than 6 months and younger than 5 years In addition to these assessments, I will test a small amount of blood from the finger of the children and women to see if they have anaemia.

Niba wemeye kuryitabira, ndakubaza ibibazo ku muryango wanyu ndanapima ibiro n`uburebure bw`abana bose bafite hejuru y`amezi 6 n`abafite muni y`imyaka 5 byiyongera kuri iri barura, turanapima amaraso makeya yo murutoki y`abana n`abagore kugirango turebe ko bafite ikibazo cy`ubuke bw`amaraso.

- Before we start to ask you any questions or take any measurements, we will ask you to state your consent on this form. Be assured that any information that you will provide will be kept strictly confidential.

Mbere yuko dutangira kubabaza cg gupima ibipimo ibyaribyo byose, twifuzaga ko muduha uburenganzira. Tubijeje ko amakuru muri buduhe azaba ari ibanga.

- You can ask me any questions that you have about this survey before you decide to participate or not.

Ushobora kubaza ikibazo icyaricyo cyose ufite kuri iri barura mbere yuko wemera cyangwa uhakana

- If you do not understand the information or if your questions were not answered to your satisfaction, do not declare your consent on this form. Thank you.

Nimba utumvishe neza cg ikibazo cyawe kitashubijwe uko ubyifuzza, ntutange uburenganzira bwo kubazwa ibiri kuri uru rupapuro. Urakoze.

FOOD SECURITY: 1 questionnaire per household (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE MAIN CARETAKER WHO IS RESPONSIBLE FOR COOKING THE MEALS)

Section code / number: _____ Block code / number: _____ Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (in cluster survey only)
_ _ / _ _ / _ _ _ _	_ _
Team Number	HH Number
_	_ _

	No	QUESTION	ANSWER CODES	
	SECTION FS1			
RCARD	FS1	Does your household have a ration card? Ese muri iyi nzu mwaba mufite ikarita muhererwaho amafunguro?	Yes (yego)..... No (Oya).....	_ _ IF ANSWER IS 1 GO TO FS3
NRCARD	FS2	Why do you not have a ration card? Kuki mutayifite?	Not given one at registration Ntayo twahawe mugihe cyo kwibaruza Lost card yaratakaye Traded card Narayigurishije/nayitije bampa amafaranga Not registered but eligible.... Ntabwo nibaruje ariko ndayemerewe Not eligible (not in targeting criteria) Ntabwo nyemerewe Other Indi mpamvu	_ _ GO TO FS4
GFDLAST	FS3	How many days did the food from the general ration from the [insert] cycle of [insert] month last? Amafunguro/ ibiryo muhabwa bimara iminsi ingaha uherye igihe (ukwezi) mwabihereweho kugeza muhawe ibindi?	INSERT DAYS Uzuzamo iminsi	_ _
BORWOINT	FS4	In the last month, have you or anyone in your household borrowed cash, food or other items without interest? Mu kwezi gushize waba cg undi uwariwe wese muri iyi nzu yarigeze kuguza amafaranga, ibyo kurya cg ikindi kintu icyaricyo cyose nta nyungu?	Yes (Yego)..... No (Oya).....	_ _

BORWINT	FS5	In the last month, have you or anyone in your household borrowed cash, food or other items with interest? Mu kwezi gushize waba cg undi uwariwe wese muri iyi nzu yarigeze kuguza amafaraga, ibyo kurya cg ikindi kintu icyaricyo cyose n`inyungu?	Yes (yego)..... No (Oya).....	<input type="checkbox"/>
SOLDASS	FS6	In the last month, have you or anyone in your household sold any assets (furniture, seed stocks, tools, other NFI, livestock etc.)? Mu kwezi gushize, waba cg undi uwariwe wese yarigeze agurisha igikoresho icyo aricyo cyose (ibikoresho byo murugo, imbuto zo gutera, udukoresho duto duto, ibindi bintu bitari ibiribwa, amatungo)?	Yes (Yego)..... No (Oya).....	<input type="checkbox"/>
REQREM	FS7	In the last month, have you or anyone in your household requested increased remittances or gifts as compared to normal? Mu kwezi gushize, waba cg undi uwariwe wese yarigeze asaba kwongererwa imfashanyo y` amafaranga aturuka hanze cg impano ugereranyije n` ibisanzwe?	Yes (Yego)..... No (Oya).....	<input type="checkbox"/>
REDQUANT	FS8	In the last month, have you or anyone in your household reduced the quantity and/or frequency of meals? Mu kwezi gushize, waba cg undi uwariwe wese muri iyi nzu yarigeze agabanya ingano cg inshuro by` amafunguro?	Yes (Yego)..... No (Oya).....	<input type="checkbox"/>
BEGGED	FS9	In the last month, have you or anyone in your household begged?	Yes (Yego)..... No (Oya).....	<input type="checkbox"/>
HARMACT	FS10	In the last month, have you or anyone in your household engaged in potentially risky or harmful activities such as: [Add list of local illegal activities] Mu kwezi gushize, waba cg undi uwariwe wese muri iyi nzu waba yarigeze gukor igikorwa kitemewe n`amategeko kugirango abone ibyo kurya cg ibindi bikoresho by`ibanze?	Yes (Yego)..... No (Oya).....	<input type="checkbox"/>
CHILD14	FS11	Do you have one or more children 14 years of age or younger currently living in the household? Waba ufite abana cg umwana ufite imyaka 14 cyangwa muni yayo mukibana?	Yes (Yego)..... No (Oya).....	<input type="checkbox"/> IF ANSWER IS 2 GO TO SECTION FS2

CHILDWORK	FS12	In the last month, have you or anyone in your household sent your child or children of 14 years of age or younger to work outside the household in order to get cash or in-kind goods or services? Mu kwezi gushize, waba cg undi uwo ariwe wese yarohereje abana cg umwana ufite imyaka 14 cyangwa muni yayo gukorera amafaranga cg ibindi bintu?	Yes (Yego)..... No (Oya).....	<input type="checkbox"/>
	SECTION FS2			
	FS13	Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. I am interested in whether you or anyone else in your household had the item even if it was combined with other foods. Ubu ndifuzza ku kubaza ku bwoko bw` ibiribwa wariye cg undi uwo ariwe wese muri iyi nzu yaariye ejo hashize ku manywa na nijoro. READ THE LIST OF FOODS AND DO NOT PROBE. PLACE A <i>ONE</i> IN THE BOX IF ANYONE IN THE HOUSEHOLD ATE THE FOOD IN QUESTION, PLACE A <i>ZERO</i> IN THE BOX IF NO ONE IN THE HOUSEHOLD ATE THE FOOD. Adapt list to local setting before survey The list that is provided below is an example The text highlighted in bold grey needs to be deleted from the final survey questionnaire		
FAIDCEREAL		1A. Food aid cereals: Any wheat, corn/maize or any foods made from these (e.g. bread, porridge) Imfashanyo y` ibinyampeke: Kawunga, impungure (ibigori).		1A..... <input type="checkbox"/>
NFAIDCEREAL		1B. Non-food aid cereals: Any rice, sorghum, millet or any other grains or foods made from these (e.g. bread, noodles, porridge or other grain products) + <i>insert local foods e.g. ugali, nshima, porridge or paste</i> Ibinyampeke bitari iby` imfashanyo: Umuceri, amasaka, ingano, uburo n` ubundi bwoko ubwaribwo bwose bw` ibiribwa bikomaka kuri ibi binyampeke (igikoma cy` amasaka, umutsima).		1B..... <input type="checkbox"/>
WROOTS		2. White roots and tubers: Any green bananas, lotus root, parsnip, plantains, white potatoes, white yam, white cassava, or other foods made from roots Ibinyamafufu n` ibinyabijumba: ibitoki, ibirayi, ibikoro, imyumbati, amateke, ibijumba n` ibindi bibikomokaho.		2..... <input type="checkbox"/>
VITAVEG		3A. Vitamin A rich vegetables and tubers: Any carrot, pumpkin, squash, or sweet potato that are orange inside + other locally available vitamin A rich vegetables (e.g. red sweet pepper) Imboga n` ibinyabijumba bikungahaye kuri vitamine A: karoti, ibijumba by` umuhondo, urusenda rwa Kamurari.		3A..... <input type="checkbox"/>

GLEAVES
 OVEG
 VITAFRUIT
 OFRUIT
 ORGMEAT
 MEAT
 EGGS
 FISH
 FAIDLEG

3B. Dark green leafy vegetables: Any dark green leafy vegetables, including wild forms + locally available vitamin A rich leaves such as amaranth, arugula, cassava leaves, kale, spinach

3B.....|__|

Imboga rwatsi: izo arizo zose harimo n`izakimeza. Dodo; isombe; epinari, isogi, ibisusa.

3C. Other vegetables: Any other vegetables (e.g. bamboo shoots, cabbage, green pepper, tomato, onion, eggplant, zucchini) + *other locally available vegetables*

3C.....|__|

Izindi mboga: amashu, puwavuro, inyanya, igitunguru, intoryi, n`izindi mboga.

4A. Vitamin A rich fruits: Any mango (ripe, fresh and dried), cantaloupe melon (ripe), apricot (fresh or dried), ripe papaya, passion fruit (ripe), dried peach, and 100% fruit juice made from these + *other locally available vitamin A rich fruits*

4A.....|__|

Imbuto zikungahaye kuri vitamine A: imyembe, ipapayi, amatunda, imitobe ikomoka kuri izi mbuto.

4B. Other fruits: Any other fruits such as apple, avocados, banana, coconut flesh, lemon, , including wild fruits and 100% fruit juice made from these

4B.....|__|

Izindi mbuto: pome, avoka, imineke, indium, inanasi n`imitobe izikomokaho.

5A. Organ meat: Any liver, kidney, heart or other organ meats or blood-based foods

5A.....|__|

Inyama zo munda: umwijima, impyiko, umutima n`izindi nyama zo munda.

5B. Flesh meats: Any beef, goat, lamb, mutton, pork, rabbit or other large wild (bush meat) or domesticated mammals, chicken, duck, or other wild or domesticated birds, cane rat, guinea pig, rat, agouti or other small wild (bush meat) or domesticated mammals, frogs, snakes, and other reptiles
 Insects

5B.....|__|

Inyama z`umubiri: inyama z`inka, ihene, intama, ingurube, inyama y`urukwavu, inyama y`inkoko, imbata cg indi nyoni yororerwa mu rugo cyangwa ziba mu ishyamba.

6. Eggs: Any eggs from chicken, duck, guinea fowl or any other egg
Amagi: amagi y`inkoko, imbata, n`andi magi ayariyo yose

6.....|__|

7. Fish and seafood: Any fresh or dried fish, canned fish (anchovies, tuna, sardines), or shellfish

7.....|__|

Amafi: amafi asanzwe mabisi cg yumye, isambaza, indugu, indagara amafi yo mu makopo (sardine)

8A. Food aid legumes, nuts and seeds: Any dried beans or foods made from these.

8A.....|__|

Ibinyamisogwe n`imbuto by`imfashanyo: ibishyimbo byumye, amashaza

<p style="text-align: center;">NFAIDLEG MILK FAID OIL NFAIDOI L SWEETS SWEETS SWEETS SWEETS</p>		<p>8B. Non-food aid legumes, nuts and seeds: Any dried peas, lentils, nuts, seeds or foods made from these (eg. hummus, peanut butter) Ibinyamisogwe n`imbuto bitari imfashanyo: amashaza, ubunyobwa n`ibibikomoka ho.</p> <p>9. Milk and milk products: Any milk, infant formula, cheese, yogurt or other milk products (e.g. kiefel) Amata n`ibiyakomokaho: amata ayariyo yose, amata y`abana, foromaje, yawurute, n`ibindi bikomoka ku mata.</p> <p>10A. Food aid oils and fats: Vegetable oil Imfashanyo y`amavuta: amavuta akomoka ku bimera</p> <p>10B. Non food aid oils and fats: Any oil, fats, ghee or butter added to food or used for cooking Amavuta atari ayimfashanyo: ayariyo yose, amavuta y`inka yo kwongera cg guteka ibiryo.</p> <p>11. Sweets: Any sugar, honey, sweetened soda or sweetened juice drinks, sugary foods such as chocolates, candies, cookies, sweet biscuits and cakes Ibiryohera: isukali, ubuki, imitobe irimo isukali, shokola, bombo, amandazi, ibisuguti, keke.</p> <p>12. Spices, condiments, beverages: Any spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages Ibirungo, ibinyobwa: Urusenda, umunyu, ikawa, icyayi, ibisindisha</p>	<p>8B..... _ </p> <p>9..... _ </p> <p>10A..... _ </p> <p>10B..... _ </p> <p>11..... _ </p> <p>12..... _ </p>
<p style="text-align: center;">FAIDFORTBLEND</p>	<p>FS14</p>	<p>Food aid fortified blended food: Have you or anyone else in your household eaten CSB or any food made from these yesterday during the day and at night? Imfashanyo y`ibiribwa byongewemo intungamubiri: waba cg undi uwariwe wese mu nzu yanyu yarigeze arya CSB /SOSOMA cg indi ndryo iyariyo yose ikomoka kuri ubu bwoko bw`ibiribwa, ejo hashize ku mankwa cyangwa nijoro?</p>	<p>Yes....1 No.....2 DK.....8</p> <p style="text-align: right;"> _ </p>

WASH: 1 questionnaire per household (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE MAIN CARETAKER OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD)

Section code / number: _____ Block code / number: _____ Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (in cluster survey only)
_ _ / _ _ / _ _ _ _	_ _
Team Number	HH Number
_	_ _

	No	QUESTION	ANSWER CODES
	SECTION WS1		
HHSIZE	WS1	How many people live in this household? Iyi nzu igizwe n'abantu bangahe?	_ _
SOURCE	WS2	What is the <i>main</i> source of drinking water for members of your household? Ni hehe abagize iyi nzu bakura amazi yo kunywa? Adapt list to local setting before survey DO NOT READ THE ANSWERS SELECT ONE ONLY (NTUMUSOMERE IBISUBIZO AHUBWO HITAMO GUSA IKIJYANYE N'ICYO AGUSHUBIJE)	Piped water Amazi ya robine Public tap/standpipe..... Robine rusange Tubewell/borehole (& pump) Amazi Protected dug well Iriba ritunganyije Protected spring Isoko ritunganyije Rain water collection= amazi y'imvura..06 UNHCR Tanker = itanki ya UNHCR Unprotected spring Isoko ridatunganyije Unprotected dug well..... Iriba ridatunganyije Small water vendor= abacuruzi bato Tanker truck= ku modoka itwara amazi Bottled water= amazi apfundikiye mu macupa Surface water (e.g. river, pond) = amazi atemba(imigezi,ibiyaga) Other= ahandi hose Don't know= Simbizi
TIME_C	WS3	How long does it usually take you to go to your main water source, get water, and come back? Bigufata igihe kingana iki	RECORD THE NUMBER OF MINUTES IF KNOWN (RECORD 000 IF ON PREMISE AND 998 IF UNKNOWN) _ _ _ _ Minutes

			SUPERVISOR TO SELECT ONE ONLY On premises <input type="checkbox"/> Less than 30 minutes..... More than 30 minutes Don't know	
SATISFY	WS4	Are you satisfied with the water supply? Amazi yo kunywa abageraho ubona ahagije? THIS RELATES TO THE DRINKING WATER SUPPLY	Yes Yego <input type="checkbox"/> No oya Other ibindi	
TOILET	WS5	What kind of toilet facility does this household use? Ni ubuhe bwoko bw'umugarane /ubwihereho uyu muryango ukoresha? Adapt list to local setting before survey DO NOT READ THE ANSWERS SELECT ONE ONLY (NTUMUSOMERE IBISUBIZO AHUBWO HITAMO GUSA IKIJYANYE N'ICYO AGUSHUBIJE)	Flush to piped sewer system Isukwa mo amazi hakoreshejwe itiyoye Flush to septic system..... Itwara umwanda n'amazi hakoreshejwe amatiyoye yabugenewe Pour-flush to pit Isukwa mo amazi hakoreshejwe igikorereho icyaricyo cyose VIP/simple pit latrine with floor/slab Imisarane isanzwe Composting/dry latrine Izikurwamo ifumbire Flush or pour-flush elsewhere..... Imena ahandi Pit latrine without floor/slab Imisarane itubakiye Service or bucket latrine Akadobo Hanging toilet/latrine..... Iyimukanwa No facility, field, bush, plastic bag Ntayo, mu gisambu, mu gihuru, mu mashashi	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> IF ANSWER IS 10 GO TO WS7
TOILETH H	WS6	How many <i>households</i> share this toilet? Uwo mugarane /ubwihereho uhurirwamo n'uzu zingahe?	RECORD NUMBER OF HOUSEHOLDS IF KNOWN (RECORD 96 IF PUBLIC TOILET OR 98 IF UNKNOWN)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Households
TOILETSH			SUPERVISOR SELECT ONE ONLY Not shared (1 HH) <input type="checkbox"/> Shared family (2 HH) Communal toilet (3 HH or more) Public toilet (in market or clinic etc.) Don't know	

CHILD	WS7	Do you have children under three years old? Waba ufite abana bari munyi y'imyaka itatu?	Yes No	_ _ IF ANSWER IS 2 GO TO WS9
STOOL	WS8	The last time [NAME OF YOUNGEST CHILD] passed stools, what was done to dispose of the stools? Ubwo (IZINA RY'UMWANA MUTO) aherukira kwituma hakozwe iki mu gukuraho umwanda we? DO NOT READ THE ANSWERS CHECK ONE ONLY NTUMUSOMERE IBISUBIZO AHUBWO HITAMO GUSA IKIJYANYE N'ICYO AGUSHUBIJE	Child used toilet/latrine..... yakoresheje umusarane Put/rinsed into toilet or latrine Wajugunywe mu musarane Buried waratabwe Thrown into garbage..... Watawe muri mondisi Put/rinsed into drain or ditch warumishijwe Left in the open..... Warekewe aho uri Other (specify)..... Ubundi buryo Don't know Simbizi	_ _ _

SECTION WS2
Observation Based Questions (done after the initial questions to ensure the flow of the interview is not broken)

	No	OBSERVATION / QUESTION	ANSWER			
	WS9	CALCULATE THE TOTAL AMOUNT OF WATER USED BY THE HOUSEHOLD PER DAY Tanga igipimo cy'amazi inzu ikoresha ku muni ushyizemo ayo kunywa ,ayo gukoresha ibindi ndetse n'andi yose. THIS RELATES TO ALL SOURCES OF WATER (DRINKING WATER AND NON-DRINKING WATER SOURCES)	Please show me the containers you used yesterday for collecting water Nyereka ibikoresho mwavomesheje ejo hashize ASSIGN A NUMBER TO EACH CONTAINER	Capacity in litres	Number of journeys made with each container	Total litres SUPERVISOR TO COMPLETE HAND CALCULATION
1.			1 E.g. jerry can	25 L	1 x	25
2.			2 E.g. jerry can	10 L	2 x	20
3.			3 E.g. jerry can	5 L	2 x	10
4.			4 E.g. jerry can	5 L	1 x	5
5.			5 E.g. bucket	50 L	1 x	50
6.			6			
7.			7			
8.			8			
9.			9			

10.			10			
11.			Total litres used by household			110
STORE	WS10	<p>Please show me where you store your drinking water. Ndagirango munyereke aho mubika amazi yo kunywa.</p> <p>ARE THE DRINKING WATER CONTAINERS COVERED OR NARROW NECKED? REBA NIBA AYO MAZI YABA ARI MU BIKORESHO BIPFUNDIKIYE CYANGWA BIFITE IMINWA MITO?</p>	<p>All are.....</p> <p>byose</p> <p>Some are.....</p> <p>Bimwe muri byo</p> <p>None are</p> <p>Nta nakimwe</p>			
TOIUSE	WS11	<p>Please show me the toilet facility that is usually used by family members CONFIRM ANSWER TO WS 5 ABOVE</p> <p>Mushobora noneho kunyereka ubwiherero bukunze gukoreshwa niyi nzu. (huza ikigisubizo n'ikibazo cya kane cyabajijwe hejuru)</p>	<p>ONLY ANSWER THIS FOR TOILETS USED BY 1 OR 2 HH (SEE WS4). IF TOILETS USED BY 3 HH OR MORE, SKIP TO NEXT MODULE AND LEAVE BLANK</p> <p>SUBIZA IKI KIBAZO GUSA KU BWIHERERORO BW'INZU CYANGWA UBUFATANYIJWE N'INZU EBYIRI.NIBA ZIRENZE 2 SIMBUKA IKI KIBAZO.</p> <p>Toilet in use.....</p> <p>umusarane urakoreshwa</p> <p>Toilet not in use.....</p> <p>umusarane ntu koreshwa</p> <p>Not observed</p> <p>ntawo nabonye</p>			

MOSQUITO NET COVERAGE: 1 questionnaire per household (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.

Section code / number: _____ Block code / number: _____ Consent : yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (in cluster survey only)
_ _ _ / _ _ _ / _ _ _ _ _ _ _	_ _
Team Number	HH Number
_	_ _

	No	QUESTION	ANSWER CODES	
SECTION TN1				
TOTHH	TN1	How many people live in this household and slept here last night? INSERT NUMBER Ni uwuhe mubare w'abantu baba muri uru rugo kandibaharaye mu ijoro ryakeye?		_ _
TOTCHILD	TN2	How many children 0-59 months live in this household and slept here last night? INSERT NUMBER Ni uwuhe mubare w'abana bafite hagati y'amezi 0-59 baba muri uru rugo kandi baharaye mu ijoro tyakeye?		_ _
TOTPW	TN3	How many pregnant women live in this household and slept here last night? INSERT NUMBER Ni uwuhe mubare w'abagore batwite baba muri uru rugo kandi baharaye mu ijoro ryakeye?		_ _
IRS	TN4	Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past I__I months? Ese mwaterewe imiti yica imibu mu nzu mu meziashize?	Yes..... No.....	_
MOSNETS	TN5	Do you have mosquito nets in this household that can be used while sleeping? Ese mufite inzitiramubu muri uru rugo abantu bashobora kuraramo?	Yes..... No.....	_ IF ANSWER IS 2 STOP NOW
NUMNETS	TN6	How many of these mosquito nets that can be used while sleeping does your household have? INSERT NUMBER Mufite inzitira mubu zingahe abantu bashobora kuraramo?	IF 4 NETS OR MORE, ENTER THE NUMBER AND USE ADDITIONAL NET QUESTIONNAIRE SHEETS ENTERING THE NUMBER OF THE NETS SEQUENTIALLY AT THE TOP	_ Nets

NID	TN7	ASK RESPONDENT TO SHOW YOU THE NET(S) IN THE HH. IF NETS ARE NOT OBSERVED → CORRECT TN 6 ANSWER	NET # __	NET # __	NET # __	NET # __
NETBRAND	TN8	OBSERVE NET AND RECORD THE BRANDNAME OF NET ON THE TAG. IF NO TAG EXISTS OR IS UNREADABLE RECORD 'DK' FOR DON'T KNOW Reba inzitiramubu wandike ubwoko bwayo urebye ku kirango. Niba nta kirango kiriho andika DK bivuze“simbizi”				
NETTYPE	TN9	For supervisor only (not to be done during interview): WHAT TYPE OF NET IS THIS? BASED ON THE TAG INDICATE IF THIS IS A LLIN OR OTHER TYPE OF NET OR DON'T KNOW. Iyi nzitiramubu ni ubuhe bwoko?	1=LLIN 2=Other/DK __	1=LLIN 2=Other/DK __	1=LLIN 2=Other/DK __	1=LLIN 2=Other/DK __
TOTLLIN	TN10	For supervisor only (not to be done during interview): RECORD THE TOTAL NUMBER OF LLINs IN HH BY COUNTING THE NUMBER OF '1' IN TN9.				__ LLINs

SECTION TN2							
Line no	Household members	Sex	Age	Pregnancy status	Slept under net	Which net	Type of net
#	COL1	COL2	COL3	COL4	COL5	COL6	COL7
MID	NAME	SEX	AGECAT	PREGSTAT	SLEPTNET	SLEPTIDNET	SLEPTTYPE
	Please give me the names of the HH members who live here and who slept in your house last night Mumbwire amazina y'abantu baba muri iyi nzu kandi baharaye mu ijoro ryakeye	Sex m/f	Age years	FOR WOMEN ≥ 15 years, ASK: Is (NAME) currently pregnant? Ku bagore bafite cg barengeje imyaka 15 baza: ese aratwite? (CIRCLE not applicable '99'	Did (NAME) sleep under a net last night? Ese yaraye mu nzitiramubu mu ijoro ryakeye?	ASK THE RESPONDENT TO PHYSICALLY IDENTIFY WHICH OF THE OBSERVED NETS THEY SLEPT UNDER. CIRCLE THE NUMBER CORRESPONDING TO THE NET THEY USED.	For supervisor only: BASED ON THE OBSERVED NET BRANDNAME RECORDED (TN8) INDICATE IF IT IS AN LLIN OR OTHER OR UNKNOWN (DK) LLIN

		m f	5 ≥5	if female 15 or male)		Yes No/DK		net#1 net#2 net# 3 net#4				OTHER/DK	
				Yes	No/DK	N/A							
01		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
02		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
03		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
04		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
05		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
06		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
07		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
08		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
09		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
10		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
11		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
12		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
13		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
14		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2
15		m f	5 ≥5	1	0	1	0	1	2	3	4	1	2

Mosquito net summary (for supervisor only, not to be done during interview)

	Total HH members		Total 5		Total Pregnant	
Slept under a net of any type	Count the number of '1' in COL5	TN11 _ _	For children 5 (COL3 is '5'), count the number of '1' in COL5	TN13 _ _	For pregnant women (COL4 is '1'), count the number of '1' in COL5	TN15 _ _
Slept under an LLIN	Count the number of '1' in COL7	TN12 _ _	For children 5 (COL3 is '5'), count the number of '1' in COL7	TN14 _ _	For pregnant women (COL4 is '1'), count the number of '1' in COL7	TN16 _ _

WOMEN ANAEMIA: 1 questionnaire per cluster / zones / sections (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL WOMEN AGED BETWEEN 15 AND 49 YEARS IN THE SELECTED HOUSEHOLD)

Section code / number: _____ Block code / number: _____

Date of interview (dd/mm/yyyy):				Cluster Number (in cluster survey only)			Team number
_ _ / _ _ / _ _ _ _				_ _ _			_ _
WM1	WM2	WM3	WM4	WM5	WM6	WM7	WM8
WID	HH	Consent	WAGE	PREG	ANC	FEREC	WHB
ID	HH	Consent given 1=yes 2=no 3=absent	Age (years)	Are you pregnant? 1=yes 2=no (GO TO HB) 8=DK (GO TO HB)	Are you currently enrolled in the ANC programme? 1=yes 2=no 8=DK	Are you currently receiving iron-folate pills (SHOW PILL)? 1=yes (STOP NOW) 2=no (STOP NOW) 8=DK (STOP NOW)	Hb (g/L or g/dL)
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							

CHILDREN 6-59 MONTHS ANTHROPOMETRY, HEALTH AND ANAEMIA: 1 questionnaire per cluster / zones / sections (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO ALL CARETAKERS OF A CHILD THAT LIVES WITH THEM AND IS BETWEEN 6 AND 59 MONTHS OF AGE)

Section code / number: _____ Block code / number: _____

Date of interview (dd/mm/yyyy):					Cluster Number (in cluster survey only)						Team number			
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15
	HH	CONSENT	SEX	BIRTHDATE	XAgeCal c Or MONTHS	WEIGHT	HEIGHT	EDEMA	MUAC	ENROL	MEASLES	VITA	Diarr Cough Fever	CHB
ID	HH	Consent given 1=yes 2=no 3=absent	Sex (m/f)	Birthdate* dd/mm/yyyy	Age** (months)	Weight (kg) ±100g	Height (cm) ±0.1cm	Oedema (y/n)	MUAC (mm)	Child enrolled 1=SFP 2=TFP 3=None	Measles 1=yes card 2=yes recall 3=no or don't know	Vit. A in past 6 months (SHOW CAPSULE) 1=yes card 2=yes recall 3=no or don't know	Diarrhoea in past 2 weeks 1=yes 2=no 8=DK	Hb (g/L or g/dL)
01				/ /										
02				/ /										
03				/ /										
04				/ /										
05				/ /										
06				/ /										
<p>*The exact birth date should only be taken from an age documentation showing day, month and year of birth. It is only recorded if an official age documentation is available; if the mother recalls the exact date, this is not considered to be reliable enough. Leave blank if no official age documentation is available.</p> <p>**If no age documentation is available, estimate age using local event calendar. If an official age documentation is available, record the age in months from the date of birth.</p>														

IYCF: 1 questionnaire per child 0-23 months (THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE MOTHER OR THE MAIN CAREGIVER WHO IS RESPONSIBLE FOR FEEDING THE CHILD AND THE CHILD SHOULD BE BETWEEN 0 AND 23 MONTHS OF AGE)

Section code / number: _____ **Block code / number:** _____ **Consent :** yes / no / absent

Date of interview (dd/mm/yyyy)	Cluster Number (in cluster survey only)
_ _ _ / _ _ _ / _ _ _ _ _ _ _	_ _ _
Team Number	ID Number
_ _	_ _ _

	No	QUESTION	ANSWER CODES	
	SECTION IF1			
	IF1	Sex igitsina	Male/ Gabo Female/ Gore	_
	IF2	Birthdate Itariki y'amavuko RECORD FROM AGE DOCUMENTATION. LEAVE BLANK IF NO VALID AGE DOCUMENTATION/ uzuza ukurikije icyemezo cy'amavuka cyemewe. Niba ntacyo, ntugire icyo wuzuzamo	Day/Month/Year..... _ _ _ / _ _ _ / _ _ _ _ _ _ _ Umunsi/ukwezi/umwaka	
	IF3	Child's age in months Imyaka y'umwana mu mezi	IF AGE DOCUMENTATION NOT AVAILABLE, ESTIMATE USING EVENT CALENDAR. IF AGE DOCUMENTATION AVAILABLE, RECORD THE AGE IN MONTHS FROM THE DATE OF BIRTH	_ _
EVERBF	IF4	Has [NAME] ever been breastfed?/ Umwana yaba yarigeze yonka?	Yes/ yego No/ oya DK/ simbizi	_ IF ANSWER IS 2 or 8 GO TO IF7
INITBF	IF5	How long after birth did you first put [NAME] to the breast?/ nyuma yuko avuka, wamushyize kw'ibere hashije igihe kingana iki?	Less than one hour/ mbere yuko isaha ishira Between 1 and 23 hours/ hagati y'isaha imwe n'amasaha 32 More than 24 hours/ nyuma y'amasaha 24 DK/ simbizi	_
YESTBF	IF6	Was [NAME] breastfed yesterday during the day or at night?/ umwana yaronkejwe ejo kugicamunsi cgse n'injoro?	Yes / yego No/ oya DK/ simbizi	_

SECTION IF2	
	<p>IF7 Now I would like to ask you about liquids that [NAME] may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] receive any of the following?/ubu nifuzaga kubabaza ubwoko bw'ibinyobwa yaba yaranyweye ejo kumanywa cg ninjoro. Ndashaka kumenya mubyukuri niba ibyo binyobwa yarabifashe byonyine cg se birikumwe n'ibindi biribwa.</p> <p>ASK ABOUT EVERY LIQUID. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE. Baza ubwoko ubwaribwo bwose bw'ibinyobwa.Niba ikinyobwa yaragihawe, uraca akaziga kuri 1, niba ntacyo yahawe, ca akadomo kuri 2,Niba ushizwe kumwitaho ntabyo azi,ca akaziga ku 8. Buri jambo rigomba kugira umwihariko wawo(code)</p> <p>Adapt list to local setting before survey The list that is provided below is an example The text highlighted in bold grey needs to be deleted from the final survey questionnaires Yes No DK</p>
WATER(C)	7A. Plain water/Amazi asazwe 7A.....1 2 8
INFORM(C)	7B. Infant formula: for example [add locally available brand names of fortified and non-fortified infant formula: amata y`abana, kigozi]/gahunda ngenga mirere yabana 7B.....1 2 8
MILK(C)	7C. Milk such as tinned, powdered, or fresh animal milk/Amata nk'ayifu,inshyushyu,nido,amata y'inyange: 7C.....1 2 8
FFJUICE(C)	7D. Juice or juice drinks [add locally available brand names of juice drinks]/ ibinyamitobe biboneka muri aka gace/akarere 7D.....1 2 8
OT H(C)	7E. Clear broth/umufa 7E.....1 2 8
SOURMILK(C)	7F. Sour milk or yogurt for example: [add local names of yogurt]/ikivuguto,yawurute,inyange 7F.....1 2 8
PORRIDGE(C)	7G. Thin porridge for example: [use local names] Igikoma gidafashe cyane(urugero, igikoma cy'amasaka,cy'uburo,cy'ibigoli) 7G.....1 2 8
TEA/COFFEE(C)	7H. Tea or coffee with milk/Icyayi cg ikawa irikumwe n'amata 7H.....1 2 8

OLIQUID(C)		7I. Any other water-based liquids [list other water-based liquids available in the local setting]: for example sodas, other sweet drinks, herbal infusion, gripe water, clear tea with no milk, black coffee, ritual fluids/ ibindi binyobwa bishingiye kumazi/bigizwe ahanini n'amazi .urugero, Fanta,ibindi binyobwa biryohereye busukari,icyayi kitarimo amata nibindi....	7I.....1 2 8	
FOOD(C)	IF8	Yesterday, during the day or at night, did [NAME] eat solid or semi-solid (soft, mushy) food? Ejo ninjoro cg kumanywa,yariye ibiryo bisazwe cg byorihereye?	Yes.....1 No.....2 DK.....8	<input type="checkbox"/>
SECTION IF3				
BOTTLE(C)	IF9	Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night? ejo kugicamunsi cg se ninjoro yaba yaranywe akoresheje inkongoro?	Yes.....1 No.....2 DK.....8	<input type="checkbox"/>
SECTION IF4				
	IF10	Is child aged 6-23 months? Uyumwana afite byibura amezi atandatu kugera ku mezi 23? REFER TO IF2	Yes.....1 No.....2	IF ANSWER IS 2 STOP NOW <input type="checkbox"/>
	IF11	Now I would like to ask you about some particular foods [NAME] may eat. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did [NAME] consume any of the following? Ubu nifuzaga kubabaza ubwoko bwihariye bwibiribwa ashobora kurya. Ndashaka kumenya niba umwana wanyu yarabiriye nubwo wenda yaba yarabifashe birikumwe n'ibindi biribwa.ejo kumanywa cgse ninjoro yaba yarariye kimwe muri ibi bikurikira? ASK ABOUT EVERY ITEM. IF ITEM WAS GIVEN, CIRCLE '1'. IF ITEM WAS NOT GIVEN, CIRCLE '2'. IF CAREGIVER DOESN'T KNOW, CIRCLE '8'. EVERY LINE MUST HAVE A CODE. Baza ubwoko ubwaribwo bwose bw'ibinyobwa.Niba ikinyobwa yaragihawe, uraca akaziga kuri 1, niba ntacyo yahawe, ca akaziga kuri 2,Niba ushizwe kumwitaho ntabyo azi,ca akaziga ku 8. Buri jambo rigomba kugira umwihariko wawo(code) Adapt list to local setting before survey The list that is provided below is an example The text highlighted in bold grey needs to be deleted from the final survey questionnaire Yes No DK		
FLESH		11A. Flesh foods [list common meat, fish, poultry and liver/organ flesh foods used the local setting] for example: beef, goat, lamb, mutton, pork, rabbit, chicken, duck, liver, kidney, heart	11A.....1 2 8	
FBF		11B. FBF [list FBF available in the local setting]: for example SOSOMA, CSB	11B.....1 2 8	
FBFPLUS		11C. FBF++ [list FBF++ available in the local setting] : for example CSB++	11C.....1 2 8	

RUTF		11D. RUTF [list RUTF products available in the local setting] : for example Plumpy’Nut®	11D.....1	2	8
RUSF		11E. RUSF [list RUSF products available in the local setting] : NONE	11E.....1	2	8
LNS		11F. LNS [list LNS products available in the local setting] : for example NONE	11F.....1	2	8
IRONFOR RTFORM		11G. Infant formula: for example [add locally available brand names of <i>iron fortified infant formula</i>].	11G.....1	2	8
IRONFOR T		11H. List any <i>iron fortified solid, semi-solid or soft foods designed specifically for infants and young children available in the local setting that are different than distributed commodities.</i>	11H.....1	2	8
MNP	IF12	In a setting where MNP are used: Yesterday, during the day or night, did [NAME] consume any food to which you added a [powder or sprinkles] like this? Example: SALT SHOW TYPES OF MICRONUTRIENT POWDERS AVAILABLE IN THE LOCAL SETTING.	Yes.....1 No.....2 DK.....8		<input type="checkbox"/>

Annex 7: Local age calendar

Months	Traditional months	2012	2011	2010	2009	2008	2007
January	Mutarama	4	16	28	40	52	
February	Gashyantare	3	15	27	39	51	
March	Werurwe	2	14	26	38	50	
April	Mata	1	13	25	37	49	
May	Gicurasi		12	24	36	48	
June	Kamena		11	23	35	47	59
July	Nyakanga		10	22	34	46	58
August	Kanama		9	21	33	45	57
September	Nzeli		8	20	32	44	56
October	Ukwakira		7	19	31	43	55
November	Ugushyingo		6	18	30	42	54
December	Ukuboza		5	17	29	41	53

Annex 8: Training Schedule for Rwanda Nutrition Surveys– April 2012

Day 1 – Introduction, Overview and practical skills (Tuesday 24th April 2012)			
<i>Times</i>	<u>Session Topics- for supervisors, team leaders and translators</u>		<i>Materials Required</i>
8.30-9.00	Registration and logistics	Lucas	Registration list, schedule, training slides Handouts / Slides: 1. Survey questionnaires 2. Anthropometry exercise (case studies, referral slip, event calendar) Scales (5), MUAC tapes (10), height board (1), height sticks (1), ruler (1)
9.00-9.15	Introduction of coordinators, supervisors and survey team members	Lucas	
9.15-10.00	-Nutrition survey objectives -Roles and responsibilities	Lucas	
10.00-10.15	Small break		
10.15-11.30	-Skills for Good Interviewing with (video) -Household definition and translation. -Mortality questionnaire. Practical	Ismail	
11.30-13.00	-Introduction to height board, scales and MUAC tape -Malnutrition, anthropometry data in children 6-59 months and referral exercise (introduction of events calendar)-procedures and common errors in <i>classroom</i>	Lucas	
13.00-14.00	Break		
14.00-14.30	-6-59 months questionnaire [sheets 1-2]	Ismail	
14.30-15.00	Food security questionnaire	Ismail	
15.00-16.00	IYCF (6-24 months [sheets 3-4] and 0-5 months) overview and translation.	Lucas	
Day 2 – Overview and practical skills (continued) (Wednesday -25th April 2012)			
<i>Time</i>	<u>Session Topics - for supervisors, team leaders and translators</u>		<i>Materials Required</i>
8.30-9.00	Review of day 1	Ismail	Training slides Hemocues (1), lancets (10), cuvettes, blood collection material etc Scales (5), MUAC tapes (10), height board (1), height sticks (1), ruler (1)
9.00-10.00	Malaria questionnaire	Lucas	
10.00-10.15	Small break		
10.15-11.30	WASH questionnaire. Practical exercise and translation.	Ismail	
11.30-12.30	-Introduction to Hemocue machine (with VIDEO) -Anaemia, hemocue measurements and referral	Ismail	
12.30-13.00	Local event calendar and age determination	Lucas	
13.00-14.00	Break		
14.00-14.30	Local event calendar and age determination (continued)	Lucas	
14.30-15.30	Women questionnaire	Ismail	
15.30-16.00	Introduction to sampling in the field	Ismail	
Day 3 – Field procedures (Thursday 26th April 2012)			
<i>Time</i>	<u>Session Topics for field teams</u>		<i>Materials Required</i>
8.30-9.30	-Team logistics and equipment checklist -Obtaining consent -Sampling procedures review	Ismail	Material distributed to camp coordinators
9.30-13.00	Sampling households / individuals, defining a household and using the local event calendar / age guide. Practical roles plays	Ismail/Lucas	Handout: Anaemia test

13.00-14.00	Break		
14.00-16:00	Phone technology	Audrey	Phones
<i>Day 4 Standardization of measurements (Friday 27th April 2012)</i>			
<i>Time</i>	<u>Session</u>		<i>Materials Required</i>
8.30-13:00	Role play on phone technology and feeb back on phone technology	Audrey	Phones
14:00-16.00	Anaemia test -Standardization of Hemocue measurements. -Feedback session Practical Anthropometry measurement Standardization of anthropometric measurements -Feedback session	Ismail/Lucas	
<i>Day 5 Standardization of data collection (Saturday 28th April 2012)</i>			
<i>Time</i>	<u>Session</u>		<i>Materials Required</i>
8.30-13.00	-Pilot test -Feedback session	Ismail/Lucas/ Audrey	Equipment, questionnaires (enough for 5 HHs for each team)- Scales, MUAC tapes, height boards, Hemocue machines and blood collection material etc.
14:00-16:00	Feedback on the pilot testing and survey data collection planning.	Ismail/Lucas/ Audrey	