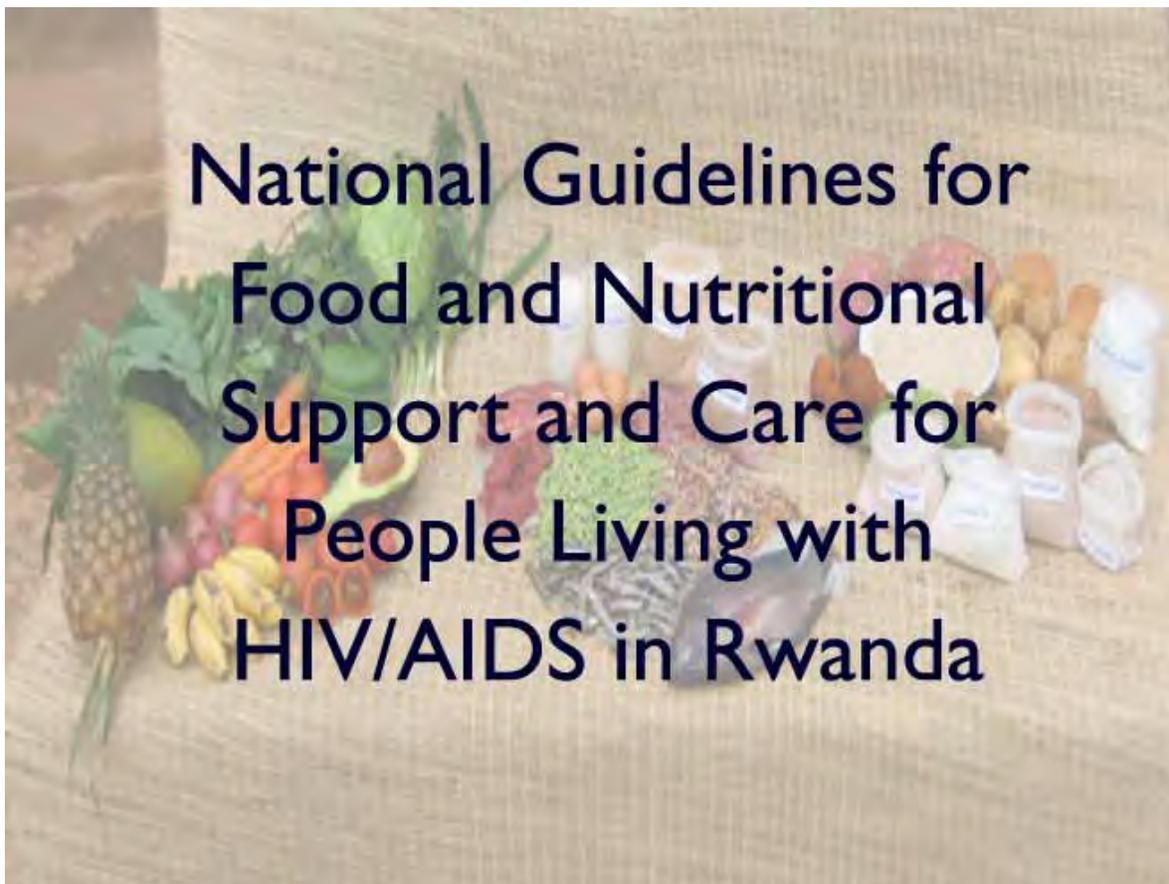


REPUBLIC OF RWANDA



Ministry of Health



PREFACE

The HIV/AIDS pandemic affects approximately 3% of the Rwandan population (7.3% in the urban area and 2.2% in the rural area, DHS 2005), with the greatest impact being on its most productive members with consequences on the economic development of the country and household food security. This situation is aggravated by poverty, which affects 60% of the population, and a high prevalence (more than 30%) of malnutrition.

AIDS leads to malnutrition in affected individuals and reduces their immunity and ability to fight opportunistic infections. As a consequence, household labour capacity is reduced, followed by a fall in agricultural production and income generation. HIV/AIDS therefore limits the capacity of the affected households to access quality and appropriate health and nutritional care. With the availability of antiretrovirals, it is important to have food for drug efficacy and to improve adherence to drug regimens. The interaction between the HIV/AIDS and nutrition is not a single vicious cycle, but several vicious cycles which does not only result in misery or death, but worse – death in misery.

In addressing the problem of HIV/AIDS, the strategy of the Government of Rwanda places particular emphasis on prevention, while at the same time providing prophylaxis and treatment for opportunistic infections and antiretroviral therapy to all eligible people living with HIV/AIDS, irrespective of their social status.

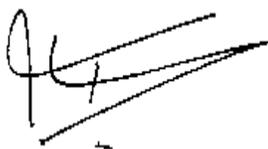
It is now important to include nutrition as an integral component of a comprehensive package of the treatment and care strategy for people living with HIV/AIDS so as to break the vicious cycle caused by the virus. For this reason, we highly appreciate the valuable multisectoral response of the Rwanda Nutrition Technical Working Group, which, with these Guidelines and Protocol, has given direction to the hitherto missing food and nutrition dimension of the package of treatment and care for people infected with HIV/AIDS.

The Guidelines raise fundamental questions and address challenges, such as the issue of breast-feeding vis-à-vis replacement feeding with breast milk substitutes for the baby born to an HIV positive mother in a resource-limited environment. In addition to addressing essential questions, it is important to recognize that the Guidelines are the first tool that integrates a nutritional dimension in the treatment and care of people living with HIV/AIDS.

The Guidelines offer practical recommendations for healthy and balanced diets aimed at improving the nutritional well being of PLWHA. The Guidelines are intended to be used by service providers, mainly in the health and agricultural sectors, gender and social development, and the local administration, as well as those providing home-based care.

The Ministry for Health is grateful for this valuable tool, which is the fruit of the effort of various partners, and counts much on the users for their constructive feedback.

Lastly, it is our intention that the Guidelines and protocol fall under the Vision 2020 of the Government whose objective is not only national development, but also to relieve the individual's pain and disease for a better health, a better education, a more productive and better life.



Dr. Innocent NYARUHIRIRA
Minister of State in Charge of HIV/AIDS and Other Epidemics,
Ministry of Health.

Acknowledgement

The Ministry of Health would like to express its sincere gratitude to the following agencies for their financial and technical assistance: CIAT, FANTA/AED, FAO, UNICEF, USAID, and WFP.

Special thanks go to the Nutrition and HIV/AIDS Working Group members: HATEGEKIMANA Dassan, KALIGIRWA Christine, KAMPIRWA Rachel, KAYUMBA Josephine, MIHIGO Jules, NGABO Fidel, NKUSI Debra, NYAGAYA Martha, OMWEGA Abiud, OULARE Macoura, and RWAHUNGU Jumapili, for their technical input, commitment and dedication, which contributed a great deal to the development of the guidelines. This work is a result of their tireless work in compiling and reviewing the various drafts. The Ministry of Health would also like to express its appreciation to all those persons who in one way or another contributed to make the guidelines a reality.

TABLE OF CONTENTS

<u>PREFACE</u>	I
<u>ACKNOWLEDGEMENT</u>	II
<u>ACRONYMS AND ABBREVIATIONS</u>	V
<u>GLOSSARY</u>	VII
1 <u>INTRODUCTION</u>	1
1.1 <u>BACKGROUND</u>	1
1.2 <u>MALNUTRITION IN RWANDA</u>	1
1.3 <u>NATIONAL RESPONSE TO HIV/AIDS AND MALNUTRITION</u>	2
1.4 <u>RATIONALE FOR THE GUIDELINES</u>	2
1.5 <u>PURPOSE OF THE GUIDELINES</u>	3
1.6 <u>TARGET GROUPS</u>	3
1.7 <u>HOW TO USE THE GUIDELINES</u>	3
2 <u>FOOD, NUTRITION AND HIV/AIDS</u>	3
2.1 <u>BASIC INFORMATION ON FOOD AND NUTRITION</u>	3
2.2 <u>NUTRITION AND DISEASE</u>	4
2.2.1 <u>HIV & AIDS</u>	5
2.3 <u>THE LINK BETWEEN FOOD, NUTRITION AND HIV/AIDS</u>	6
2.4 <u>REQUIRED NUTRIENTS FOR GOOD HEALTH AND NUTRITION</u>	7
2.4.1 <u>Balanced Diet</u>	7
2.4.2 <u>Consequences of nutrient deficiencies</u>	10
2.4.3 <u>Non-nutritive components of foods</u>	11
3 <u>NUTRITION COUNSELING FOR PEOPLE LIVING WITH HIV/AIDS</u>	12
3.1 <u>TIPS FOR EFFECTIVE COUNSELING</u>	13
3.2 <u>COUNSELING PLWHA ON HOW TO TAKE CARE OF THEMSELVES</u>	13
3.3 <u>NUTRITIONAL COUNSELING FOR CAREGIVERS OF PLWHA</u>	13
4 <u>NUTRITIONAL CARE AND SUPPORT FOR ADOLESCENTS AND ADULTS WITH HIV/AIDS</u> 15	
4.1 <u>OVERVIEW</u>	15
4.1.1 <u>Assessing Body Weight</u>	16
4.1.2 <u>Assessing Micronutrient Deficiencies</u>	17
A. <u>CARE AND SUPPORT FOR ADULTS AND ADOLESCENTS WITH HIV/AIDS</u>	18
B. <u>CARE AND SUPPORT FOR PREGNANT AND LACTATING MOTHERS WITH HIV/AIDS</u>	20
5 <u>FOOD AND NUTRITIONAL CARE AND SUPPORT FOR CHILDREN WITH HIV OR BORN TO HIV-POSITIVE MOTHERS</u>	21
5.1 <u>RECOMMENDATIONS FOR FEEDING CHILDREN BORN TO HIV POSITIVE MOTHERS IN RWANDA</u>	21
5.2 <u>FEEDING OPTIONS FOR INFANTS BORN TO HIV POSITIVE MOTHERS</u>	23
5.2.1 <u>INFANTS 0 - 6 MONTHS</u>	23
5.2.2 <u>Children aged 6 to 24 months</u>	31
5.3 <u>MANAGEMENT OF LACTATION PROBLEMS</u>	32
5.3.1 <u>MECHANISM FOR MILK PRODUCTION</u>	32
5.3.2 <u>Management of cracked nipples</u>	32
5.3.3 <u>Management of breast engorgement</u>	33
5.3.4 <u>Management of mastitis or abscess</u>	33
5.3.5 <u>Management of "NOT ENOUGH MILK SYNDROME"</u>	34
5.3.6 <u>Management of a child who cries persistently</u>	34
5.3.7 <u>Management of inverted nipples</u>	35
5.4 <u>NUTRITION CARE AND SUPPORT FOR CHILDREN INFECTED WITH HIV/AIDS</u>	35

5.4.1	<u>MAJOR NUTRITIONAL PROBLEMS OF HIV-INFECTED CHILDREN</u>	35
6	<u>FOOD AND NUTRITIONAL CARE AND SUPPORT FOR PLWHA TAKING MEDICATION</u> ..	37
6.1	<u>ANTIRETROVIRAL THERAPY, FOOD AND NUTRITION</u>	37
6.2	<u>INTERACTIONS BETWEEN ARV AND OTHER DRUGS WITH FOOD AND NUTRITION</u>	38
7	<u>FOOD SECURITY FOR HOUSEHOLDS AFFECTED BY HIV/AIDS</u>	41
8	<u>MONITORING AND EVALUATION OF THE IMPLEMENTATION OF GUIDELINES</u>	42
8.1	<u>OBJECTIVES OF MONITORING AND EVALUATION</u>	42
9	<u>REFERENCES AND RESOURCES</u>	45
ANNEX 1:	<u>ESSENTIAL NUTRIENTS, THEIR FUNCTIONS AND LOCAL FOOD ANNEX SOURCES</u>	48
ANNEX 2:	<u>MAINTAINING WEIGHT</u>	51
ANNEX 3:	<u>NUTRITIONAL ASSESSMENT TOOL FOR PLWHA</u>	53
ANNEX 4:	<u>BODY MASS INDEX TABLE: ADULTS AND ADOLESCENTS</u>	54
ANNEX 5:	<u>FOOD SAFETY AND PERSONAL HYGIENE</u>	55
ANNEX 6:	<u>NUTRITIONAL MANAGEMENT OF SYMPTOMS ASSOCIATED WITH HIV/AIDS</u> ..	56
ANNEX 7 :	<u>COPING WITH COUGHS, COLD AND FEVER</u>	57
ANNEX 8 :	<u>COPING WITH DIARRHEA</u>	58
ANNEX 9:	<u>INDIVIDUAL EVALUATION FORM FOR REPLACEMENT FEEDING OPTIONS FOR HIV-POSITIVE MOTHERS</u>	59
ANNEX 10:	<u>ALGORITHM FOR COUNSELING OF HIV-POSITIVE MOTHERS ON INFANT FEEDING</u>	60
ANNEX 11:	<u>FOOD AND NUTRITION IMPLICATIONS AND SOME SIDE EFFECTS OF MEDICATIONS USED TO TREAT COMMON INFECTIONS</u>	61
ANNEX 12:	<u>FOOD AND NUTRITION IMPLICATIONS AND SOME SIDE EFFECTS OF ARV DRUGS</u>	62
ANNEX 13:	<u>SCHEMATIC PRESENTATION FOR FEEDING A CHILD AGED 0-24 MONTHS</u>	64
ANNEX 14:	<u>PREPARATION OF ARTIFICIAL MILK</u>	65
ANNEX 15:	<u>FOLLOW-UP OF A HIV-POSITIVE WOMAN AND HER CHILD</u>	66
ANNEX 16 :	<u>FOLLOW-UP PLAN FOR CHILD UNDER ARV TREATMENT</u>	69
ANNEX 17.	<u>MINIMUM FOOD PACKAGE FOR NUTRITIONAL CARE AND SUPPORT OF PEOPLE (INCLUDING CHILDREN) LIVING WITH HIV/AIDS IN FOOD INSECURE HOUSEHOLDS</u>	70
ANNEX 18:	<u>SOME RECIPE SUGGESTIONS</u>	77

ACRONYMS AND ABBREVIATIONS

ABC	Abstain-Be Faithful-Use Condoms
AFASS	Acceptable, Feasible, Affordable, Sustainable, and Safe
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ARI	Acute Respiratory Infection
ART	Antiretroviral Therapy
ARV	Antiretroviral
BMI	Body Mass Index
CIAT	Centro Internacional de Agricultura Tropical
CNLS	Commission Nationale de Lutte contre le SIDA
FANTA	Food And Nutrition Technical Assistance Project
FAO	Food and Agriculture Organization of the United Nations
FP	Family planning
GAM	Global Acute Malnutrition
GDP	Gross Domestic Product
GoR	Government of Rwanda
HAART	Highly Active Antiretroviral Therapy
Hb	Hemoglobin
HIV	Human Immunodeficiency Virus
IDD	Iodine Deficiency Disorders
IEC	Information, Education, and Communication
IMCI	Integrated Management of Childhood Illnesses
IU	International Units
IYCF	Infant and Young Child Feeding
M&E	Monitoring and Evaluation
MAP	World Bank Multi-country HIV/AIDS Program
MICS	Multiple Indicator Cluster Survey
MINISANTE	Ministère de la Santé (Ministry of Health)
MTCT	Mother-to-child transmission (of HIV)
NGO	Non-governmental organization
ORS	Oral Rehydration Solution
PACFA	Protection and Care of Families Against HIV/AIDS
PLWHA	People Living with HIV/AIDS
PMTCT	Prevention of mother-to-child transmission (of HIV)
PRSP	Poverty Reduction Strategy Paper
RDA	Recommended Daily Allowance
RCQHC	Regional Center for Quality Health Care (Kampala, Uganda)
RDHS	Rwanda Demographic and Health Survey
RNTWG	Rwanda Nutrition Technical Working Group
SAM	Severe Acute Malnutrition
STI	Sexually Transmitted Infections
TB	Tuberculosis
TBA	Traditional Birth Attendants
TRAC	Treatment and Research AIDS Centre
UNAIDS	United Nations HIV/AIDS Program
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund

USAID
VCT
WFP
WHO

United States Agency for International Development
Voluntary Counseling and Testing
World Food Program
World Health Organization

GLOSSARY

Absorption	The process by which nutrients cross the gastrointestinal cell membranes into the blood system to be utilized by the body.
AIDS	Acquired Immunodeficiency Syndrome. A group of diseases caused by HIV.
Antiretroviral Therapy (ART)	A treatment regime for HIV with antiretroviral drugs
Antiretroviral	The name given to a group of drugs that act on the HIV virus and prevent it from reproducing itself in the body.
Candidiasis	Also called <i>candidosis</i> . Infection with a fungus of the genus <i>Candida</i> that usually occurs in the skin and mucous membranes of the mouth, respiratory tract, or vagina but may invade the bloodstream, especially in immuno-compromised individuals.
Constipation	A condition when the bowels do not function properly and a person has difficulty in passing stools (defecating). This may be caused by a diet low in fiber or be a symptom of illness or a side-effect of medicines.
Counseling	Counseling is a dialogue between a client and a care provider aimed at enabling the client to cope with stress and take personal decisions relating to their condition, i.e., HIV/AIDS. The counseling process includes the evaluation of personal risk of HIV transmission and the facilitation of preventive behavior
Dehydration	The excessive unhealthy loss of water and salts from the body, often during diarrhea.
Diarrhea	The frequent passing of watery feces (stools) - at least three in a day
Digestion	The process by which food is prepared (broken down or decomposed) in the digestive tract releasing nutrients for absorption
Healthy and balanced diet	Consuming the required quantities and varieties of food in sufficient quantities to meet daily energy and nutrient needs. The food should consist of staples (cereal), vegetables, legumes, animal products, fruits, nuts and fats/oils.
Household Food Security	A situation whereby every person, at all times, have physical, social and economical access to sufficient, safe and nutritious food to meet their nutrient needs for an active and healthy life.
Immune system	All the mechanisms that act to defend the body against external agents, particularly microbes (viruses, bacteria, fungi and parasites).
Malnutrition	An abnormal physiological condition caused by deficiencies, excesses or imbalances in energy, protein and/or other nutrients. Malnutrition in this publication refers to: a) lack of food energy (undernutrition); and b)

	lack of nutrients.
Micronutrients	The vitamins, minerals and certain other substances that are required by the body in small amounts.
Nausea	A feeling of disquiet in the stomach.
Nutrients	The nutritional substances contained in food and released during digestion.
Nutrition	The science of food and how it is utilized by the body for growth, work, play, sustain health and resist diseases.
Nutrition education	The education of individuals, families and communities encouraging them to select the food they consume in order to achieve optimum health.
Opportunistic infection	An infection with a microorganism that does not ordinarily cause disease, but that becomes pathogenic in a person whose immune system is impaired, as by HIV infection.
Oral rehydration solution (ORS)	A liquid substance administered to people to restore fluids and mineral salts lost during diarrhea. An ORS can be prepared by mixing salt, sugar and water or making some light porridge using cereals such as rice and maize or diluting the ORS powder from a package in drinking.
Palliative drugs	Drugs which moderate HIV symptoms and help a person to feel better without treating the HIV infection itself.
PLWHA	A general term for people infected with HIV, whether or not they are showing any symptoms of infection.
Positive living	An approach to life whereby people with HIV/AIDS maintain a positive attitude towards themselves, take action to improve their situation, continue to work and lead a normal life and approach the future positively with hope and determination and not with despair, depression, guilt and self pity.
Refined cereals	Foods containing cereals such as wheat, rice or maize that have been processed to remove all or part of the husks. Refined foods are low in fiber and generally contain less micronutrients than whole foods.
Staple foods	Foods that form the main part of the diet, usually cereals such as maize, rice, wheat and millet or root crops, such as yams, cassava and potatoes.
Virus	Infectious agent (microbe) responsible for numerous diseases in living beings. It is an extremely small particle and, in contrast with bacteria, can only survive and multiply within a living cell at the expense of that cell.
Vitamins	A group of naturally occurring substances that are needed in small amounts (micronutrients) by the body to maintain health

1 INTRODUCTION

1.1 Background

Magnitude of HIV/AIDS in Rwanda

According to DHS (2005) the sero-prevalence is 3% at the national level, with a 7.3% prevalence in urban areas and a 2.2% prevalence in rural areas. The effect of HIV/AIDS has been enormous on families, communities and the country. AIDS is expected to increase the country's already high under-five child mortality of 203 per 1000 live births (UNICEF 2005). By 2001, an estimated 264,000 children orphaned by AIDS were living in Rwanda, and life expectancy had declined from 54.9 to 37.6 years (USAID 2003). Table 1.1 highlights some of the epidemiological statistics related to HIV/AIDS in Rwanda.

Table 1.1 HIV/AIDS Epidemiological Statistics

Indicator	Statistic
HIV prevalence (number of cases)	906,000
Annual deaths from AIDS	49,000
New HIV cases annually	80,000
Annual pregnancies, HIV+ women	40,000
Perinatal HIV infections per year	11,904
% HIV+ persons with TB	60%
Children orphaned by AIDS	260,000

Source: Government of Rwanda (2003)

Key social and economic sectors have lost members of their prime labor force to HIV/AIDS, and as infection rates rise, the effects of the pandemic are beginning to have a negative impact on food security, nutrition, and household coping strategies. Food insecurity increases vulnerability to diseases and malnutrition, and reduces the body's immunity and ability to fight opportunistic infections. HIV/AIDS, both a cause and consequence of food insecurity, undermines the livelihoods and resilience of many people in the country.

1.2 Malnutrition in Rwanda

For the past two decades, malnutrition and micronutrient disorders have been problematic in Rwanda, contributing to high levels of morbidity and mortality, particularly among children and women, as well as to poor health and low work capacity, learning disabilities, mental retardation, and blindness.

Since the 1994 war, the population has become increasingly mobile, with large segments of the population moving to the cities, particularly Kigali. Women head approximately 38% of households, and thousands of children are growing up with neighbors, relatives, or on the street, where they may be vulnerable to sexual and other abuses, poor health and malnutrition.

The results of various surveys undertaken in the country, show that the rate of chronic malnutrition is 45% among children under five years old with a higher proportion (56%) suffering from anemia (Hb<12g) (RDHS, 2005). These data suggest that malnutrition and micronutrient deficiencies are public health problems in Rwanda.

Like HIV/AIDS, malnutrition also compromises the immune function and thus increases susceptibility to severe illnesses and reduces survival. Since HIV/AIDS weakens infected individuals, resulting in reduction of labor capacity, agricultural production and household incomes, which in turn results in household food insecurity. In this way, HIV/AIDS limits the capacity of affected households to acquire adequate food or quality care, and to adopt appropriate health and nutritional responses to the disease. Consequently, providing quality care and support for people living with HIV/AIDS (PLWHA) includes addressing their nutritional needs. Providing nutritional care and support has been shown to be an effective strategy in mitigating the effects of HIV/AIDS and should therefore be an integral component of a comprehensive care package.

1.3 National Response to HIV/AIDS and Malnutrition

The GoR has demonstrated a strong commitment towards controlling the HIV/AIDS pandemic. The National AIDS Control Commission (CNLS) released a new Strategic Framework to Combat HIV/AIDS, 2002–2007, which addresses the full spectrum of HIV/AIDS prevention, care, treatment and mitigation. This Strategic Framework was prepared in a participatory manner, with input from public officials, NGOs, PLWHA, church groups, youth clubs, women’s organizations and private sector groups.

In 2002, the CNLS and the Treatment and Research for AIDS Center (TRAC) assumed responsibility for implementing the National HIV/AIDS Strategy. The CNLS is mandated by the President to integrate all sectors in the national response to HIV/AIDS, whilst TRAC focuses on HIV/AIDS surveillance, treatment, and clinical care and support. The National Care and Treatment Plan for HIV/AIDS, developed in June 2003 with support from the William J. Clinton Foundation, outlines a vision and objectives for a national comprehensive treatment and care system for HIV/AIDS in Rwanda.

A wide range of bilateral, multilateral and NGO partners contribute resources, direct assistance and capacity building in the field of HIV/AIDS in Rwanda. The GoR has secured significant funds from the Global Fund to Fight AIDS, Tuberculosis and Malaria and the World Bank’s Multi-Country HIV/AIDS Program (MAP). Apart from the Global Fund and MAP funds, the United States Government currently is the largest donor to HIV/AIDS programs in Rwanda.

1.4 Rationale for the Guidelines

Rwanda has adopted policies and guidelines related to HIV/AIDS prevention and treatment but these do not specifically address issues of nutritional care and support for PLWHA. To date, initiatives to provide such care and support, such as those undertaken by NGOs and AIDS service programs, are limited in scope and coverage and are not harmonized. As such, additional guidance is needed to fill this gap. These Guidelines for Food and Nutritional Support and Care for PLWHA will enable programs and services to provide consistent and sound recommendations to PLWHA and their caretakers, and contribute to greater awareness of the importance of nutritional care and support in mitigating the impact of HIV/AIDS.

1.5 Purpose of the Guidelines

The Guidelines present the actions that service providers need to take in order to provide quality care for and support to PLWHA at various contact points. The Guidelines address the specific needs of different populations of HIV/AIDS infected/affected people, such as adults, adolescents, pregnant and lactating women, children and antiretroviral therapy (ART) clients. The Guidelines do this by providing practical recommendations for food and nutritional support within household, hospitals and health facilities.

The Guidelines also explain how to address the nutritional aspects of HIV-related conditions, illnesses and infections. Food requirements of PLWHA are described, and recommendations are provided on foods, feeding and eating practices to meet these requirements. Finally, recommendations are provided for the use of food aid in home-based care, hospital setting and health centers.

1.6 Target groups

The Guidelines are targeted at providers of care and services for PLWHA in Rwanda:

- Health service providers and extension workers, including those involved in testing, counseling, diagnosis, treatment and home-based care;
- Community-based organizational staff working with PLWHA;
- Planners in health, social, educational and nutrition services, who will develop local Guidelines for nutritional care and support for PLWHA;
- International and national agency staff, who support national and community-based programs for PLWHA;
- Research and training institutions like the NUR, KHI, ISAE, ISAR, etc.).

1.7 How to Use the Guidelines

The Guidelines provide a general approach to meet a variety of situations found in Rwanda. Each service provider will need to adapt the recommendations to the local context or to the individuals to whom the services are being offered.

The Guidelines can be used to:

- Create messages that advocate good nutrition for all, but particularly for PLWHA;
- Develop more detailed and specific operational Guidelines and materials to communicate to caregivers and PLWHA;
- Provide nutritional and dietary counseling to PLWHA;
- Design monitoring and evaluation systems for nutritional components of HIV/AIDS programs/interventions.

2 FOOD, NUTRITION AND HIV/AIDS

2.1 Basic Information on Food and Nutrition

Food provides the energy and nutrients that humans need to stay alive, move and work; build new cells and tissues for growth, maintenance and repair; resist and fight infections.

Nutrition refers to how food is utilized by the body for growth, energy, reproduction and maintenance of health. Foods contain different nutrients (Annex 1).

Good nutrition is essential for:

- Growth, development, replacement and repair of cells and tissues;
- Production of energy for warmth, movement and work;
- Carrying out digestion, metabolism and maintenance;
- Protection against disease and recovery from disease.



Nutrients are essential for health and include water, macronutrients (carbohydrates, proteins, and fats), and micronutrients (vitamins and minerals).

Water is a key nutrient, found in all foods. About two-thirds of the body is water.

Macronutrients are nutrients that are needed in large amounts, such as carbohydrates (found in sweet potatoes, Irish potatoes, rice, maize, and cassava), proteins (found in meat, poultry, fish, eggs and dried peas and beans) and fat or lipids (such as oil, butter, fatty cheese, and avocados).

Micronutrients are essential nutrients which are needed in very small amounts. These are the vitamins (found mainly in colourful fruits and vegetables, whole grains, meat and fish) and minerals (found mainly in meat, fish, poultry, whole grains, dark green leafy vegetables, and dried peas and beans). Both macro- and micro-nutrients are required in the right amounts and combinations for the body to function properly.

Calories are the amounts of energy in food that provides the body with the fuel it requires to function and fight disease.

2.2 Nutrition and Disease

Nutrition is the science of food and how it is utilized by the body for growth, work, play, and to sustain health and resist diseases.

An optimal diet plays a major role in preventing disease and recovering from many diseases. As with any illness, the body requirements for more energy are greater than when the body is healthy.



‘A healthy lifestyle includes adopting healthy and balanced dietary practices necessary to lengthen & improve quality of life.’

A healthy life style and nutritionally sound diet, early treatment of infections, and recovery after infection can limit weight loss and reduce the negative effects of future infections.

2.2.1 HIV & AIDS

Acquired Immune Deficiency Syndrome (AIDS) is a disease caused by a retrovirus known as the Human Immunodeficiency Virus (HIV), which attacks and impairs the body’s natural defense system against disease and infection. Because an HIV-infected person’s defense system is impaired, other viruses, bacteria and microorganisms can cause opportunistic infections such as diarrhea, pneumonia, tuberculosis and oral thrush, which further weaken the body.

As the body’s immune system weakens, the increased number and frequency of infections place extra demands on the immune system and increase the body's need for energy and other nutrients. As a result of frequent illnesses and malnutrition, the body gradually becomes weaker; weight loss or wasting becomes a serious problem, and diarrhea and other infections occur more often and last longer.

There is no cure for HIV/AIDS. Some therapies can prevent, treat or cure many of the opportunistic infections and relieve the symptoms associated with them. Antiretroviral drugs attack the virus and may slow the weakening of the body’s immune system, but they do not cure the disease.

In Rwanda, as in most developing countries, HIV is mostly transmitted to adult through sexual contact with an infected person. Women are more vulnerable to HIV infection than men due to the physiology of their reproductive organs.

Children are also at risk because HIV can be transmitted from a mother to a child during pregnancy, labour and delivery or through breastfeeding. Because the virus can be transmitted from mother to child through breast milk and breastfeeding, HIV positive

mothers need information to make an informed choice about feeding their infants. The risks to an infant from not breastfeeding, especially in resource-poor settings where there is limited money to buy breast milk substitutes, inadequate hygiene and access to potable water, and other constraints, must be weighed against the risks of HIV/AIDS transmission from mother to child due to breastfeeding.

2.3 The Link between Food, Nutrition and HIV/AIDS

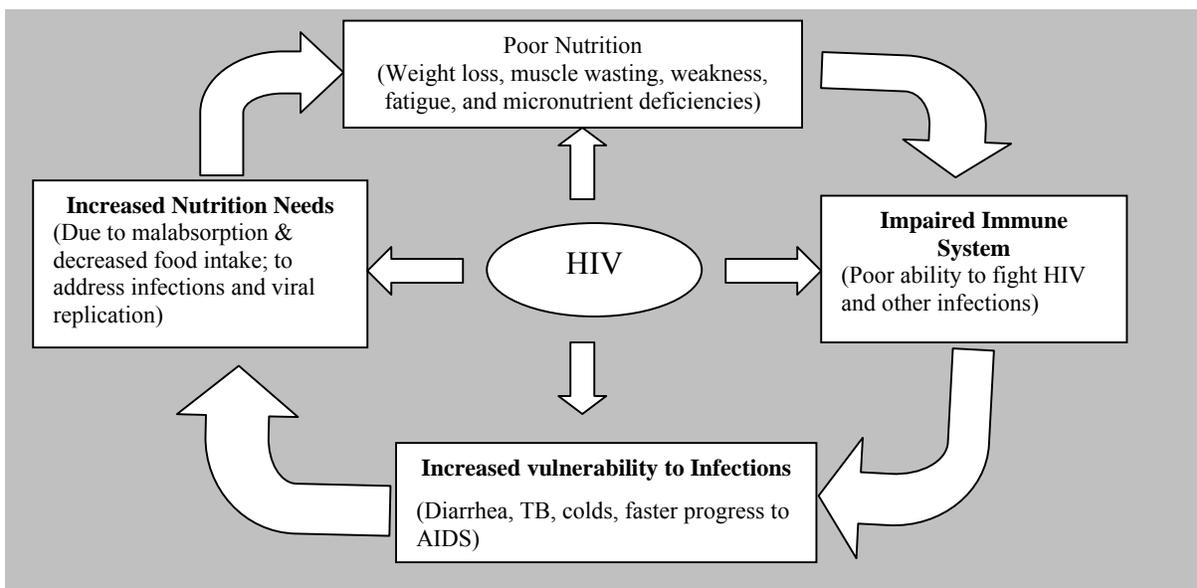
An HIV infected individual is more at risk for malnutrition for the following reasons:

- Loss of appetite
- Poor food absorption
- Chronic infections and illness

Nutrition and HIV/AIDS are strongly interdependent. Malnutrition can both contribute to and result from the progression of HIV. This relationship between malnutrition and HIV/AIDS creates a vicious cycle: HIV weakens the immune system, which in turn leads to more

infections (Figure 1). Infections increase energy needs and at the same time cause anorexia, as indicated in Table 2. Heightened infections (in number and severity) lead to loss of appetite, resulting in inadequate food intake, and eventually malnutrition. Malnourished persons are at greater risk of infections, creating more vulnerability to HIV, and so the cycle continues.

Figure 1: The Cycle of Malnutrition and Infection in the Context of HIV/AIDS



Source: FANTA, 2002.

Whilst HIV may take years to progress to AIDS, the negative effects of the virus on nutritional status can occur early in the course of the disease. Weight loss, a decrease in lean muscle tissue and damage to the immune system, are more common for adults but they are also prevalent in children infected with HIV. A PLWHA is more at risk of malnutrition because of reduced food intake, poor absorption, changes in the body’s metabolism, chronic infections and illnesses, anorexia or loss of appetite, diarrhea, fever, nausea and frequent vomiting, thrush, and anemia (see Annex 6 for advice on the nutritional management of these symptoms).

Table 2. Energy needs by phase of disease

Population Group	HIV phase	Energy requirement
Adults	Asymptomatic	10% increase
	Symptomatic	20-30 % increase
Pregnant/lactating women*	Asymptomatic	10% increase
	Symptomatic	20-30% increase
Children	Asymptomatic	10% increase
	Symptomatic (with no weight loss)	20-30% increase
	Symptomatic (with weight loss)	50-100% increase

* This is in addition to extra energy, protein and micronutrients required by pregnancy or lactation.

Source: WHO (2003).

Although treatment for opportunistic infections and ART may help a PLWHA to maintain better health status, they may also influence eating practices and subsequently have a negative effect on nutrition. Taking measures to ensure an adequate nutrient intake, following sound hygiene practices, and treating illnesses quickly and effectively are necessary to reinforce the positive effects of HIV/AIDS treatment.

2.4 Required Nutrients for Good Health and Nutrition

2.4.1 Balanced Diet

A *well balanced diet*, that is, a correct combination of different kinds (energy-giving, body-building and protective foods) and amounts of food and drink consumed, is the key to a stronger immune system.

Water is an important component of the body and necessary for many of its functions. A safe water supply is the most basic of all nutritional needs. Safe drinking water should be boiled for three minutes, cooled, and stored in clean, covered containers. If possible, drinking water should be filtered to prevent the transmission of illnesses.

No single food contains all the nutrients the body needs in the right quantities and combinations (except for breast milk, which contains the perfect combination of nutrients and ideal quantity needed for a baby during the first six months of life). A nutritious diet provides a variety of foods in adequate quantities and combinations to supply essential nutrients on a daily basis.

☞ Energy-giving foods



Carbohydrates are mainly found in staples and sugars. ***Staples*** form the main part of the meal and are cheap and readily available, provide energy, they may also provide some protein, vitamins and fiber. In Rwanda, the main staples include bananas (ibitoke), Irish potatoes (ibirayi), sweet potatoes (ibijumba), cassava (imyumbati), flour (amafu - made from maize, sorghum and millet), yams and rice.

Staples alone cannot provide enough of all the nutrients the body needs and should therefore be eaten in combination with other foods.

Sugars and Sugary Foods are another source of energy, but usually lack other beneficial nutrients. These foods include honey, jam, table/tea sugar, cakes and biscuits, which are more common in urban centers of Rwanda, and are generally expensive. Sugary foods also include most artificial fruit juices and sodas. Some fruit juices are too acidic and may be too strong for the stomach of a sick person. Natural sugars in fruit and mild fruit juices are better tolerated.

Fats and Oils are rich sources of energy. People generally need fats in smaller quantities than carbohydrates. Fats also add flavour and taste to food, and thus stimulate the appetite. They build body cells, help body processes, and are essential for absorption and utilization of fat-soluble vitamins. Excessive consumption of fat, however, may contribute to diarrhea in PLWHA. Vegetable oils are obtained from corn, simsim, sunflower, cottonseed, and palm. Animal sources of oils and fats include lard, butter (including ghee), margarine, cheese, meat, poultry and fish (including fish oil). Vegetable sources of oils and fats include avocados and groundnuts.

☞ Body-building foods



Protein is essential for cell growth and repair. Proteins support the function and formation of the general structure of all tissues, including muscles, bones, teeth, skin and nails. Protein is also the basic element of the substances that make up the immune system. Unless the body receives enough calories and protein in the diet, it will break down its protein stores (usually muscles) to make up for the lack of calories. A balance of calories and protein, along with other nutrients, is necessary to maintain a strong defense against infections and weight loss.

Plant proteins include beans and peas of different varieties, groundnuts, soyabeans and some vegetables. Plant proteins also provide vitamins and minerals.

Animal proteins most commonly available in Rwanda are meat, poultry, milk (including cheese, yogurt and fermented milks), fish and eggs. Others include *isenene* (grasshoppers) and white ants. Animal proteins are sources of high quality protein, and also provide vitamins and minerals. Animal products also provide additional energy.

☞ Protective foods

Vitamins and Minerals are required for the immune system to function optimally, and for cell growth, maintenance and repair. Some vitamins are water-soluble (e.g., the vitamin B group and vitamin C) and should be consumed regularly since the body does not store them but excretes any excess intakes. Other vitamins (A, D, E, K) are fat soluble, and are stored for longer periods in the body. Vegetables containing fat-soluble vitamins should be eaten or prepared with some oil/fats to improve their absorption and use by the body. In terms of public health, the important minerals include iron, selenium, zinc, iodine and calcium.



Vegetables add taste, flavor and color to meals. Common vegetables in Rwanda include: *dodo*, cassava leaves, spinach, pumpkin leaves, carrots, *isombe*, and green peppers. Red and yellow vegetables contain pro-vitamin A substances called beta-carotenes. In many cases, vegetables are available seasonally, which means that quality and prices can vary considerably throughout the year. Vegetables provide nutrients as listed in Annex 1[0].

Fruits in Rwanda come in a variety of forms. Deep yellow or orange-colored fruits such as banana, avocados, mangoes, and *papayas* are rich in vitamins, particularly beta-carotenes, which are transformed into vitamin A in the body. Oranges, lemons, and other citrus fruits, as well as strawberries, guava, *maracuja*, pineapple and gooseberries are rich sources of vitamin C. Like vegetables, many fruits in Rwanda are seasonal.

In Rwanda, fruits and vegetables are considered as the most cost-effective and practical means to improve availability and intake of micronutrient-rich foods for many communities. PLWHA who are deficient in micronutrients can improve their nutritional status by consuming larger amounts and varieties of micronutrient-rich foods or by taking special supplements. Keeping small domestic animals (e.g., chickens, rabbits, goats) for household consumption can improve the availability of foods rich in protein, fat, as well as micronutrients such as iron and vitamin A.

Research on the impact of micronutrient supplements on HIV infection is still ongoing especially with respect to zinc and selenium. At present, there is no conclusive evidence to show that micronutrient supplementation effectively reduces morbidity and mortality among HIV-infected adults. Therefore, health service providers should follow the current WHO recommendations to promote and support adequate dietary intake of micronutrients at recommended dietary allowance (RDA) level.

For TB clients being treated with *isoniazid*, Vitamin B₆ (10 mg daily) supplementation is recommended. Vitamin A supplementation for all children and especially for children of HIV infected mothers reduces illness, particularly diarrhea. High dose vitamin A supplements are also recommended for mothers immediately after delivery and for infants 6 months and older.

In Rwanda, regular access to micronutrient supplements may be difficult for PLWHA due to lack of availability and associated high cost. For this reason, improving dietary intake of all nutrients is the most practical solution, especially for PLWHA.

Dietary fiber is important for the digestive system, and to ensure the proper movement of the bowels. Children or people with poor appetites should consume foods rich in fiber with caution since too much fiber may fill up their stomachs quickly, before they have consumed enough energy and other nutrients. The best sources of fiber are vegetables and fruits.

2.4.2 Consequences of nutrient deficiencies

a) Macronutrient deficiencies can be caused by reduced food intake, poor absorption of nutrients, and changes in metabolism that affect cell growth and other processes and immune system reactions. Known as Protein Energy Malnutrition (PEM), macronutrient deficiencies are evidenced by weight loss and wasting. In order to avoid PEM, a PLWHA should consume more food than persons who are not infected. (See Table 2).

b) Deficiencies in essential micronutrients can have devastating effects on health status, resulting in impaired immune system which leads to inability to fight infections, and thus placing a PLWHA at a much higher risk of infections. Current WHO recommendations to promote and support adequate dietary intake of micronutrients at recommended dietary allowance (RDA) level should be encouraged for all PLWHA.

2.4.3 Non-nutritive components of foods

There are some non-nutrient chemical substances in plants (*phytochemicals*) such as tannins and phytates that may prevent or reduce the prevalence of some diseases such as cancer, but also prevent absorption of some micronutrients (iron, zinc, etc.). They contain protective, disease-preventing compounds, and thus help to protect the body from cell damage caused by chronic disease. Although more is yet to be discovered about these phytochemicals, there is strong evidence that consuming a wide variety of plant foods such as garlic, onions, leeks, cabbage, tomatoes, peppers, carrots, celery, parsley, oranges, lemons, limes, grapefruits, berries, watermelon, beans, whole grains, seeds, herbs and spices, and green tea, amongst others, may be very beneficial for improving health.

Tea, coffee and other caffeinated drinks such as sodas should be avoided, or taken in moderation since they can interfere with absorption of nutrients and may interact poorly with medicines.

Alcohol should either be avoided or taken in small quantities since it can damage the ability of the body to fight disease. Some alcoholic beverages like beer contain sugar and yeast that may be harmful to a sick person. Alcohol can create dangerous side effects if consumed along with medications.

ACTIONS FOR SERVICE PROVIDERS

Promoting Nutritious Foods

In all contacts with PLWHA, service providers should:

- Provide counselling on nutrition and healthy feeding/eating practices to ensure that PLWHA consume a balanced diet, manage illnesses and monitor and maintain nutritional status
 - Encourage PLWHA to increase the amount of food they eat to make sure they get more calories for energy. The amount of food consumed should be greater than their usual amount of food to increase energy intake.
 - Assist PLWHA to increase the frequency or number of times they eat during the day. Eating small, frequent meals is easier on the digestive system than a few large, heavy meals. Persons with poor appetites should be advised to eat as often as possible, even if the amount at each meal is small.
 - Encourage PLWHA to increase nutrient-rich foods, especially fruits, vegetables, beans and whole grains, in their meals.
 - Recommend the consumption of foods fortified with micronutrients (vitamin A, vitamin C, iron, folic acid, the B vitamins, and vitamins K, and E), if they are available and accessible.
 - For specific deficiencies, advise PLWHA to take nutritional supplements to complement the diet.
- Work with their families/households to plan for lean periods or hungry season, when food supplies may be lower than usual or non-existent. During these periods, some family members may reduce portion sizes, skip meals or eat inferior foods.

- Investigate all options for obtaining sufficient amounts of foods, ensuring that all required nutrients are available, and promoting eating habits that improve nutrition.
- If necessary, demonstrate to clients how to prepare foods.

3 NUTRITION COUNSELING FOR PEOPLE LIVING WITH HIV/AIDS

Counseling is an integral part of nutritional care and support of PLWHA. Positive, effective counseling can result in improvements in nutrition related behaviour and help improve the quality of life of PLWHA. Since most service providers in Rwanda are not trained counselors, they need to develop basic interviewing skills so as to meet the goal of counseling.

The goal of counseling is to help the client to:

- Assess his/her nutrition and food needs clearly in the context of his/her living situation.
- Identify the alternatives s/he has for correcting a problem or meeting a need.
- Address the constraints that may affect choice of alternatives.
- Make the best choice depending on his/her circumstances.
- Understand the pros and cons of each option and take responsibility for choices made.
- Express his/her innermost fears/feelings or concerns and develop the confidence to address them.
- Develop a positive attitude towards achieving behavioral change.



Information for counseling on food choices, maintaining weight, safe food handling and proper hygiene can be found in the Annexes.

Counseling can be either **Individual** (through one-to-one contact) or **Group** (of value if the HIV status of most members of the group is unknown).

Interviews/assessments should be conducted in a non-judgmental manner to elicit more accurate responses (e.g., be aware of body language, both yours and the person you are counseling). The service provider should be an active listener, sensitive to changes in mood, and communicating nutrition information according to the client's needs and in consideration of what s/he already knows.

3.1 Tips for Effective Counseling

- Always treat the client with respect.
- Listen carefully and actively to the client's situation/concerns.
- Avoid insincere sympathy. Empathise with the client's situation.
- Ask open-ended questions to elicit detailed responses and dialogue with the client.
- Praise and affirm the things that the client is doing right.
- Allow the client the opportunity to make decisions on her/his choices on the way forward.
- Maintain professional conduct and emotional stability during all counseling sessions.
- Maintain privacy and confidentiality.
- Always be conscious of issues that may require referral.

3.2 Counseling PLWHA on How to Take Care of Themselves

Counsel the client as follows:

- Your body needs extra rest. Try to sleep for eight hours every night. Rest whenever you are tired.
- Try not to worry too much. Stress can harm the immune system. Relax more. Relax with people you love, your family, your children and your friends. Do things you enjoy, e.g., listen to music or read a newspaper or a book.
- Be kind to yourself. Try to keep a positive attitude. Feeling good is part of being healthy.
- Take light exercise. Choose a form of exercise that you enjoy.
- Find support and get good advice. Ask for advice from health workers. Many medical problems can be treated.
- Ask for help and accept help when it is offered.
- Stop smoking. It damages the lungs and many other parts of the body and makes it easier for infections to attack your body.
- Alcohol is harmful to the body, especially the liver. It increases vulnerability to infection and destroys vitamins in the body; under the influence of alcohol you may forget to practice safe sex.
- Avoid unnecessary medicines. They often have unwanted side effects and can interfere with food and nutrition. If you do take medicines, read the instructions carefully.

3.3 Nutritional Counseling for Caregivers of PLWHA

The person caring for a PLWHA may be a member of the family or, if the person lives alone, a neighbour, relative or friend. Caring for a PLWHA involves meeting the needs of the sick person and balancing these with the needs of other members of the family. Too much help may be overprotective and take away the dignity, independence and self-respect of the person with HIV/AIDS while too little help may not provide the support that is needed to ensure that the person eats well and has the strength to resist infection. Procuring, preparing, cooking and serving food for a person with HIV/AIDS demands considerable time, energy and resources.

Counsel the caregiver as follows:

- Spend time with the PLWHA. Discuss the foods they need to maintain and gain weight and manage their illness. Learn what kind of foods they like and do not like. Involve them in planning their meals.
- Monitor their weight. If possible, weigh them regularly and keep a record. Look out for signs of unexpected weight loss and take action.
- Check the medicines they are taking. Read the instructions to find out when they need to be taken, what foods to be avoided and any side effects.
- Be encouraging and loving. If people want to have food of their choice at any time of the day, try to get it for them. They may suddenly stop liking a food, refuse what has been prepared and want something different. They are not trying to be difficult. These sudden changes in taste are a result of their illness.
- Be firm about the importance of eating and encourage them to eat frequently, but do not force them to eat. Giving them too much food at one time may cause them to refuse or vomit.
- If they are too sick to leave their beds, make sure that they have something to drink and a snack nearby.
- Keep a watchful eye. Look around to see if the house is clean, that there are no hygiene problems and there is enough food.
- If the sick person lives alone, invite them to join your family for a meal. Encourage others in the community to visit them and invite them out.
- Advise the caregiver to take care of him/herself, get enough rest and have the appropriate information and support to carry out their difficult task.
- Inform the caregiver of the following:
 - HIV/AIDS is not spread by food or water.
 - HIV/AIDS cannot be spread by sharing food, dishes or cooking utensils such as cups, plates, knives and forks with a person who is HIV positive.
 - Touching another person, hugging, shaking hands or holding other people in a normal way cannot spread HIV/AIDS. There is no need to avoid body contact with a person living with HIV/AIDS.

ACTIONS FOR SERVICE PROVIDERS

Nutrition Counseling for PLWHA

I. Create an environment conducive for counseling.

- Make space available for counseling, taking care to guarantee privacy
- Develop a positive attitude. Remember people are able to make choices that fit with their circumstances; they just need support.
- Set aside the time for counseling to avoid rushing
- Establish rapport with the client
 - Welcome the person
 - Greet the person in a kind and friendly way
 - Introduce yourself and let the client also introduce him/herself
 - Ask general questions about the client's feelings, health and welfare.
 - Reassure clients of confidentiality

- II. Assess the needs of the client, and provide information to help decision-making.**
- Make the client feel comfortable to tell his/her story and express needs and wants during the counseling session.
 - Empathise with clients, especially those in shock, depressed or frightened.
 - Pay attention to special needs or fears of some groups, e.g., pregnant women, adolescents, and school children.
- III. Help the client to make practical decisions.**
- Request the client to use the information provided to make the correct decision.
 - Help the client come up with a plan that will work given the context.
 - Review cultural values, traditions and beliefs as well as any family or community factors that may affect his/her decision.
 - Help the client make informed decisions. For example, use a list of local, affordable and accessible foods to show the client how much extra food he/she needs to eat.
 - Make sure the client understands who else is affected by his/her decisions and what implications these decisions may have.
 - When giving information that encourages behavioral change, suggest one change at a time, and make sure that the recommendations are realistic given the client's circumstances.
- IV. Support the client to implement the decisions they have made to address nutrition concerns.**
- Help the client recall what has been discussed and agreed upon to ensure they know exactly what they need to do. You may role-play if necessary.
 - Help the client build confidence that they know how to implement the decisions made.
 - Help the client consider who else may support the decisions made.
 - Praise and reaffirm those things that the client is doing right, to help build self-confidence and motivation.
 - Work out a follow-up plan with the client, including return dates and where to seek support in case there is need.

4 NUTRITIONAL CARE AND SUPPORT FOR ADOLESCENTS AND ADULTS WITH HIV/AIDS

4.1 Overview

Adults and adolescents with HIV/AIDS may suffer from loss of appetite, difficulty in eating and poor absorption of nutrients, which may result in **wasting**, or the loss of body weight and lean tissues. The **HIV/AIDS wasting syndrome**, a major cause of morbidity and mortality in

Weight loss and wasting are strongly associated with poor health outcomes for PLWHA. Smaller amounts of weight loss during short periods of time, or any loss of important lean muscle tissue can increase a person's risk for illness or other complications. Most wasting can be prevented or reduced by maintaining a healthy, balanced diet that meets the body's changing needs. Maintaining weight is a key component of any health care plan for PLWHA.

PLWHA, refers to a loss of 10% or more of a person's original weight before illness, plus chronic diarrhea, weakness, or fever.

Good nutritional status is important for the well being of everyone, as well as the birth outcomes of pregnant women, and for the survival and development of children. Because of the increased energy demands of HIV/AIDS, pregnant and lactating mothers with HIV/AIDS are at a higher risk of malnutrition. They will need nutritional advice and additional food to minimize the negative impact of HIV/AIDS on their health, to delay disease progression, and to maintain productivity.

Older adults have special nutritional problems due to the effects of aging, such as the loss of teeth, fragile gums, poor absorption, poor appetite and chronic diseases. HIV/AIDS infection makes these problems worse.

Adolescents' nutrient needs are high because of their rapid growth and development. Young girls who become pregnant are at particular risk of developing nutrient deficiencies if they have HIV/AIDS. They need additional nutrients for their babies' growth as well as their own and to boost their immunity.

4.1.1 Assessing Body Weight

For adults and adolescents, measurements of weight and height give us important information about a person's nutritional status when considered together. There are several different anthropometric measures, but the most common for adults are: BMI, and MUAC. For adolescents, weight for height (W/H) is used. There are currently no specific anthropometric measurements for PLWHA; consequently, these common measurements are used.

Symptomatic adults and adolescents with HIV/AIDS may display the following:

- Weight loss;
- Changes in body shape, e.g., changes in fat deposits and lean muscle;
- Frequent illnesses due loss of resistance to infection.

The best way to **assess weight loss is by using a calibrated scale**. However, if no scales are available, weight loss can be recognized by changes in the fit of clothing or appearance. If possible, PLWHA should be weighed every month and records of weight should be kept to detect changes as quickly as possible. Weight should be assessed using the same scale, if possible, wearing no shoes or heavy clothing. A form for monitoring weight over time is found in Annex 3.

Body Mass Index (BMI) is an indicator of adult nutritional status that reflects thinness, by adjusting bodyweight for height (Annex 4). BMI is calculated as shown below:

$$\text{BMI} = \text{Weight (kg)} / \text{Height (m}^2\text{)}$$

Cut-off points for BMI for adults, including PLWHA:

- 18.5 – 25 : person is at healthy weight
- 16 – <18.5 : person is moderately malnourished
- < 16 : person is severely malnourished

Although the cut-off points are based on European populations, Rwanda has adopted BMI as a method to assess nutritional status of adults. BMI can only be used in adults who have reached full maturity but cannot be used for **adolescents**, who are still growing or for **pregnant women**. For individual assessment and follow-up of adolescents and pregnant women, weight gain or loss is the preferred indicator for nutritional status.

Measuring body composition involves measurements of different parts of the body with skinfold caliper. **Nutritional edema** is swelling caused by an excessive amount of fluid in the tissues of the body, often as a result of severe protein energy malnutrition. It's occurrence in adults and adolescents is rare, and will only occur in severe food shortages. A finding of edema may also be due to other medical causes, and should therefore be interpreted with caution.

PLWHA have should be weighed at least once a month with calibrated scales and record their weight in order to detect changes as soon as possible. Table 3 provides the criteria for classification of nutrition status that can be used by service providers when classifying their clients.

Table 3: Criteria for classification of nutritional status

	Severe malnutrition		Moderate malnutrition	
	Adults	Children and Adolescents	Adults	Children and Adolescents
BMI	< 16		16 - 18.5	
W/H		< 70%		70%-80%
MUAC (children 1-5 years)	-	< 11cm		11- 12.5cm
MUAC (pregnant and breast-feeding women)	< 16cm		16 - 18.5cm	
Edema	Yes	Yes		

Source: RCQHC/FANTA/LINKAGES (2003).

4.1.2 Assessing Micronutrient Deficiencies

Deficiencies in micronutrients can occur with or without other signs of malnutrition. The outcomes of micronutrient deficiencies can be serious, increasing the risk of morbidity and in severe cases, resulting in permanent disabilities (such as blindness) or death. Clinical signs of deficiencies may not be evident for a long time after the deficiency has begun. However, an analysis of the diet can give an indication of potential micronutrient deficiencies. Since cooking and storage practices may also destroy micronutrients, or limit their availability in foods, food preparation techniques and storage facilities should also be examined. Some signs of key micronutrient deficiencies are provided in Annex 1. The main diagnosis criteria for key micronutrients are shown below:

Vitamin A Deficiency (VAD)

- Low intake of vitamin A and pro-vitamin A rich foods for prolonged periods of time.
- In advanced cases, presence of disorders such as night blindness (reduced ability to see in dim light) and xerophthalmia.
- Low plasma or serum concentration of retinal: <0.35 µmol/L.

Iron deficiency (ID)

Tests for assessing iron status include serum ferritin, transferrin receptor, zinc protoporphyrin and Hb. Often, with exception of Hb, these tests are not available. Some of the criteria for assessment and cut-off points include the following;

- Low bioavailable iron diet or marked blood loss.
- Low Hb: <10.5 g/dL and hematocrit value less than about 3 times the Hb value.
- Low red blood cell volume (MCV): <72 fL
- Low serum ferritin: <12 ng/mL.
- Low serum transferrin receptor <28.1 nmol/L.
- A large proportion of small red cells and generally pale red cells under the microscope.
- Large normal color red cells suggest deficiencies due to folate and/or vitamin B₁₂.
- High zinc protoporphyrin (ZnPP): >40 μmol/mol of Heme.

Iodine deficiency disorders (IDD)

- Intake of non-iodized salt or poorly iodized salt
- High intake of goitrogens (e.g., foods that inhibit iodine absorption such as cassava).
- Low urinary iodine levels (iodine intake during the preceding meals): <50 μg/L.
- The presence of visible enlarged thyroid gland (goitre), which indicates a history of previous or ongoing iodine deficiency.

Selenium deficiency

- Low intake and poor bioavailability diets.
- Low plasma or serum concentration of selenium: <0.58 μmol/L.

Zinc deficiency (ZID)

- Low intake and poor bioavailability diets,
- Functional improvement of taste following zinc supplementation.
- Suggestive clinical signs such as delayed sexual maturation and dermatitis;
- Low plasma zinc levels: <10.7 μmol/L.

ACTIONS FOR SERVICE PROVIDERS

A. Care and Support for Adults and Adolescents with HIV/AIDS

I. Support adults living with HIV/AIDS to access information on nutrition and HIV/AIDS.

- Increase your own knowledge by attending HIV/AIDS related meetings/seminars
- Read latest guidance/reports materials on nutrition and HIV/AIDS for HIV/AIDS infected adults.
- Refer adults with HIV/AIDS to support groups
- Assist in linking them to organizations/services where they can get food and nutrition information or support depending on their situation.

II. Encourage adults with HIV/AIDS to periodically check their nutritional status.

- Monitor weight every month

- Monitor anemia by assessing and recording hemoglobin levels
- Keep accurate personal health records for service providers
- Record complete diet over one week to assess nutritional needs

III. Support adults with HIV/AIDS to know how to eat balanced diets and maintain or gain weight.

- Counsel PLWHA to increase their energy and nutrient intake, through:
 - Increasing the amount and the frequency of eating meals rich in energy, protein and micronutrients.
 - Eating nutritious snacks between meals as often as possible
 - Consuming foods that are fortified with essential micronutrients like vitamins A, C, E, K and iron, zinc and selenium
- If a PLWHA has weight loss of more than 10% of their initial body weight, complete the form to monitor food intake over one week, and review his/her history of illness. Based on the findings, make recommendations for action for gaining weight and preventing further weight loss
- If hemoglobin (Hb) levels are less than 11 mg/dl, encourage the client to seek medical care immediately. S/he should be advised to eat a diversified diet and consume micronutrient-rich foods
- Assist the client to make meal plans using a variety of locally available foods to improve nutrient intake. Consider food accessibility, availability, affordability, preservation and storage, tastes and preferences of the client, and whether the client is taking medication or has symptoms that could interfere with eating
- Advise caregivers of PLWHA to regularly supervise their meals to ensure that they are eating a balanced and nutritious diet.

IV. Support adults with HIV/AIDS to address conditions that may negatively affect their physical health.

- Advise the client to seek prompt treatment for HIV-related conditions, particularly those that affect eating such as fever, oral thrush, ulcers/sores in the mouth, diarrhea, vomiting, nausea and loss of appetite
- Advise the client to avoid (or minimize) practices that may interfere with food intake, absorption and utilization such as drinking alcohol, smoking or chewing tobacco, using illegal drugs, and drinking too much tea, coffee or soda
- Ensure food and water safety, follow personal hygiene measures (wash hands with soap and water before eating or handling food, thoroughly cook animal products, boil drinking water, wash fresh fruits and vegetables in clean water and store food appropriately (see Annex 5)
- Develop an exercise plan with the client, to make sure s/he has regular physical activities to prevent loss of muscle tone, strengthen the body and stimulate appetite. If loss of muscle tone persists despite regular exercises, the client should be referred for medical help
- If taking ARV drugs, assess whether the changes in body shape or muscle tone are a side effect of the drugs. Clients should seek medical advice
- Get de-worming treatment (for all household members, except women in the first trimester of pregnancy) twice/year.

- Always practice safer sex (ABC -Abstain, Be faithful, or use Condoms) to avoid re-infection.
- Follow guidelines for the nutritional management of symptoms associated with HIV/AIDS (see Annex 6, 7 and 8).

B. Care and Support for Pregnant and Lactating Mothers with HIV/AIDS

I. Ensure that pregnant and lactating mothers seek PMTCT counseling in health facilities for early diagnosis of HIV infection.

- Counsel pregnant and lactating mothers to prevent infection or re-infection by having safer sex
- Counsel women on the need to seek early and periodic antenatal and postnatal care and to comply with antenatal care (e.g., frequent weight monitoring – ideally once a month, micronutrient supplementation, STI and hemoglobin screening).
- Encourage them to use free PMTCT and ART services available in Rwanda.

II. Support pregnant and lactating mothers to monitor and improve their nutritional status.

- Ensure that every pregnant mother has an antenatal health card to record weight changes and other information during pregnancy
- Explain the importance of regular weighing to determine whether a mother is gaining enough or losing weight
- Determine the nutrition and nutrition-related factors influencing loss or failure to gain weight for pregnant and lactating mothers.
 - Once the causes of weight loss have been identified, work together to identify the best course of action to promote weight gain.
 - Refer pregnant women gaining less than 1 kg per month from the second trimester for appropriate care and treatment.
 - Refer lactating mothers who loose >10% of their body weight (within a period of six months) for appropriate care and treatment.
- Screen all HIV positive mothers for anemia (check paleness of inner eyelids and palms or for hemoglobin levels).
 - Refer women with any clinical signs of anemia (or Hb <11mg/dL) to a Health Centre for appropriate intervention, including increased consumption of iron rich and iron-absorption enhancing foods.

III. Support pregnant and lactating mothers to consume enough food to meet their energy and nutrient needs.

- Seek nutritional support that is more specific to the needs of the client (see Table 2).
- Encourage pregnant and lactating mothers to consume a variety of micronutrient-rich foods.
- Ensure that mothers receive 200,000 UI of vitamin A within six weeks after delivery.

IV. Support pregnant and lactating mothers to address conditions that may negatively affect their physical and nutritional health

- Advise pregnant and lactating mothers to:
 - Prevent parasite infestation and food-borne illnesses by following recommended food safety and hygiene practices such as washing hands regularly with soap and water, safely disposing of feces, and drinking safe water.
 - Seek early treatment for any infections (fever and diarrhea) to minimize the impact on nutritional status.
 - Encourage pregnant and lactating mothers to take measures to prevent malaria (always sleep under treated bed nets), and to get prompt treatment for malaria
 - Maintain regular physical activity and exercise to improve appetite and to help build body mass.
 - Avoid overworking and stress. Heavy physical labor, worry and fatigue increase susceptibility to illness, so mothers should have adequate rest, time for relaxation, and assistance to carry out strenuous tasks.
 - Use reproductive health services where mothers can get family planning support as well as counseling on STI, HIV/AIDS prevention and infant feeding.
 - Always practice safe sex (ABC -Abstain, Be faithful, or use Condoms) to avoid re-infection.

V. Partner support for pregnant and lactating mothers

- Encourage partner involvement during ante-natal consultations and counseling for VCT/PMTCT
- Counsel couples on family planning and safe sex practices
- Counsel couples on infant feeding options and encourage them to make a choice together on their preferred option
- Enlist partner involvement in adherence to the selected feeding option
- Enlist partner support to minimize overworking and assist to carry out strenuous tasks and create or sustain a stress-free environment.

5 FOOD AND NUTRITIONAL CARE AND SUPPORT FOR CHILDREN WITH HIV OR BORN TO HIV-POSITIVE MOTHERS

5.1 RECOMMENDATIONS FOR FEEDING CHILDREN BORN TO HIV POSITIVE MOTHERS IN RWANDA

Breast milk is the best food for infants and young children. It supports optimal growth and development and protects the child against diseases. Although breast-feeding is one of the modes of transmission of HIV/AIDS from mother to child, the risks of death in children related to malnutrition and infectious diseases (diarrhea, respiratory infections) are higher than those related to HIV transmission to children through breast-feeding in developing countries. Artificial feeding (animal milk, infant formula, or milk powder) predisposes children under 5 to a greater risk of morbidity and mortality, particularly in Rwanda, where

more than 60% of the rural populations live under the poverty line, clean water is not easily accessible, and prevalence of chronic malnutrition is 45%. In this context, the following infant feeding recommendations are made for the care and support of children born to HIV positive mothers in Rwanda.

HIV negative mothers and those whose **HIV status is unknown** must be encouraged to practice exclusive breast-feeding from birth to the age of **6 months**, continuing thereafter with breastfeeding and appropriate complementary feeding up to 2 years.

For HIV **infected mothers**, the following infant feeding options are recommended:

- When replacement feeding is not acceptable, feasible, affordable, sustainable and safe, exclusive breastfeeding is recommended for the first 6 months with early cessation at 6 months. At the fourth month, prepare the child for weaning by giving breast milk in a cup up to 6 months. At age of 6 months, provide appropriate breast milk substitutes with safe and appropriate complementary foods up to the age of 24 months.
- When replacement feeding is acceptable, feasible, affordable, sustainable and safe, replacement feeding (infant formula or animal milk) is recommended for the first 6 months continuing thereafter with the addition of safe and appropriate complementary foods. Supplement the child with 50,000 IU of vitamin A during the first 6 months after birth.
- For a child of 6 to 24 months who has been exclusively breastfed in the first 6 months, replace breast milk with other milk (infant formula, animal milk prepared at home or heat-treated breast milk) and provide appropriate locally available complementary foods (2-3 meals a day from 6 to 8 months, 3-4 meals a day plus snacks from 9-24 months). Give the child 100,000 IU of vitamin A once every 6 months and other micronutrients according to the needs.
- For a child of 6 to 24 months who has been on replacement feeding for the first 6 months, continue replacement feeding with locally available complementary foods (2-3 meals a day from 6 to 8 months, 3-4 meals a day plus snacks from 9-24 months). Provide 100,000 IU of vitamin A once every 6 months and other micronutrients according to needs.

All HIV infected mothers must receive counseling on available infant feeding options, benefits and risks associated with each option and guidance in selection of the appropriate choice. The mothers should make an **informed choice** based on full information about the risks and benefits of each option. Support whatever **option the mother chooses** to prevent malnutrition and psychological consequences between the mother and the child.

HIV positive mothers who don't breast feed or have stopped breastfeeding before 6 months must continue with **medical and nutrition-specific follow-up** with their children for at least **2 years**, to ensure that the child receives appropriate care and support.

HIV positive women must have access to **information**, at the **family planning** services and counseling, on **safe sexual practices**. HIV positive pregnant women should increase their food intake by supplementing their meals with an extra meal and one snack in order to try to meet the additional nutrient needs due to pregnancy and HIV infection.

For infected children with or without symptoms, increase the quantity, frequency and the energy density of meals given every day. For children on antiretroviral treatment, provide their caregivers with the knowledge and skills necessary for the nutritional management of drug and food interactions in HIV/AIDS therapy and adjust the diet in accordance to type of treatment and associated side effects (Annex 11 and 12).

Due to the difficulties in cleaning feeding bottles and teats, increased risk of death in children related to poor preparation of artificial milk and economic constraints of rural households, replacement feeding should be done with cups rather than bottles. Because of the risks related to replacement feeding, demonstrations on replacement feeding must be done on an individual, one-on-one basis.

5.2 FEEDING OPTIONS FOR INFANTS BORN TO HIV POSITIVE MOTHERS

5.2.1 INFANTS 0 - 6 MONTHS

Annex 13 gives a schematic diagram on the infant and young children feeding aged 0 to 24 months.

OPTION 1: EXCLUSIVE BREASTFEEDING

This is the practice of feeding an infant only breast milk, without adding any other food or drink including water. The exception that is allowable is providing the infant with drops or syrups consisting of vitamins, mineral supplements or medicine. Exclusive breastfeeding must be initiated within 30 minutes of birth and continued for the first 6 months of life. At the 4th month, an HIV positive mother should prepare her child for early cessation by giving breast milk in a cup until the child is 6 months old.

Advantages of exclusive breastfeeding

- Provides all the nutrients required by an infant of up to 6 months
- Protects the child against infections like diarrhea and acute respiratory infections;
- Decreases the risks of HIV transmission from breastfeeding
- Delays the return of fertility helping to space the next pregnancy
- Provides bonding and contact between the mother and the child
- Is less expensive than replacement feeding

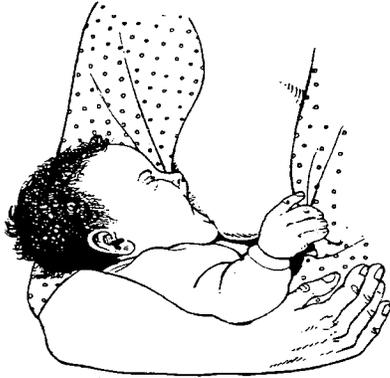
Disadvantages of exclusive breastfeeding

- HIV/AIDS transmission risk through breast milk during the first 6 months. This risk increases if the mouth, throat or the intestines of the child are irritated or if the mother's breasts are infected (abscess, cracked nipples, mastitis, and engorgement).

Appropriate attachment and positioning of baby to the breast

- The areola is more visible above the mouth of the child than below
- The mouth is largely open
- The lower lip is turned towards outside

- The chin of infant touches the breast
- The cheeks of infant are rounded or flattened against the breast
- The breast seems to be round during the suckling
- When the child takes the breast well, milk runs out easily in the mouth of the child
- The baby suckles slowly, deeply with pauses.



Good attachment position



Poor attachment position



Good position



Bad position

EARLY CESSATION

The following steps should be taken when making the transition from exclusive breast-feeding to replacement feeding:

- Gradually reduce breast-feeding frequency and lengthen breastfeeding intervals
- Beginning the month before you are scheduled to wean your child, cut out one or more night feeds
 - Reduce the number of night feedings gradually so that by 4 months he or she is not waking often to feed
- Lengthen the time interval between breastfeeds to once every 4-6 hours
- Teach your baby to drink breast milk from a cup
- Cup feed expressed milk in-between feeds
- Try not to breast feed the infant to sleep, lay the baby down, pat, calm, carry, or rock the baby to sleep

Actions for healthcare providers

- Explain to the mother the disadvantages and risks associated with mixed feeding
- Help the mother to initiate breast feeding within 30 minutes of delivery
- Help the mother to adopt a good position for breast-feeding and good attachment
- Help the mother to manage issues related to breast-feeding
- Help the mother to increase and maintain production of milk by breastfeeding on demand
- Provide treatment for breast diseases and oral candidiasis of the child
- Refer mothers to counselors in case of the mother's or child's problems
- Counsel the mother to avoid risky behavior to prevent mother-to-child transmission (prevent and treat opportunistic infections, STI and use condoms)
- Prepare the mother and child to for cessation between 4 to 6 months
- Provide recommended amount of vitamin A at 6 weeks post-partum
- When possible, combine appointments with those for immunization and post-natal care
- Provide family planning counseling and services

OPTION 2: Expressed, heat-treated breast milk

This is the method whereby breast milk coming from an HIV positive mother is treated by heat to destroy the HIV virus in the milk. It is the same technique that is referred to as pasteurization.

Advantages of the method

- Kills the virus in milk of an HIV positive mother
- Preserves the main nutrients in breast milk
- Allows the mother to continue with breast-feeding after 6 months
- Decreases the possibility of engorgement and mastitis
- Less expensive and risky than artificial milk
- Does not require laboratory equipment for preparation - requires simple jars, cup, charcoal or wood

Disadvantages of the method

- Heat-treatment reduces the level of anti-infective factors in breast milk
- Requires a lot of time for the mother or the person in charge
- Creates stigma around the woman in the community
- Mothers require a lot of support and motivation to face difficulties
- Cool the milk for 10-20 minutes before giving to the child
- Require the availability of materials for preparation (e.g., wood, charcoal, cups)

Materials required

- Jar or container fit to express and store the breast milk (bottle with a cover, a cup with a cover)
- Two sauce-pans (a small one to heat expressed milk and another to boil water)

- A cup and a spoon to feed the child
- Fuel to boil water
- Water, soap and a bucket to clean utensils

Techniques

- Expression of milk:

Milk expression is done with a manual breast pump, electric pump or with hand (manual expression) for women without breast pumps. The latter is the one described and is applicable for by women in the rural area.

 - Wash both hands with soaps and clean water
 - Sit or take a comfortable position
 - Prepare a clean container near the breast
 - Gently massage breast in a circular motion
 - Position the thumb on the upper edge of the areola and the first two fingers on the underside of the breast behind the areola (opposite the thumb). The other fingers will support the breast
 - Press the thumb and forefinger slightly from inside towards outside (don't press too far to avoid blocking lactiferous canals)
 - Press on the lactiferous canals (feeling of peanuts) next to the areola on different sides and press continually
 - Express one breast for 3-10 minutes until the flow of milk diminishes, then go to the other breast and vice versa
 - Avoid sliding the fingers on the skin which may hurt the breast
 - Avoid pressing the nipple by itself, for milk is not concentrated there
 - If the expression of milk must be done by someone else, it is recommended to wear a glove to avoid contamination



- Treatment of expressed breast milk by heating
 - Find a jar or bottle of 50 to 150 ml (example of jar; bottle of mayonnaise) with cover, two saucepans and wash properly
 - Express milk into the jar/bottle and close tightly
 - Boil clean water in the big saucepan



- Place the closed jar containing breast milk on the inner surface of the small saucepan and add the boiled water

- Leave the jar of milk in the hot water for 20-30 minutes (until it is not too hot (between 56-63⁰C) to put your fingers in the water)
- Remove and cool before giving milk to the child by using a cup.



Actions for care providers

- Explain to the mother the advantages, disadvantages and risks and challenges related to the method as well as other feeding options available
- Discuss the implications of this method on her and the child (stigma)
- Make available the necessary materials for demonstrations - show mothers how to express breast milk manually or by using a pump and feeding on the cup
- Inform the mother about the complexity of expressing breast milk and probable complications
- Show the mother how to express and heat breast milk;
- Handle promptly breast problems
- Refer the mother to a support group in the community for help;
- Record the problems faced by the mother and her child in a follow-up document;
- This milk can be stored for 4 to 6 hours in a covered container at room temperature or in the refrigerator for 72 hours.

Option 3: WET NURSES

This method involves the breast-feeding of the child by a woman other than its own mother (grandmother, close relative or other volunteer). Traditionally, this method was practiced by grandmothers or aunts when the mother is dead or absent.

Advantages

- Ideal for feeding an infant, because it provides the same advantages as breastfeeding by the biological mother
- Provides protection against many diseases for the child
- Culturally acceptable in many regions
- Is cheaper than replacement feeding

Disadvantages

- Can be source of HIV/AIDS transmission from the wet nurse to child in areas of high HIV/AIDS prevalence and where VCT is not part of routine exams and the wet nurse is not aware of her status
- Risk of unwanted pregnancy for the child's biological mother
- Can be a source of stigma for the mother in the community

Action for care providers

- Inform the wet nurse about the risks of HIV transmission to child and encourage her to take an obligatory HIV test before she breast-feeds the baby (repeat test every 3 months during the breast-feeding period)
- If the woman (wet nurse) is married, provide education to the couple on HIV transmission risks through sexual intercourse
- Help the wet nurse to access and manage issues related to breastfeeding (engorgement, mastitis, cracks, etc)
- Help the wet nurse to adopt a good position for breastfeeding
- Help the wet nurse to ensure a good attachment of the child to the breast
- Help the wet nurse to increase and maintain milk production
- Treat problems of breast early and oral candidiasis in the child
- Give the wet nurse her dose of vitamin A in their first 6 weeks of breastfeeding
- When possible, combine appointments with those for immunization and post-natal care

OPTION 4: BREAST MILK BANK

This method involves collecting milk from HIV negative women and making it available in a warehouse called a milk bank. Milk banks have traditionally been used to supply babies with special needs (premature, light weights, etc.) for a short period of time.

OPTION 5: REPLACEMENT FEEDING

Feeding infants who are receiving no breast milk with a diet that provides the nutrients infants need until the age at which they can be fully fed on family food. During the first 6 months of life, replacement feeding should be an appropriate breast milk substitute. After 6 months, the appropriate breast milk substitute should be complemented by other suitable foods. Replacement feeding should not be encouraged without taking into consideration the AFASS conditions.

Appropriate replacement foods include; commercial infant formula and modified animal milk. The preparation of these products is described in Annex 14.

Advantages

- There is no risk of HIV transmission to the child

Disadvantages

- Commercial infant formula is less easily digested than breast milk and lacks breast milk protective immune factors
- Modified animal milk is difficult for infants to digest, does not contain all of the needed nutrients in the appropriate proportions and quality (e.g., the proteins and fats in modified

animal milk are inferior to those in breast milk) and has a higher sodium and calcium content compared to human breast milk

- It is expensive in comparison to breast milk
- It carries an additional risk of infection and malnutrition if not prepared and used correctly
- Can have dilution errors leading to malnutrition of the child
- Can reduce the bonding opportunities between mother and child causing a delay of psychosocial stimulation
- High risk of contamination if hygiene conditions are uncertain, hence a higher risk of diarrhea, malnutrition and death of the child
- Risk of early pregnancy of the mother if there is no family planning
- Can be a source of stigma to the mother in her community

Home prepared animal milk

Animal milk can be prepared (modified) at home and adapted in accordance to the infant's nutrient needs. These milks include those from cow, goat, sheep, camel, etc. and can be:

- Modified by adding water, sugar and other nutrients
- Powder milk (whole milk, cream milk)
- Non-modified fresh milk (whole)
- Condensed milk: is not good for infants and storage is difficult

Preparation of modified milk for a child between 0 to 6 months

Cow milk: 100 ml of cow milk + 50 ml boiled water + 10 g of sugar (2 pieces of sugar or two full coffee spoons) or 2 volumes of milk + 1 volume boiled water + 2 pieces of sugar or 2 two full coffee spoons).
The mixture must be boiled before being given to the infant.

Goat milk: Same preparation as cow milk, but requires folic acid supplementation.

Sheep milk: Richer in fats and proteins than cow milk. Thus dilute as follows:
50 ml milk + 50 ml boiled water + 5 g of sugar.
Boil the mixture.

Actions for care providers

- Explain to the mother the advantages, disadvantages and risks related to bad application of the method as well as other feeding options available
- Discuss the implications of using this method for the mother and the child (stigma)
- Help the mother to monitor the production of urine by the child to avoid dehydration. A normal child urinates 5 to 6 times a day
- Refer the mother to a support group in the community for help
- Provide family planning (FP) services and advise on feeding of the mother

OPTION 6: ARTIFICIAL MILK

The preparation of artificial milk is described in Annex 14.

INDUSTRIAL PREPARATIONS FOR INFANTS

These are milk-based products or proteins of soya enriched with micronutrients given to an infant. Generally, they are available in powder form to be dissolved or reconstituted in water. There are generic forms for normal children and special preparations for premature babies.

Advantages

- No risk of contamination of HIV/AIDS after birth
- It is an option if the family meets all the AFASS conditions

Disadvantages

- Very expensive for a majority of mothers in rural area
- Can have errors of dilution
- High risk of contamination if hygiene conditions are uncertain, hence a higher risk of diarrhea, malnutrition and death of the child
- Can reduce the bonding opportunities between mother and child causing a delay of psychosocial stimulation
- Risk of early pregnancy of the mother if there is no family planning
- Can be a source of stigma for the mother in the community

Preparation

- Follow preparation instructions provided on the package in terms of quantity and quality
- Practice using household measures (i.e., utensils) with the mother to measure milk and water if mother can not read
- Encourage the mother to feed the child with a cup instead of a bottle and teat

Actions for care providers on artificial milk

- Explain to the mother the advantages, the disadvantages and risks and challenges related to nutritional value and bad application of the method as well as other feeding options available
- Never demonstrate preparation of artificial milk in a group which can be construed as a promotion of the products
- Discuss the implications of this method on her and the child (stigma)
- Evaluate the feasibility, acceptability, durability and safety (AFASS) conditions for this method with the mother
- Show to the mother or her family how to clean the materials used to prepare the milk
- Ask the mother to practice preparing the milk to ensure that she understands (has mastered) the procedure
- Give a dosage of vitamin A to the mother and the child within the first 6 weeks after delivery
- Provide family planning (FP) services and advise on feeding of the mother
- Respect the international or national code on breast milk substitutes

5.2.2 Children aged 6 to 24 months

Milk is an important part of a child's diet even after first 6 months of life and should continue to provide at least half of the nutritional needs of the child between 6 and 12 months of age, and, up to 40% for a child between 12 and 24 months. For HIV infected mothers early cessation (shortened duration) of breastfeeding is recommended (by 6 months) to reduce the risk of MTCT after delivery.

The mother should continue replacement feeding with an appropriate breast milk substitute until the child is 24 months of age. In addition, complementary foods must be properly prepared and varied. Meals should be given 2-3 times a day from 6 to 8 months and 3-4 times a day plus snacks from 9-24 months.

If there are no available, feasible, affordable, sustainable and safe (AFASS) substitutes for breast milk, replacement feeding must be based on properly prepared foods. Provide a variety of foods in order to get an adequate amount of energy, protein and micronutrients. If possible, other derivatives of milk like non-modified animal milk, full cream (whole) milk in powder, or yogurt should be given as a source of protein and calcium. Other products like meat, liver, and fish should be given as sources of iron and zinc. Fruits and vegetables are a good source of vitamins and minerals. Micronutrient supplements may be provided according to the child's needs.

Table 4 below gives a summary of nutritional care and support for asymptomatic and symptomatic infected children.

Table 4: Summary of nutritional care and support for asymptomatic and symptomatic infected children.

Age	Asymptomatic children	Symptomatic children	
		On ARV	Not on ARV
0-6 months	Assessment of the nutritional status Exclusive breastfeeding in the first 6 months	Assessment of the nutritional status Exclusive breastfeeding in the first 6 months	Assessment of the nutritional status Exclusive breastfeeding in the first 6 months
6-12 months	Continuing breastfeeding A meal of cereal and/or enriched vegetable plus fruits Vitamin A twice a year and, if necessary, add other multivitamins	Continuing breastfeeding A meal of cereal and/or enriched vegetable and fruits Vitamin A twice a year and, if necessary, add other multivitamins	Continuing breastfeeding A meal of cereal pulp and enriched vegetable and fruits Vitamin A twice a year and, if necessary, add others multivitamins
12-24 month	Continuing breastfeeding; 4-6 meals per day including snakes food between the meals Vitamin A twice a year and if necessary add	Continuing breastfeeding; 5-7 meals per day including snacks between meals - Multivitamins	Continuing breastfeeding; 6-8 meals per day, including between meals - Multivitamins

	others multivitamins		
3-5 year	5-7 meals per day including snacks between meals Vitamin A twice a year and if necessary add others multivitamins	5-7 meals per day including snacks between meals Vitamin A twice a year and if necessary add others multivitamins	4 meals split per day including snacks between meals Vitamin A twice a year and if necessary add others multivitamins
Child above 5 years	6-8 meals per day including snacks between meals Vitamin A twice a year and if necessary add other multivitamins		

Source: Rwanda nutrition working group.

NOTE: The proposals are based on the increase nutrients needs.

5.3 MANAGEMENT OF LACTATION PROBLEMS

5.3.1 MECHANISM FOR MILK PRODUCTION

Milk is produced in the breast from the milk ducts and then drained outside by lactiferous channels. At the level of the areola, these channels grow bigger and become joined at the nipple where milk accumulates for nursing. When a child suckles, it stimulates the mother's brain which produces milk. Sight of the child, his tears or even thinking about the child can produce the same effects (the woman develops a feeling of milk discharge). If the child does not suckle on a regular basis, the volume of milk produced decreases and eventually the breasts dry up.



5.3.2 Management of cracked nipples

Cracks on nipples can cause open wounds at the end of the nipple and pain during breastfeeding. This can be caused by poor attachment and suckling position.

Actions for the healthcare provider

- Help the mother put the child on the breast in a good position with more areola (dark area around the nipple) visible above the baby's mouth than below
- Leave nipples free to air for a few minutes after nursing
- Do not wear tight bras
- Apply a drop of milk to nipples at the end of nursing to lubricate the nipple and reduce the pain
- Do not wash nipples with soap or aggressive products or apply drugs on it -- use only water

5.3.3 Management of breast engorgement

Engorgement is manifested by a feeling of heaviness, heat and pain in the breasts. They become hard and swollen. This should not be confused with the feeling of the breasts being full of milk.

Actions for service providers

Hot bottle Method:

- Take a bottle of 700 to 1000 ml with a broad neck
- Fill it with hot water and empty it thereafter
- Insert the nipple into the opening of this bottle to stretch the nipple
- Hold the bottle without moving it for 5-10 minutes. As it cools, a vacuum is created in the bottle, the nipple is pulled in and milk is ejected;
- Repeat the process if necessary until the milk ducts are completely opened. This is easier than manual expression, is less painful and makes breastfeeding easier.



Some health-providers recommend putting *frozen ice cubes* near the armpits for 15-20 minutes, 4 times a day to cool down the pain and the heat.

b) Restoring normal nursing

- Let the baby suckle as frequently as possible or continue to regularly extract milk to avoid additional engorgement
- Ensure proper suckling and attachment position
- Gently massage the engorged areas towards the nipple
- Change position in order to empty all of the breast, especially parts where milk is accumulated
- Avoid leaning forward because this may increase gravity and increase engorgement

5.3.4 Management of mastitis or abscess

Mastitis is an inflammation of a woman's breast, usually as a result of bacterial infection that causes fever; pain and swelling of the breast. If mastitis is not treated, the breasts can get swollen and pus can accumulate within. This is called a "breast abscess".

Actions for service providers

- Empty the infected breast as described above under engorgement
- Check if the liquid coming from the nipple is milk or pus - press on a piece of cotton; if the liquid soaks into the cotton easily, it is milk; if it remains on the surface, it is pus. If the breast is infected, the milk should not be given to the child
- Continue breast-feeding on the non-infected breast
- Put the mother on antibiotics and antipyretics (e.g., aspirin)
- Show the mother how to gently apply a wet piece of cloth on the breast to decrease pain

- If the abscess is confirmed, take her to the hospital for abscess drainage
- If the abscess is on both breasts, unblock as described above, advise the mother to heat treat and cup feed expressed breast milk
- Help the mother to continue breast-feeding after healing

5.3.5 Management of “NOT ENOUGH MILK SYNDROME”

The causes of the “not enough milk syndrome” are: late breast-feeding initiation after birth, nursing irregularly or for short periods and at fixed times, no nursing at night, bad positioning of the baby at the breast, use of feeding-bottles, teats, lollipops and early introduction of other foods, drinks (water or infusions etc). Lack of milk can also be as a result of a psychological problem encountered by some women.

A lack of milk is evidenced through: passing of a low volume of concentrated urine (less than 6 times per day, yellow and strong odor); poor weight gain of the infant (less than 500 g/month and birth weight not doubled at two weeks); milk that does not discharge when the mother tries to express or when the baby is placed on the breast; and the child does not defecate frequently (and when they do it is hard and in small quantity).

Actions for service providers

- Advise the mother to eat and drink sufficiently and rest and relax as much as possible
- Breastfeed frequently, longer and upon request
- Improve the baby’s latch on the breast by adopting a good position
- Let the baby empty each breasts completely
- Breast feed exclusively until 6 months; other than breast milk do not give other food or drink to the baby
- Do not use a feeding-bottle, lollipop or teat
- Help the mother rebuild self-confidence to increase her production of milk

5.3.6 Management of a child who cries persistently

Children generally cry due to hunger, discomfort (dirty, hot, cold, etc.) and illness or pain (colic, otitis). This can make the baby refuse to suckle and is unable to sleep properly.

Actions for service providers

- Change the baby’s clothes, keep them warm or reduce their clothing depending on the discomfort
- Advise the mother to breastfeed the baby in a good position
- Examine the child and refer for treatment if/when necessary
- Try putting the child in a different position that might relieve its pains (i.e., lay the baby on the back, on the mother’s stomach, etc)

5.3.7 Management of inverted nipples

Actions for service providers

- Reassure the mother that she can still breastfeed her baby
- Explain to the mother that the nipples will be extended after delivery when the baby suckles
- During the antenatal clinic, counsel the mother to pull and roll (using her fingers) the nipples frequently especially after birth. Maximum effect occurs during the first 2 weeks after delivery
- Encourage partner support in correcting inverted nipples
- If the inversion persists, the nipples can be suctioned using a syringe if inversion persists - this should be done at the hospital or health center

5.4 NUTRITION CARE AND SUPPORT FOR CHILDREN INFECTED WITH HIV/AIDS

Malnutrition is frequently a problem with children infected with HIV/AIDS, non-infected children born to HIV infected mothers or those who are not infected but sick or do not receive enough food.

Like any other infection, HIV increases demand for macronutrients (proteins, carbohydrates and lipids) and micronutrients (vitamins and minerals). In general, in rural areas where more than half of population lives under the poverty line, parents are not able to provide adequate quantities and quality of food to their children.

The current recommendation (WHO, 2003) is for an energy increase of 10% above the normal needs for infected asymptomatic children in order to ensure growth, and development. For infected symptomatic children or those suffering from loss of weight increase energy requirements by 50 to 100% above the normal needs.

5.4.1 MAJOR NUTRITIONAL PROBLEMS OF HIV-INFECTED CHILDREN

Low birth weight: This is due to the high prevalence of premature deliveries and inadequate intra-uterine growth seen in HIV-infected women and is related to the severity of AIDS in the mother and micronutrient deficiencies (common in HIV infected women).

Growth faltering: Growth faltering is also a symptom of HIV/AIDS infection in children and results in growth failure in terms of height and weight gain. Non-infected children with low birth weight born to infected mothers tend to rapidly gain weight after birth. On the other hand, infected children do not gain adequate weight and height or they gain weight very slowly after birth.

In addition to Table 3, the following information can be used to classify nutritional status of children:

For children under 5 years old, some possible clinical signs of malnutrition are: underweight, stunting, edema, thinning hair, loss of weight, skin wrinkles, anemia. An assessment and classification of their nutritional status can be done using the following anthropometric indices:

- **W/A:**
 - < 65%: severe malnutrition (red strip)
 - 65 - 85%: moderate malnutrition (yellow strip)
 - \geq 85% : good nutritional state (green strip)

- **W/H:**
 - <70%: severe malnutrition
 - Between 70 - 80%: moderate malnutrition

For children aged between 5 and 15 years, their nutritional status and classification can be done using the W/H anthropometric index:

- **W/H:**
 - < 70%: severe malnutrition
 - between 70 - 80% : moderate malnutrition

Major causes of nutritional problems (malnutrition)

- High viral load
- Existence and persistence of other diseases, i.e., diarrhea; and opportunistic infections
- Insufficient intake and an poor quality diet
- Influence of medication on appetite, absorption, utilization and metabolism of food

Actions for service providers

Guidelines on monitoring HIV-positive mothers and their children are given in Annex 15.

For infected children, actions should lead to:

- Improved nutritional status as shown by maintenance of weight, avoidance of weight loss, and maintenance of muscular mass
- Reinforced immunity for resistance to infection and healing upon treatment
- Management of symptoms that could interfere with food intake

Care and support for severely malnourished children is a more complex situation. It requires therapeutic feeding and should be done at a therapeutic nutrition service center by qualified personnel. The therapeutic regimen should conform to the national protocol for care and support for severe malnutrition or the WHO guidelines for management of severe malnutrition. The steps of the protocol are summarized in the Rwanda National Protocol for Food and Nutrition Care and Support for PLWHA.

6 FOOD AND NUTRITIONAL CARE AND SUPPORT FOR PLWHA TAKING MEDICATION

6.1 Antiretroviral Therapy, Food and Nutrition

Increased access to ART by PLWHA in Rwanda is being achieved through a combination of local, national and international efforts. Antiretroviral drugs have been shown to significantly reduce the rate of replication of HIV in the body. However, ART is not required by all PLWHA at all stages of infection, research is ongoing but most often ARVs are prescribed when the virus has begun to cause damage to the immune system. WHO recommends ARV treatment programs in resource limited settings to start ARV therapy for HIV infected adolescents and adults when they have:

- WHO Stage IV of HIV disease (clinical AIDS), regardless of CD4 count;
- WHO Stages I, II, or III of HIV disease, with a CD4 count below $200/\text{m}^3$; or
- WHO Stages II or III of HIV disease with TLC below $1200/\text{mm}^3$.



ARVs are normally given to HIV positive people based on CD4 decline and a high viral load and clinical symptoms of AIDS. These medications do not cure the HIV virus, but work to reduce the amount of virus in the blood and help delay the progress of the disease and increases life expectancy improving the quality of life. If the medications are able to raise the CD4 count, it means that they are working.

There are two classes¹ of ARV drugs that are commonly used:

1. **Reverse transcriptase inhibitors (RTIs),**
and
2. **Protease inhibitors (PIs).**

Each class of drug acts at a different stage in the replication of HIV. When HIV infects a cell, the viral RNA converts to viral DNA and is copied into the host cell's DNA by an enzyme called reverse transcriptase. Then the viral DNA instructs the cell to make copies of HIV genetic material. The protease enzyme assembles this copied viral genetic material into new viruses, after which they are released from the cell to infect other cells.

RTIs operate early in the HIV life cycle to stop viral replication after HIV has infected a cell. Two types of these drugs exist: non-nucleoside reverse transcriptase inhibitors (NNRTIs) and nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) also called nucleoside analogues. **NNRTIs** bind onto the reverse transcriptase enzyme and prevent the HIV RNA

¹ A third class of ARV, fusion inhibitors, is seldom used in resource-limited settings; no fusion inhibitors are included in the list of ARVs published by the World Health Organization (WHO) for resource limited settings.

from converting into DNA, thereby preventing it from being copied into the cell's DNA. NRTIs incorporate into the viral DNA and prevent it from producing copies of HIV. On the other hand, **PIs** operate later in the life cycle of HIV, stopping the protease enzyme from assembling new HIV material to be released to infect other cells.

In most cases, one ARV drug alone cannot stop replication of the virus. To optimize efficacy and reduce the chances of drug resistance, ART usually involves the administration of more than one ARV drug, a practice known as **combination therapy** or **highly active antiretroviral therapy (HAART)**. In Rwanda, the first-line HAART regimen for adults and adolescents consists of **stavudine, lamivudine, and nevirapine**.

PLWHA must strictly follow treatment schedules for ART and other medications in order to maintain the best possible health status. Non-adherence to treatment can have grave negative implications for both individuals and their communities. For an HIV-infected individual, interrupting ART or taking it incorrectly may lead to a substantial decline in health, increased frequency of opportunistic infections, and faster progression of the disease. For the community, non-adherence to treatment may lead to the development of drug-resistant strains of HIV, which creates a greater number of PLWHA who cannot be effectively treated against the disease.

Because ART usually involves a lengthy period of treatment and because side effects are common, the risk of non-adherence to ART is high. Food and nutrition interactions with ARV drugs can also affect PLWHA's adherence to drug regimens resulting in difficulties to follow drug schedules, taking incorrect doses, failure to follow other drug directions, or stopping consumption of the drug altogether.

6.2 Interactions between ARV and other Drugs with Food and Nutrition

Interactions between ART and food can significantly influence the success of ART by affecting drug efficacy, adherence to drug regimens, and the nutritional status of PLWHA. Therefore, managing ART and food interactions is a critical factor in the extent to which ART is effective in slowing the progression of HIV/AIDS and improving the quality of life of the PLWHA.

Annex 12 provides information about food implications of the 13 approved ARVs and their side effects.

1) Food can affect medication absorption, metabolism, distribution, and excretion.

Certain foods affect the efficacy of some ARV drugs by affecting their absorption, metabolism, distribution, or excretion. Food enhances the efficacy of some drugs and inhibits the efficacy of others. Consequently, some ARV drugs should be taken with food, others on an empty stomach, and others with or without specific types of foods.

Four principles for interactions between ARV drugs and food:

- Food can affect medication absorption, metabolism, distribution, and excretion.
- Medications can affect nutrient absorption, metabolism, distribution, and excretion.
- The side effects of medication can negatively affect food consumption and nutrient absorption.
- Combination of medication and certain foods can produce unhealthy side effects.

2) Medications can affect nutrient absorption, metabolism, distribution and excretion.

Certain ARV drugs influence the body's use of nutrients by affecting absorption, metabolism, distribution, or excretion. Elevated blood cholesterol and triglyceride levels can increase the risk of coronary heart disease. Such interactions may call for nutritional responses, such as reduced consumption of saturated fats, if other food options are available.

3) Medication side effects can negatively affect food consumption and nutrient absorption.

Side effects of some medications can lead to reduced food intake or nutrient absorption that worsens weight loss and nutritional problems experienced by PLWHA. Nausea, taste changes, and loss of appetite may reduce food consumption, while diarrhea and vomiting may increase nutrient losses.

Changing the diet may help PLWHA to manage certain ARV side effects and reduce negative effects on their nutritional status. For example, if a particular medication causes nausea, it can be taken with a light meal or with dry, salty foods. If it causes diarrhea, a PLWHA can drink plenty of fluids and eat foods rich in energy and other nutrients to reduce the impact of diarrhea on health and nutritional status (Annex 6, 7 and 8).

ARVs can also have unhealthy side effects that are not related to food consumption or nutrient absorption but call for food and nutritional responses.

4) Combinations of medication and certain foods can produce unhealthy side effects.

PLWHA need to be made aware of the foods contra-indicated with the drugs they are taking so that these foods can be avoided. For example, consuming alcoholic drinks while taking ARV medication can cause pancreatitis, an inflammation of the pancreas that can be serious and even fatal. In some cases, the food interactions of ARV combinations are different from those of the individual drugs (Annex 12).

All combination ART regimens have food and nutrition implications, though the specifics and the severity of ART-food interactions vary. Food and nutrition interactions of each drug in the regimen must be considered separately, as well as any interactions that may be different due to the drug combination. For those taking multiple ARV drugs (combination therapy), one ARV may need to be taken with food and one without food, requiring the drugs to be taken at separate times. Drug and food timetables need to be established to meet these requirements.

When planning management of drug-food interactions, service providers must obtain complete and up-to-date information from drug product information, medical facilities, publications, or other sources. **Table 5** shows the interactions that can occur between drugs in Rwanda's First Line HAART regimen, and food and nutrition, and offers recommendations to manage them.

Table 5: Recommendations for managing food and nutrition interactions of Rwanda’s First Line ARV Combination Regimen: **stavudine (d4T), lamivudine (3TC), and nevirapine (NVP).**

Medication (abbreviation)	Food Recommendations	Foods to avoid	Possible Side Effects
Stavudine (d4T)	Can be taken without regard to food	Limit the consumption of alcohol	Nausea, vomiting, diarrhea, peripheral neuropathy, chills and fever, anorexia, stomatitis, anemia, headaches, rash, bone marrow suppression, pancreatitis. May increase the risk of lipodystrophy.
Lamivudine (3TC)	Can be taken without regard to food	alcohol	Nausea, vomiting, headache, dizziness, diarrhea, abdominal pain, nasal symptoms, cough, fatigue, pancreatitis, anaemia, insomnia, muscle pain, rash
Nevirapine (NVP)	Can be taken without regard to food	alcohol	Nausea, vomiting, rash, fever headache skin reactions, fatigue, stomatitis, abdominal pain, drowsiness, paresthesia. High hepatotoxicity, Steven Johnson syndrome

Source: Adapted from FANTA, 2001.

ACTIONS FOR SERVICE PROVIDERS

- I. Support PLWHA with information to prevent food-drug interactions and to mitigate the side effects of medications and herbal remedies.
 - Keep up-to-date about information on food and drug interactions;
 - Provide informative materials related to food, nutrition and medication;
 - Create awareness on nutrition concerns related to HIV/AIDS treatment.

- II. Support PLWHA to meet their drug and food obligations to prevent negative effects of food-drug interactions and to mitigate harmful side effects.
 - Advise on the drugs that should be taken with or without food (See Annex 12 for specific food-drug interactions);
 - Devise a meal plan/drugs timetable to minimize the side effects of medications;
 - Follow instructions for medications and continue the full course;
 - Monitor the effects of medication on client’s health and nutritional status;
 - Not all symptoms are necessarily due to side effects of drugs;
 - Advise clients to seek prompt treatment for any infections, allergies and other conditions;
 - Inquire about side effects and actions taken regarding these side effects;
 - Counsel the client on the use of herbal remedies.

The above recommendations also apply to older children and adolescents on ART and others medications. Annex 16 shows the biological and laboratory monitoring plan.

7 FOOD SECURITY FOR HOUSEHOLDS AFFECTED BY HIV/AIDS

Household food security implies a situation whereby every person, at all times, have physical, social and economical access to sufficient, safe and nutritious food to meet their nutrient needs for an active and healthy life. To achieve this, households have the ability to produce and/or purchase and preserve food and have adequate knowledge on how to use the food.

HIV/AIDS increases the risk of food insecurity through its impact on household productive labor, income, food stores and dependency ratios. HIV/AIDS affects all three elements of food security: availability, accessibility, and utilization.

Food insecurity may lead people to adopt risky behaviors (*i.e.*, sex for food/money), which in turn, may increase the spread of HIV/AIDS. As such, improving food security is a prerequisite to improving livelihoods and preventing risky behaviors.

ACTIONS FOR SERVICE PROVIDERS

Service providers include associations of PLWHA, community development committees, agricultural extension services, health facilities, NGOs, bi- and multi-lateral organizations.

- I. Assess the dietary practices and factors that might prevent PLWHA from improving their food security.
 - Understand the following areas specific to the community:
 - HIV/AIDS burden in the community;
 - Food production patterns;
 - Access to health, social and financial services;
 - Division of labor in households of PLWHA;
 - Use of food available to the households;
 - Food consumption patterns;
 - Food preservation methods;
 - Coping mechanisms for food insecurity;
 - Evaluate food security in HIV/AIDS affected households. Specific community factors should be developed in collaboration with social workers and local leaders to identify with food insecure households including some of the following:
 - Households that report to have had less than 2 meals per day, prior to the interview;
 - Households that have been forced to reduce food portions;
 - Households that have been obliged to borrow or exchange food in the course of the week preceding the interview;
 - Assess constraints and challenges met in adopting recommended practices.
- II. Support households, in collaboration with partners, affected by HIV/AIDS to implement effective and sustainable food security strategies, such as:
 - Using new crop breeds and new technologies that reduce labor requirements
 - Initiate income generating activities;
 - Reallocating food expenditures to increase purchase of nutritious foods;

- Adjusting tasks within the household to accommodate nutritional care and support for PLWHA;
- Identify services to strengthen food access/availability among households affected by HIV/AIDS
 - Growing a variety of foods and rearing of animals (i.e., chickens, goats, etc).
- Refer eligible beneficiaries to services/institutions that provide food support and on-site or take-home rations for HIV/AIDS.
- Combine or link food aid to other services such as:
 - Nutrition education and counseling;
 - Growth promotion, breastfeeding and basic child health services;
 - Management/treatment of infections, which can worsen malnutrition;
 - Reproductive health services, particularly pre- and post-natal care;
 - Psychosocial support for PLWHA and family members;
 - Economic/social support for HIV-affected households maintain their income, savings and overall livelihood security;
- Inform patients about food security social networks in the community.

Annex 17 gives the Minimum Household Food Package for Nutritional Care and Support of PLWHA in food insecure households while Annex 18 presents some suggested recipes.

8 MONITORING AND EVALUATION OF THE IMPLEMENTATION OF GUIDELINES

8.1 Objectives of Monitoring and Evaluation

Monitoring and evaluation (M&E) will generate information regarding the extent to which the main objectives of the Guide for Food and Nutritional Support and Care for PLWHA are being met, and improve efficiency of the users. Systematic assessment, analysis and documentation of progress of activities related to nutritional care and support are essential to ensure successful implementation.

Benefits of monitoring and evaluation are that it:

- Allows for improvements in interventions;
- Provides stakeholders with information on progress in use of food and nutrition as a component in comprehensive care and support for PLWHA;
- Permits the sharing of results and lessons learned with other programs and supplies the information to advocate for increased support for nutritional care and support programs;
- Creates awareness about improvements in nutritional status that can be achieved through behavior change as recommended by the Guidelines.

What to monitor?

- The number of people trained;
- The number of copies of guidelines distributed.

Who does the monitoring?

- National level: Ministry of Health (Nutrition Division, TRAC);
- District level: Health district (Medistrict);
- Health center level: Nutritionists, PMTCT/VCT heads;
- Community level: Health animators, PLWHA networks, NGOs, community-based organizations, other partners;

How to do the monitoring:

- Develop a monitoring tool in a participatory manner;
- Interview people living with HIV/AIDS to assess at what level the service providers were able to utilize and implement the guidelines.
- Hold a follow-up meeting with key persons in agencies using the guidelines in order to evaluate their experience with its use.
- Set up a system of periodic reporting to assess progress on the use of the guidelines.

Follow –up

- Utilization of feedback and lessons learnt by relevant staff on the implementation and (possible) revision of the guidelines.
- Documentation of best practices on the experience in implementation of the guidelines.

Table 6: Activities, indicators and sources of data for monitoring and evaluation

ACTIVITY	INDICATORS	SOURCE OF INFORMATION
Evaluation of nutritional status	% of children <5 years with W/A <65%	Growth chart
	% of children <5 years with W/A between 65%-85%	Growth chart
	% of children <5 years with W/A < 85%	Growth chart
Nutritional counseling	% counselors trained	Service providers' reports
	Topics covered for different groups (children, mothers...)	
	Duration of counseling sessions	
	Number of sessions held	
	% of people followed up at home	
	% of people followed up at health centers	
	% of people followed up at the offices of associations	
Nutritional rehabilitation	% of children <5 years with W/H < 70%	Rehabilitation centre register
	% of children <5 years with W/H between 70% and 80%	Rehabilitation centre register
	% of children between 5-15 years with W/H <70	Rehabilitation centre register
	% of children of 5-15 years with W/H between 70% and 80%	Rehabilitation centre register
	% adults with BMI <16	Rehabilitation centre register
	% adults with BMI between 16-18.5	Rehabilitation centre register
	Number of admitted cases	Rehabilitation centre register
	% cured	Rehabilitation centre register
	% abandoned	Rehabilitation centre register
	% died	Rehabilitation centre register
	% transferred	Rehabilitation centre register
	Average length of stay	Rehabilitation centre register
	Average weight gain	Rehabilitation centre register
	% children having receive Vitamin A	Rehabilitation centre register
	% children vaccinated against measles	Rehabilitation centre register
	% children dewormed	Rehabilitation centre register
	% women having received Iron	Rehabilitation centre register
% breast feeding women having received Iron	Rehabilitation centre register	
Food Security	% identified food insecure households	
	% household having benefited from IGAs	
	% PLWHA having received food aid	Reports from service providers
	% PLWHA having joined associations	
	% PLWHA having gained weight as a result of food aid	

Source: Nutrition working group in Rwanda (2005).

9 REFERENCES AND RESOURCES

- American Dietetic Association : *Manual of Clinical Dietetics*. Chicago, 2000.
- Antiretroviral Treatment: Swiss HIV Cohort Study.” *The Lancet*. October 20, 2001. 358:1322-27.
- Bonnard, P. *HIV/AIDS Mitigation: Using What We Already Know*. Washington DC : Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2002.
- Cadman, J, and C. Arboleda. *Once or Twice : A Guide to Medication Dosing for HIV infection*. Washington DC: National Minority AIDS Council, 2001.
- Carr, A., and D. Cooper. “Adverse Effects of Antiretroviral Therapy.” *The Lancet*. 2000. 356 : 1423-30.
- Castleman, Tony, Seumo-Fosso, Eleonore, and Cogill, Bruce, FANTA Technical Note No. 7: *Food and Nutrition Implications of Antiretroviral therapy in Resource Limited Settings*, FANTA-AED, and Washington, DC: 2003.
- Centers for Disease Control Website: www.cdc.gov
- Clinical Infectious Diseases*. Supplement to April 2003 Issue. 2003:36 (Supplement 2). Infectious Diseases Society of America, 2003.
- Currier, J. “Metabolic Complications of Antiretroviral Therapy and HIV infection.” *HIV/AIDS: Annual Update 2001*. Imed Options, 2001. Medscape.
- Dobkin, J.F. “Tenofovir: the First Nucleotide for HIV Infection.” *Infectious Medicine*. 19(1): 11, 38, 2002.
- Dresbach, Sereana Howard, and Rossi, Ami, Ohio State University Fact Sheet, *Phytochemicals – Vitamins of the Future ?* Ohio State University Extension, Family and Consumer Sciences, <http://ohioline.ag.ohio.state.edu:2004>.
- Fan, H., R.F. Conner, and L.P. Villarreal. *The Biology of AIDS*. Fourth Edition. Boston: Jones and Bartlett Publishers International, 2000.
- FANTA, 2001. *HIV/AIDS: A Guide for Nutrition, Care and Support*. Food and Nutrition Technical Assistance Project, Academy for Educational Development Washington DC. www.fantaproject.org (French and English versions)
- FAO – Rwanda, Improvement of Food and Nutrition Status of Vulnerable households by using Ubudehe approach, Kigali : December 2003
- FAO – Rwanda, Protection and improvement of food and nutrition security of orphans and HIV/AIDS affected children in Umutara province, Kigali : March 2004
- FAO/WHO, 2002. *Living Well with HIV/AIDS : Nutritional Care and Support for People Living with HIV/AIDS*. Food and Agriculture Organization and World Health Organization, Rome/Geneva. www.fao.org
- Felly J., K. Boubaker, B. Ledergerber, E. Bernasconi, H. Furrer, M. Battegay, B. Hirschel, P. Vernazza, P. Francioli, G. Greub, M. Flepp, and A. Telenti, for the Swiss HIV Cohort Study. “Prevalence of Adverse Events Associated with Potent.
- Fields-Gardner C., C. Thomson, and S. Rhodes. *A Clinician’s Guide to Nutrition in HIV and AIDS*. Chicago: American Dietetic Association, 1997.
- Fields-Gardner, Cade, Salomon, and Davis, Margaret, *Living Well with HIV and AIDS : A Guide to Nutrition*, American Dietetic Association, USA : 2003.
- Gelato, M. “Insulin and Carbohydrate Dysregulation”. *Clinical Infectious Diseases*. 2003. 36 :S91-5.
- GoR/FAO – Rwanda, Strategy Paper : Agriculture sector response to mitigate the impacts on HIV/AIDS in Rwanda, Kigali : May 2004 Food and Nutrition Technical Assistance Project. *HIV/AIDS: A Guide for Nutritional Care and Support*. Food and Nutrition

- Technical Assistance Project, Academy for Educational Development, Washington DC, 2001.
- Hsu, A., G.R. Granneman, M. Heath-Chiozzi, E. Ashbrenner, L. Manning, R. Brooks, P. Bryan, K. Erdman, and E. Sun. "Indinavir Can Be Taken with Regular Meals when Administered with Ritonavir." Abbot Laboratories. 12th World AIDS Conference, 1998.
- Linkages, *FAQ Sheet 1: Breastfeeding and HIV/AIDS: Frequently Asked Questions*, Linkages Project- AED, Washington, DC: Updated April 2004. (French and English).
- Linkages, *Infant Feeding Options in the Context of HIV*, the Linkages Project, AED, Washington, DC: April 2004.
- MAAIF, 1997 *Nutrition and HIV/AIDS: A Handbook for Field Extension Agents*. Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Uganda.
- Ministry of Health, Kampala, Uganda. Mondy, K., S. Lassa-Claxon, M. Hoffman, K. Yarasheski, W. Powderly, and P. Tebas. "Longitudinal Evolution of Bone Mineral Density (BMD) and Bone Markets in HIV Infected Individuals." Paper presented at the 9th Conference of Retroviruses and Opportunistic Infections, Seattle, WA, February 2002.
- MOH (2003) *Nutritional Care and Support for People Living with HIV/AIDS in Uganda: Guidelines for Service Providers*, Ministry of Health, Kampala, Uganda (2003).
- MOH, 1999. *The Management of Severe Malnutrition in Uganda: A Guide for Health Workers*.
- MOH, 2001. *Policy for the Reduction of the Mother-to-Child HIV Transmission in Uganda*, Ministry of Health, Kampala, Uganda
- MOH, 2001. *Policy Guidelines on Feeding of Infants and Young Children in the Context of HIV/AIDS*. Ministry of Health, Kampala, Uganda.
- MOH/RSA, 2001. *South African National Guidelines on Nutrition for People Living with TB, HIV/AIDS and other chronic Debilitating Conditions*. Ministry of Health, South Africa.
- Monday, K., and P. Tebas. "Emerging Bone Problems in Patients Infected with Human Immunodeficiency Virus." *Clinical Infectious Diseases*. 2003. 36 :S101-5.
- MSF 1995 *Nutrition Guidelines*, Médecin Sans Frontières, Paris, France: 1995.
- National Institutes of Health. "Structured Intermittent Therapy May Prove Feasible, Garlic Can Impede HIV Medication." *AIDS Read* 12. (2): 60, 2002.
- NPA+2002. *Food for People Living with HIV/AIDS*. Network for African People Living with HIV/AIDS. Nairobi, Kenya.
- "Optimizing Anti-HIV Medications." *The Cutting Edge*, 2001. www.tceconsult.org. Nerad, J., M. Romeyn, E. Silverman, J. Allen-Reid, D. Dietrich, J. Merchant, V. Pelletier, D. Tinnerello, and M. Fenon. "General Nutrition Management in Patients Infected with Human Immunodeficiency Virus." *Clinical Infectious Diseases*. 2003. 36.
- Piscitelli, S.C., A.H. Burstein, N. Welden, K.D. Gallicano, and J. Falloon. « The Effect of Garlic Supplements on the Pharmacokinetics of Saquinavir. » *Clinical Infectious Diseases*. 2002. 34:234-8.
- Piwoz, E. G., and E.A. Preble. *HIV/AIDS and Nutrition: A Review of the Literature and Recommendations for Nutritional Care and Support in Africa*. Washington, DC: Academy for Educational Development, November 2000.
- Pronsky, Z., S. A. Meyer, and C. Fields-Gardner. *HIV Medications Food Interactions*, Second Edition. Birchrunville, PA: 2001.
- RCQHC/FANTA, 2003. *Handbook: Developing and Applying National Guidelines on Nutrition and HIV/AIDS*. Regional Center for Quality of Health Care, Kampala, Uganda. www.fantaproject.org
- RCQHC/FANTA/LINKAGES, 2003. *Nutrition and HIV/AIDS: A Training Manual*. Regional Center for Quality of Health Care, Kampala, Uganda. www.fantaproject.org

- RCQHC/LINKAGES, 2002. *Nutrition Job Aids: Regions with High HIV Prevalence*. Regional Center for Quality of Health Care, Kampala, Uganda. www.linkagesproject.org
- RCQHC/USAID, 2003: Counseling Mothers on infant Feeding for the Prevention of Mother-to-Child Transmission of HIV : A Job Aid for Primary Health Care Workers Regional Center for Quality of Health Care, Kampala, Uganda.
- RDHS, 2001. Rwanda Demographic and Health Survey, 2000/2001, GoR, Kigali, Rwanda
- Stone, V.E. "Enhancing Adherence to Antiretrovirals: Strategies and Regimens." *Medscape, General Medicine* 4(3), 2002.
- Tawfik, Y., S. Kinoti, and C. Blain. *Introducing Antiretroviral Therapy (ART) on a Large Scale: Hope and Caution*. Washington, DC: Academy for Educational Development, November 2002.
- Tebas, P., W.G. Powderly, S. Claxton, D. Marin, W. Tantisiriwat, S.L. Teitelbaum, *et al.* *AIDSmeds.com*. U.S. Food and Drug Administration, and National Consumers League. "Food and Drug Interactions." Pamphlet. 1998.
- U. S. Public Health Service and Infectious Diseases Society of America. 2001 USPS/IDSA Guidelines for the Prevention of Opportunistic Infections in Persons Infected with HIV. November 2001.
- WHO/BASICS/UNICEF, 1999. *Nutrition Essentials: A Guide for Health Managers*. BASICS II, Washington DC.
- World Food Program. *Food and Nutrition Handbook*, WFP, Rome : 2002 www.wfp.org
- World Health Organization (WHO) Nutrient Requirements for People Living with HIV/Consultation, WHO Geneva : 13-15May 2003.
- World Health Organization (WHO) Scaling Up Antiretroviral Therapy in Resource-Limited Settings: Guidelines for a Public Health Approach. Geneva, June 2002.
- World Health Organization (WHO). New Data on the Prevention of Mother-to-Child Transmission of HIV and their Policy Implications: Conclusions and Recommendations. Geneva, 2001.
- World Health Organization (WHO, UNAIDS). Safe and Effective Use of Antiretroviral Treatments in Adults with Particular References to Resources Limited Settings. Geneva: 2000.
- Zeman, F. *Clinical Nutrition and Dietetics*. Second Edition. New York: Macmillan Publishing Company, 1991.

ANNEX I: ESSENTIAL NUTRIENTS, THEIR FUNCTIONS AND LOCAL FOOD SOURCES

SPECIFIC NUTRIENT	ROLE	DIETARY SOURCES	DEFICIENCY SYMPTOMS
Carbohydrates (Sugars and Starches)	Provide energy and promote body function	Cereals such as maize and rice Starchy roots such as cassava, sweet potatoes, Irish potatoes and yams Starchy fruits such as ibitoke Sugars from sugarcane, ripe fruit, milk, and honey	
Fats and Oils	Provide a concentrated source of energy	Cooking oil, Margarine, fatty animal foods such as meat, chicken, milk, fish, fatty vegetable foods, such as peanuts and soybeans	
Proteins	Form a part of the essential structure of cells	PLANT: legumes and pulses (such as beans, cowpeas garden peas, pigeon-peas and groundnuts). ANIMAL: milk and milk products like yogurt and cheese	

SPECIFIC NUTRIENT	ROLE	DIETARY SOURCES	DEFICIENCY SYMPTOMS
VITAMINS	Promote cell growth and repair, maintenance of epithelial cells, mucous membranes.	Yellow and orange fruits and vegetables (sweet potatoes, mangoes, papaya, carrot, etc).	
Vitamin A	Health and integrity of the skin; supports immune system and provides resistance to infections. Promotes growth Ensures good vision	Dark green leafy vegetables (DGLVs) (including doodo), milk, eggs, liver, full cream milk, margarine	Xerophthalmia , Bitot's spots (dry or foamy white patches on the conjunctive or white of the eye) Night blindness (inability to see clearly at night)
Vitamin B₁ (Thiamine)	Involved in producing energy for the body Supports appetite & central nervous system functions Contributes to energy production in the body	Whole grain cereal, such as roasted and cooked maize, legumes and oil seed. Fish, liver, milk and eggs	Beriberi is the most obvious clinical sign of Vitamin B1 deficiency, and presents in two forms: "Dry" – bilateral peripheral polyneuritis, with evolution to flaccid paralysis "Wet" – cardio-vascular syndrome with oedema and heart failure. Early deficiency symptoms are less specific: fatigue, anorexia, and abdominal discomfort
Vitamin B₂ (Riboflavin)	Enables energy production in the body, supports appetite and central nervous system functions	Fish, liver, meat, milk and eggs Whole grain cereals (maize) and legumes	
Vitamin B₃ (Niacin)	Facilitates metabolism& absorption of fat and proteins. Promotes Red blood cell (RBC) formation	DGLVs, whole grain cereals, fish, meat, chicken & eggs	Angular stomatitis and other mucocutaneous symptoms
Vitamin B₆	Contributes to synthesis of new cells and maintains nervous system	Legumes (especially white beans), avocado and DGLVs, Maize, potatoes, and water melons Fish, meat and chicken	Pellagra : dematise, dementia and diarrhea. Typical skin lesions (dark and dry) are on sun-exposed parts (neck, face and arms).
Vitamin B₁₂	Contributes to bone formation. Improves the absorption of non-heme iron	Fish, meat, eggs and milk	

Vitamin C	Improves the absorption of non-heme iron. Improves the resistance to infections Serves as an anti-oxidant Helps protein metabolism.	Citrus fruits such as guavas, lemon and oranges tomatoes, red and green eppers, Irish potatoes, yams, matoke, and fresh milk	Scurvy: painful joints, swollen, bleeding gums, and possible or hemorrhages
Vitamin D	Required for mineralization of bone and teeth.	Produced by the skin on exposure to sunlight, milk, cheese, butter, eggs, & liver.	
Folic acid (folate)	Supports synthesis of new cells, especially RBCs and gastro-intestinal cells	Margarine, fatty fish, especially ijanga, isambaza, capitaine, tilapia, liver and fish, DGLVs, legumes, oil seeds, groundnuts.	
Vitamin E	Acts as an anti-oxidant by preventing the breakdown of fat and other cells.	DGLVs, legumes and pulses, whole cereals, and oil seeds (such as groundnuts), butter, liver, egg yolk, and milk	
MINERALS			
Zinc	Supports immune system function and resistance to infections and promotes wound healing.	DGLVs, legumes and pulses, whole cereals (maize), and oil seeds (such as peanuts), garlic, butter, liver, egg yolk, milk, meat, chicken, and fish.	
Selenium	Metabolized vitamin A (as an antioxidant) and serves as an antioxidant preventing the breakdown of fat and other body cells.	Liver, egg yolk, meat, and milk Roasted and boiled maize, brown rice, and brown maize flour, DGLVs, legumes and pulses, whole cereals, nuts, avocado and potato leaves.	
Magnesium	Assists muscle and nerve function and release of energy.	Meat, liver, kidney, eggs and milk	
Iron	Promotes oxygen exchange in the blood and serves as a coenzyme.	DGLVs, legumes and pulses, whole cereals, nuts, avocado, Irish potatoes, and fish.	
Fibre	Makes food bulky, gives feeling of fullness, aids in rapid transit of food in intestines, assists bowel movements.	Unrefined or unprocessed plant foods (whole grain- maize, leafy vegetables – spinach, cabbage).	

Adapted from UGANDA Guidelines, 2003.

ANNEX 2: MAINTAINING WEIGHT

If you are sick with HIV/AIDS you need more food to recover from illness. When your body does not get enough food it uses energy and protein stored in fat and muscles. This leads to weight loss, muscle weakness and malnutrition from which it takes longer to recover. Once weight has been lost it is difficult to regain it.

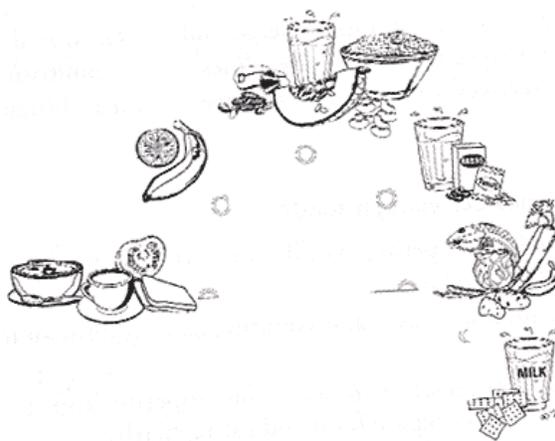
Why do people with HIV/AIDS not eat enough food?

- Illness and medicines reduce appetite, modify the taste of food and prevent the body from absorbing it.
- Symptoms such as a sore mouth, nausea and vomiting make it difficult to eat.
- Tiredness, isolation and depression reduce the appetite and the willingness to make an effort to prepare food and eat regularly.
- There is not enough money to buy food.

To gain or maintain weight

- Eat an adequate amount of staple foods such as rice, maize, millet, sorghum, wheat, bread, potatoes, sweet potatoes, yams and bananas.
- Increase your intake of beans, soy products, lentils, peas, groundnuts, peanut butter and seeds, such as sunflower and sesame.
- Eat meat, fish and eggs as often as you can afford them.
- Eat an adequate amount of fat by using fats and oils when preparing food, as well as eating fatty foods - oilseeds such as groundnuts, soy and sesame, avocados and fatty meat. If problems with fat intake are experienced (especially diarrhea), reduce the fat intake until symptoms are over and then gradually increase it to a level the body can tolerate.
- Add dry milk powder to foods such as porridge, cereals, sauces and mashed potatoes. However, avoid using coffee and tea whiteners, which do not have the same nutritional benefits as milk. Note that some people may find milk difficult to digest. It should be avoided if it causes cramps, a feeling of being full or skin rashes.
- Eat snacks regularly between meals. Good snacks are nuts, seeds, fruit, avocados, yogurt, carrots, cassava chips, crab chips and peanut butter sandwiches.

Try to eat three good meals daily with frequent snacks in-between.



Keep active and stay fit. Exercise helps you to maintain muscle mass.

- Regular exercise strengthens the muscles, makes you feel energetic, helps to relieve stress and increases appetite.

- Cleaning, working in the field and collecting firewood and water may provide enough exercise.
- Find an exercise that you enjoy and can fit into your daily life.
- Walking, running, swimming or dancing are all suitable exercise.

Increase your intake of vitamins and minerals

- Your immune system needs vitamins and minerals to function properly. You should maintain an adequate intake of vitamins and minerals when HIV-positive.
- Eat a variety of vegetables and fruit every day, as these are a valuable source of vitamins and minerals.
- Take care not to lose vitamins and minerals when cooking your food. Boil, steam and fry vegetables only for a short time.
- Multivitamin and mineral supplements, usually in the form of pills, can help but they are expensive and leave less money for food.
- Too many vitamins and minerals can harm you. If you take supplements, follow the instructions on the label.

During infection

- It is very important to try to eat, even though you may not feel like eating, to avoid weight loss.
- Treat infection as early as possible. If you are ill for more than a couple of days see a health worker.

ANNEX 4: BODY MASS INDEX TABLE: ADULTS AND ADOLESCENTS

		(round to the closest number in the table)																
		Weig ht		60	61	62	63	64	65	66	67	68	69	70	72.5	75	77.5	80
Height		KG	132	134.2	136.4	139	141	143	145.2	147.4	149.6	152	154	160	165	170.5	176	182
CM	In	Lb																
150	59		26.7	27.1	27.6	28	28.4	28.9	29.3	29.8	30.2	30.7	31.1	32.2	33.3	34.4	35.6	36.7
152	59.8		26	26.4	26.8	27.3	27.7	28.1	28.6	29	29.4	29.9	30.3	31.4	32.5	33.5	34.6	35.7
154	60.6		25.3	25.7	26.1	26.6	27	27.4	27.8	28.3	28.7	29.1	29.5	30.6	31.6	32.7	33.7	34.8
156	61.4		24.7	25.1	25.5	25.9	26.3	26.7	27.1	27.5	27.9	28.4	28.8	29.8	30.8	31.8	32.9	33.9
158	62.2		24	24.4	24.8	25.2	25.6	26	26.4	26.8	27.2	28	29	30	31	32	32	33
160	63		23.4	23.8	24.2	24.6	25	25.4	25.8	26.2	26.6	27	27.3	28.3	29.3	30.3	31.2	32.2
162	63.8		22.9	23.2	23.6	24	24.4	24.8	25.1	25.5	25.9	26.3	26.7	27.6	28.6	29.5	30.5	31.4
164	64.6		22.3	22.7	23.1	23.4	23.8	24.2	24.5	24.9	25.3	25.7	26	27	27.9	28.8	29.7	30.7
166	65.4		21.8	22.1	22.5	22.9	23.2	23.6	24	24.3	24.7	25	25.4	26.3	27.2	28.1	29	29.9
168	66.1		21.3	21.6	22	22.3	22.7	23	23.4	23.7	24.1	24.4	24.8	25.7	26.6	27.5	28.3	29.2
170	66.9		20.8	21.1	21.5	21.8	22.1	22.5	22.8	23.2	23.5	23.9	24.2	25.1	26	26.8	27.7	28.5
172	67.7		20.3	20.6	21	21.3	21.6	22	22.3	22.6	23	23.3	23.7	24.5	25.4	26.2	27	27.9
174	68.5		19.8	20.1	20.5	20.8	21.1	21.5	21.8	22.1	22.5	22.8	23.1	23.9	24.8	25.6	26.4	27.2
176	69.3		19.4	19.7	20	20.3	20.7	21	21.3	21.6	22	22.3	22.6	23.4	24.2	25	25.8	26.6
178	70.1		18.9	19.3	19.6	19.9	20.2	20.5	20.8	21.1	21.5	21.8	22.1	22.9	23.7	24.5	25.2	26
180	70.9		18.5	18.8	19.1	19.4	19.8	20.1	20.4	20.7	21	21.3	21.6	22.4	23.1	23.9	24.7	25.5
182	71.6		18.1	18.4	18.7	19	19.3	19.6	19.9	20.2	20.5	20.8	21.1	21.9	22.6	23.4	24.2	24.9
184	72.4		17.7	18	18.3	18.6	18.9	19.2	19.5	19.8	20.1	20.4	20.7	21.4	22.2	22.9	23.6	24.4
186	73.2		17.3	17.6	17.9	18.2	18.5	18.8	19.1	19.4	19.7	19.9	20.2	21	21.7	22.4	23.1	23.8
188	74		17	17.3	17.5	17.8	18.1	18.4	18.7	19	19.2	19.5	19.8	20.5	21.2	21.9	22.6	23.3
190	74.8		16.6	16.9	17.2	17.5	17.7	18	18.3	18.6	18.8	19.1	19.4	20.1	20.8	21.5	22.2	22.9

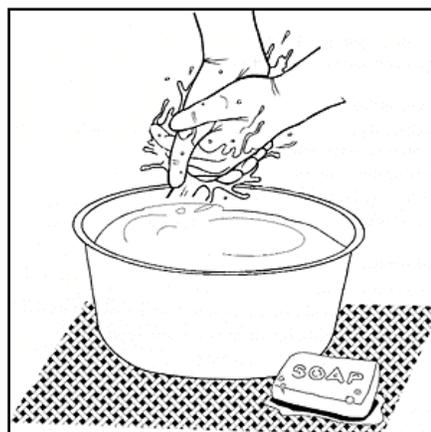
ANNEX 5: FOOD SAFETY AND PERSONAL HYGIENE

Keep the home free from feces

- Use a latrine and keep it clean and free from flies.
- Keep the home environment clean.
- Wash clothes, bedding and surfaces that might have been contaminated with feces in hot water with soap.

Personal hygiene

- Always wash hands with water and soap or ashes before, during and after preparing food or eating, and after visiting the toilet.
- Cover all wounds to prevent contamination of food during preparation and handling.
- Use clean water. If the water is not from a protected source, it should be boiled for ten minutes or treated with Sure Eau.



Storage of drinking-water

- Keep drinking water in a cleaned covered container
- Do not dip hands or cups into the container.

Hygiene in the kitchen

- Keep all food preparation surfaces clean. Use clean dishes and utensils to store, prepare, serve and eat food.
- Wash vegetables and fruit with clean water.

Cooking and storage of food

- Clean all cooking and eating surfaces, utensils and dishes.
- Wash all fruit and vegetables with clean water before eating or cooking.
- Thoroughly wash or peel raw fruits and vegetables with skin that may hold soil particles, such as potatoes and carrots.
- Avoid letting raw meat come into contact with cooked food. Cut meat, poultry and fish on a separate cutting board than food that has been cooked or will be eaten raw.
- Ensure that all food is cooked well, especially meat, poultry and fish.
- Avoid storing cooked food unless one has access to a refrigerator.
- Reheat left over foods well to avoid contamination
- Keep food covered.
- Avoid eating moldy or spoiled foods.
- Avoid eating raw eggs or foods that contain raw eggs.

ANNEX 6: NUTRITIONAL MANAGEMENT OF SYMPTOMS ASSOCIATED WITH HIV/AIDS

Illness	Food	Care and Nutrition Practices
Muscle Wasting	Increase the amount and frequency of food consumption Improve the quality of food intake by eating a variety of foods	Eat an adequate amount of starchy foods, protein, vitamins and minerals and fat. Eat fortified foods where available. Exercise regularly.
Constipation	Increase consumption of foods that are high in fiber content, such as millet, whole-wheat bread, green vegetables and washed fruits with the peel remaining. Avoid processed or refined foods.	Avoid using cleansing practices, such as enemas. Drink plenty of fluids, particularly clean, boiled water. Exercise regularly.
Bloatedness/ Heartburn	Eat small frequent meals Avoid gas-forming foods, such as beans, cabbage, broccoli, cauliflower, and soda. Drink fluids.	Do not lie down or sleep immediately after eating.
Tuberculosis	Consume foods high in protein, energy, iron and vitamins	Seek medical attention immediately Consult medical personnel about taking food with medications If taking isoniazid for treatment, take a Vitamin B6 supplement to avoid deficiency of this micronutrient.
Loss of Taste and/or Abnormal Taste	Use flavor enhancers, e.g. salt, spices, herbs and lemon.	Chew food well and move around mouth to stimulate taste buds.
Anorexia	Eat small and frequent meals. Eat favourite foods. Select foods that are energy dense. Avoid strong smelling foods.	Eat in a relaxed, happy setting. Try to eat with others.
Diarrhea	Drink plenty of fluids. Continue eating during and following illness. Avoid fried or fatty foods.	Prepare and drink rehydration solution as needed.
Flatulence	Avoid gas-forming foods, such as beans, cabbage, broccoli, cauliflower and soda.	
High Blood Cholesterol	Eat a low fat diet and limit intake of foods rich in cholesterol and saturated fat. Eat fruits and vegetables daily.	Exercise regularly.
High Triglycerides	Limit sweets and excessive carbohydrate and saturated fat intake. Eat fruits, vegetables, and whole grains daily.	Avoid alcohol and smoking. Exercise regularly.
Nausea or Vomiting	Eat small quantities of food at frequent intervals. Drink after meals and limit intake of fluids with meals. Eat lightly salty and dry foods to calm the stomach.	Avoid having an empty stomach. Avoid lying down immediately after eating. Rest between meals.
Fever	Drink plenty of fluids. Eat energy and nutrient dense foods.	Drink plenty of fluids including boiled water.

Adapted from FANTA, 2003

ANNEX 7: COPING WITH COUGHS, COLD AND FEVER

Cough is how the body cleans the lungs and throat by getting rid of mucus and germs.

Actions to Take:

Advise Patients/caregivers to take the following actions for cough:

- Crush some fresh gum tree, mint or thyme leaves and place them in boiling water. Place a cloth over the person's head and lean over the pot to breathe the vapors. Breathe deeply for 10 minutes, twice a day.
- Place 3-4 dried gum tree leaves in a cup of hot water and boil for 10 minutes. Let the tea cool slightly before drinking. Drink this tea 2-3 times a day. Tea can also be made with lemon or guava leaves.
- Inform Patients when to seek medical help if the cough lasts more than two weeks, if the person is coughing blood or bad-smelling sputum or mucous

Fever means that the body temperature is higher than normal (37°C). Fever is common in people with HIV/AIDS, and does not necessarily indicate a serious illness. Fever may result in increased nutrient requirements.

Actions to Take

Advise caregivers to take the following actions for fever:

- Provide citrus (lemon, orange) juice several times throughout the day.
- Pound lemon or orange peel with a small amount of water. Rub on the patient's back or add to bathwater before bathing.
- Pound gum/eucalyptus leaves with a small amount of oil. Rub the oil onto the patient's chest. Or place a large number of gum leaves in a pot of boiling water. Leave the pot in the patient's room so the vapors can be inhaled.
- Drink plenty of fluids.
- Try to bring down the fever by sponging the body with a cool wet cloth
- Cut a fresh twig from a neem tree (*Azadirachta indica*). Remove the leaves, and have the patient chew the bark; or boil some water with the bark and have the patient drink the tea.

Inform patients when to seek medical help:

- If fever lasts more than 24 hours.
- If fever is accompanied by other signs of serious illness.

ANNEX 8: COPING WITH DIARRHEA

Diarrhea

Diarrhea occurs when a person has several watery or loose bowel movements in a day. Diarrhea results in losses of water and essential nutrients, and leaves a person at greater risk of dehydration, which can be life threatening. Diarrhea also reduces appetite and interferes with nutrient absorption. If diarrhea persists or continues for a prolonged period, severe malnutrition results. Diarrhea has serious nutritional implications for people with HIV infection.

Actions to Take

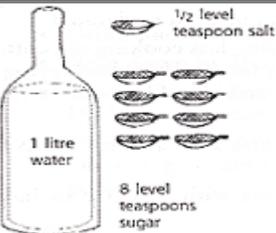
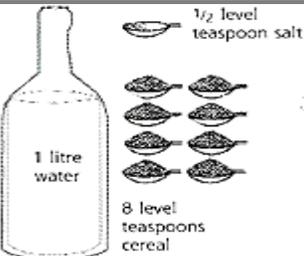
Advise patients to do the following:

- Drink plenty of fluids to prevent dehydration.
- Drink soups, fruit juice diluted with water or an oral rehydration solution (ORS)
- Avoid spicy foods and fatty foods.

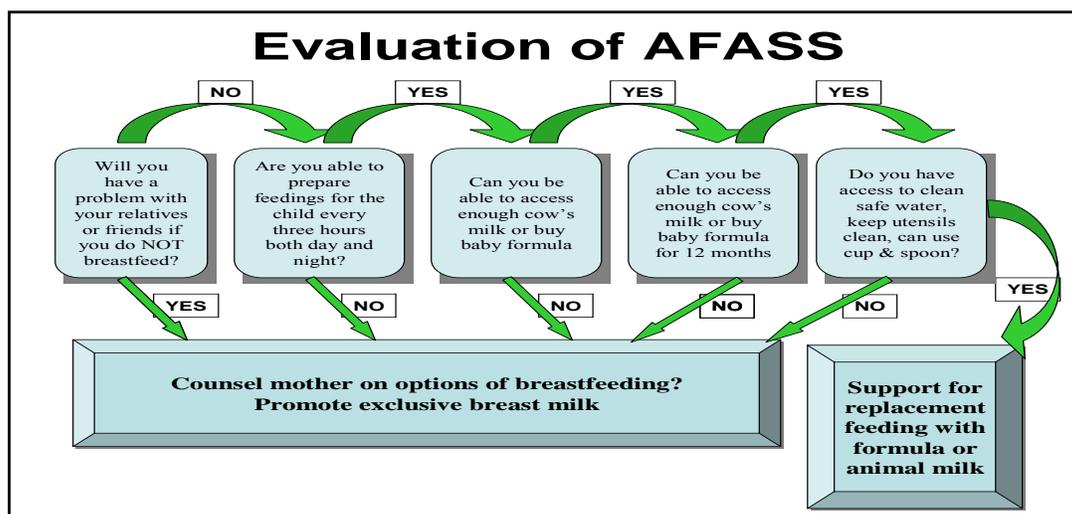
Inform Patients when to seek medical help:

- If there is blood in the diarrhea.
- If the diarrhea persists for more 24 hours
- If diarrhea is accompanied by fever or vomiting.

Methods of preparing an oral rehydration drink

 <p>1 litre water</p> <p>ORS</p>	<p>From packets</p> <p>Follow the instructions and dissolve the contents of the packet in 1 L of clean water as stated on the packet.</p>
 <p>1 litre water</p> <p>1/2 level teaspoon salt</p> <p>8 level teaspoons sugar</p>	<p>With sugar and salt</p> <p>To 1L clean water, add 1/2 teaspoon of salt and 8 teaspoons of sugar. Stir or shake well.</p>
 <p>1 litre water</p> <p>1/2 level teaspoon salt</p> <p>8 level teaspoons cereal</p>	<p>With powdered cereals</p> <p>To 1L of clean water, add 1/2 a teaspoon of salt and 8 teaspoons of a powdered cereal. Rice is best, but wheat, maize, sorghum flour, or cooked mashed potatoes can be used. Boil for five to seven minutes to make a liquid soup or watery porridge. Cool and drink.</p>

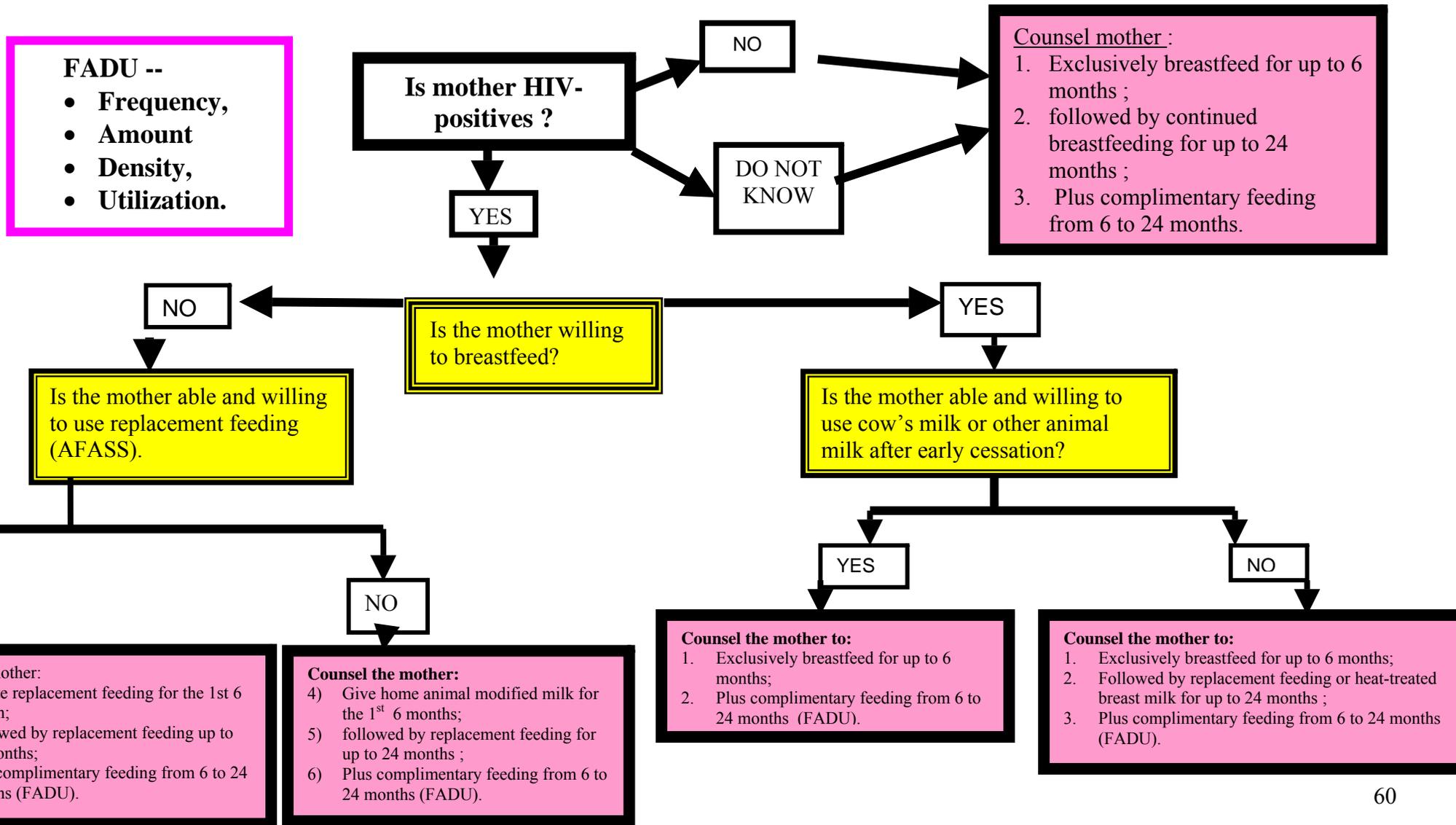
ANNEX 9: INDIVIDUAL EVALUATION FORM FOR REPLACEMENT FEEDING OPTIONS FOR HIV-POSTIVE MOTHERS



For the mother to be allowed to practice replacement feeding, she should fulfill the following condition (**in bold**). If any one of these conditions is not fulfilled, the mother is NOT eligible for replacement feeding.

Criteria for Replacement Feeding	YES (1)	NO (0)	Total points
ACCEPTABLE means that :			(1 point)
<ul style="list-style-type: none"> The mother perceives no barrier to choosing replacement feeding for cultural or social reasons, or for fear of stigma and discrimination. 	x		
FEASIBLE means that:			(1 point)
<ul style="list-style-type: none"> The mother (or family) has adequate time, knowledge, skills, resources, and support to correctly prepare breastmilk substitutes and feed the infant 8 to 12 times in 24 hours. 	x		
AFFORDABLE means that:			(1 point)
<ul style="list-style-type: none"> The mother and family, with available community/or health system support, can pay for the cost associated with the purchase/production, storage and use of replacement feeds without compromising the health and nutrition of the family. 	x		
SUSTAINABLE means that:			(1 point)
<ul style="list-style-type: none"> A continuous, uninterrupted supply and a dependable system for distribution of all ingredients (for example micronutrient supplements, fuel) and products needed to safely practice replacement feeding are available for as long as needed. 	x		
SAFE means that:			(3 points)
<ul style="list-style-type: none"> Replacement are correctly and hygienically stored and prepared and fed with clean hands using clean cups and utensils – no bottles or teats: <ul style="list-style-type: none"> Safe source of portable water for household use; Replacement foods should be stored in secure places or prepared at each meals; Other persons (care-givers) should have skills in case mother is not available 	x x x		

ANNEX 10: ALGORITHM FOR COUNSELING OF HIV-POSITIVE MOTHERS ON INFANT FEEDING



ANNEX 11: FOOD AND NUTRITION IMPLICATIONS AND SOME SIDE EFFECTS OF MEDICATIONS USED TO TREAT COMMON INFECTIONS

Medication	Purpose	Recommended to be taken	Potential side effects
Sulfanamides: Sulfamethoxazole Cotrimoxazole, (Bactrim, Spectra)	Antibiotic for treatment of pneumonia and toxoplasmosis	With food	Nausea, vomiting, abdominal pain
Rifampin	Treatment of TB	On an empty stomach at least 1-2 hrs before meals	Nausea, vomiting, diarrhea and loss of appetite
Isoniazid	Treatment of TB	On an empty stomach at least 1-2 hrs before meals	May cause reactions with foods such as bananas, beer, avocados, caffeinated beverages, chocolate, sausage, liver, smoked fish, yeast and yogurt. May interfere with vitamin B6 metabolism and therefore require vitamin B6 supplement.
Quinine	Treatment of malaria	With food	Abdominal or stomach pain, diarrhea, nausea, vomiting, lower blood sugar
Sulfadoxine and pyrimethamine (Fansidar*)	Treatment of malaria	With food and continuously drink clean boiled water	Nausea, vomiting. Not recommended if folate deficient. Not recommended for women who are breastfeeding.
Chloroquine	Treatment of malaria	With food	Stomach pain, diarrhea, loss of appetite, nausea, vomiting. Not recommended for women who are breastfeeding.
Fluconazole	Treatment of candida (thrush)	With food	Nausea, vomiting, diarrhea. Can be used during breastfeeding.
Nystatin	Treatment of thrush	With food	Infrequent occurrence of diarrhea, vomiting, nausea.
Zidovudine	Antiretroviral	With food	Anaemia, nausea, vomiting.
Lamivudine	Antiretroviral	Avoid alcohol Can be taken without regard to food	Nausea, vomiting, headache, dizziness, diarrhea, abdominal pain, nasal symptoms, cough, fatigue, pancreatitis, anaemia, insomnia, muscle pain, rash
Nevirapine	Antiretroviral	With food	Sedative effect, diarrhea, nausea, rash.

Adapted from FANTA, 2003

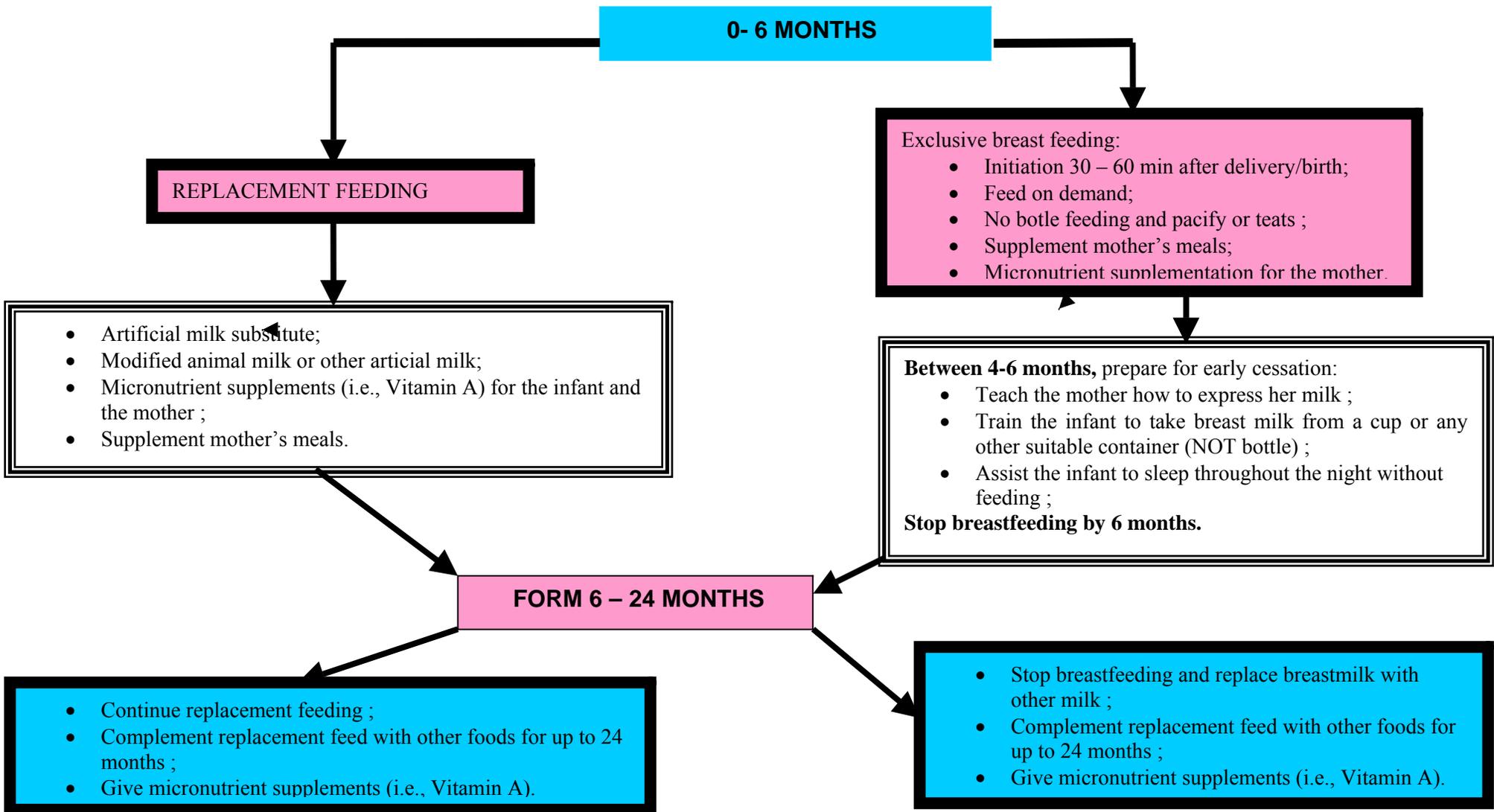
ANNEX 12: FOOD AND NUTRITION IMPLICATIONS AND SOME SIDE EFFECTS OF ARV DRUGS

ARV Class: REVERSE TRANSCRIPTASE INHIBITORS (NNRTI)			
ARV Type: Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI)			
Medication Generic Name (abbreviation)	Food Recommendations	Avoid	Possible Side Effects
efavirenz (EFZ)	Can be taken without regard to meals, except do <u>not</u> take with a high fat meal. (A high fat meal increases drug absorption to potentially harmful levels).	Alcohol	Elevated blood cholesterol levels, elevated triglyceride levels, rash, dizziness, anorexia, nausea, vomiting, diarrhea, Dyspepsia, abdominal pain, flatulence.
Nevirapine (NVP)	Can be taken without regard to food	St. John's wort (Igikakarubamba)	Nausea, vomiting, rash, fever headache skin reactions, fatigue, stomatitis, abdominal pain, drowsiness, paresthesia. High hepatotoxicity.
ARV Class: Reverse Transcriptase Inhibitors (RTI)			
ARV Type: Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)			
Medication Generic Name (abbreviation)	Food Recommendations	Avoid	Possible Side Effects
abacavir (ABC)	Can be taken without regard to food		Nausea, vomiting, fever, allergic reaction, anorexia, abdominal pain, diarrhea, anaemia, rash, hypotension, pancreatitis, dyspnoea, weakness, insomnia, cough, headache.
didanosine (ddl)	Take on an empty stomach (at least 30 minutes before or two hours after eating). Take with water only. (Taking with food reduces absorption).	Alcohol. Do not take with juice. Do not take with antacids containing Aluminium or Magnesium	Anorexia, diarrhea, nausea, vomiting, pain, headache, weakness, insomnia, rash, dry mouth, loss of taste, constipation, stomatitis, anaemia, fever, dizziness, pancreatitis.
lamivudine (3TC)	Can be taken without regard to food	Alcohol.	Nausea, vomiting, headache, dizziness, diarrhea, abdominal pain, nasal symptoms, cough, fatigue, pancreatitis, anaemia, insomnia, muscle pain, rash
stavudine (d4T)	Can be taken without regard to food	Limit the consumption of alcohol	Nausea, vomiting, diarrhea, peripheral neuropathy, chills and fever, anorexia, stomatitis, anaemia, headaches, rash, bone marrow suppression, pancreatitis. May increase the risk of lipodystrophy.

tenofovir (TDF)	Take with a meal		Abdominal pain, headache, fatigue, dizziness
zidovudine (ZDV/AZT)	Better to take without food, but if it causes nausea or stomach problems, take with a low-fat meal. Do not take with a high-fat meal. May require zinc and copper supplementation	Alcohol	Anorexia, anaemia, nausea, vomiting, bone marrow suppression, headache, fatigue, constipation, dyspepsia, fever, dizziness, dyspnoea, insomnia, muscle pain, rash.
ARV Class: PROTEASE INHIBITORS (PI)			
Medication Generic Name (abbreviation)	Food Recommendations	Avoid	Possible Side Effects (nutritional management of side effects is given in Table 4)
indinavir (IDV)	Take on an empty stomach, one hour before or two hours after a meal. Or take with a light, non-fat meal. Take with plenty of water, Drink at least 1500 ml of fluids daily to prevent kidney stones	Grapefruit St John's wort (Igikakarubamba)	Nausea, abdominal pain, headache, kidney stones, taste changes, vomiting, regurgitation, diarrhea, insomnia, ascites, weakness, dizziness. May increase the risk of Lipodystrophy (increased blood fats)
lopinavir (LPV)	Can be taken without regard to food	St John's wort (Igikakarubamba)	Abdominal pain, diarrhea, headache, weakness, nausea. May increase the risk of Lipodystrophy. May increase the risk of diabetes.
nelfinavir (NFV)	Take with a meal or light snack Taking with acidic food or drink will cause a bitter taste. To increase absorption, take with meal containing >15 g. of fat	St John's wort (Igikakarubamba)	Diarrhea, flatulence, nausea, abdominal pain, rash. May increase the risk of Lipodystrophy.
ritonavir (RTV)	Take with a meal if possible	St John's wort (Igikakarubamba)	Nausea, vomiting, diarrhea, hepatitis, jaundice, weakness, anorexia, abdominal pain, fever, diabetes, headache, dizziness. May increase the risk of Lipodystrophy.
saquinavir (SQV)	Take with a meal or light snack. Take within two hours of a high fat and high-calcium meal	Garlic supplements. St John's wort (Igikakarubamba)	Mouth ulceration, taste changes, nausea, vomiting, abdominal pain, diarrhea, constipation, flatulence, weakness, rash, headache, insomnia. May increase the risk of Lipodystrophy.

Adapted from FANTA, 2003

ANNEX 13: SCHEMATIC PRESENTATION FOR FEEDING A CHILD AGED 0-24 MONTHS.



ANNEX 14: PREPARATION OF ARTIFICIAL MILK

Age of infant	Quantity of milk over 24 hours	Number of feeds per day
1 week	240 ml	8 x 30 ml
1 month	450 ml	8x 60 ml
2 months	600 ml	7 x 90 ml
3 months	750 ml	6x 120 ml
4 months	750 ml	6 x 120 ml
5 months	900 ml	6 x 150 ml
6 months	900 ml	6 x 150 ml
7-12 months	900 ml	6 x 150 ml

Detailed preparation of fresh whole milk (cow or goat)

Age of infant	Quantity of milk per feed	Quantity of water to add to the milk	Sugar to add	Quantity of mixture per feed	Number of feed per day	Total quantity of fresh milk required per day
1 week	20 ml	10 ml	2 g	30 ml	8	160
2-4 weeks	40 ml	20 ml	4 g	60 ml	8	620
2 months	60 ml	30 ml	6 g	90 ml	7	420
3-4 months	120 ml	0 ml	12 g	120 ml	6	720
5-12 months	150 ml	0 ml	15 g	150 ml	6	900

Reconstitution of powder milk

RECONSTITUTION			PREPARATION DES REPAS DE LAIT		
Age of infant	Quantity of water needed to prepare milk feed per day	Quantity of milk powder added to water per a feed per day	Quantity of milk per feed	Quantity water added to the milk	Amount of sugar added
1 week	160 ml	20 g	20 ml	10 ml	2 g
2-4 weeks	320 ml	40 g	40 ml	20 ml	4 g
2 months	420 ml	60 g	60 ml	30 ml	6 g
3-4 months	720 ml	90 g	120 ml	0 ml	12 g
5-12 months	900 ml	115 g	150 ml	0 ml	15 g

ANNEX 15: NUTRITION FOLLOW-UP OF AN HIV-POSITIVE WOMAN AND HER CHILD

Period	Activities
Antenatal consultation and counseling (ANC)	<ul style="list-style-type: none"> • Discuss the various feeding options, their disadvantages and advantages, and their implications for woman and her family • Help the woman to choose the best feeding option for her and her child • Answer questions concerning the management of problems related to breast feeding or other feeding options chosen • If breast feeding is chosen, examine the breast for signs of potential problems, such as retracted nipples • If a feeding option other than breastfeeding is selected, evaluate the conditions of acceptability, feasibility, accessibility, sustainability and safety • Provide individual demonstrations of the infant feeding method chosen • Ask woman to practice the techniques immediately to ensure her comprehension before she leaves <p>Other areas for discussion and follow-up include:</p> <ul style="list-style-type: none"> • Tetanus toxoid vaccination for the mother • Iron folic acid supplementation • ARVs where appropriate • Information on risks related to home delivery and options
Delivery	<ul style="list-style-type: none"> • Confirm the infant feeding choice of the mother <p>If the mother chose to breastfeed:</p> <ul style="list-style-type: none"> • Put the child in contact with his/her mother directly after delivery • Show the mother how to put the infant to her breast, in a good position to suckle • Initiate breast feeding within 30 minutes of delivery • Don't give other liquids or food in addition to the breast milk <p>If the mother chose to replacement feeding:</p> <ul style="list-style-type: none"> • Put the child in contact with his/her mother directly after delivery • Initiate feeding • Provide information on the method chosen and its implications for the mother and child <p>Other areas for discussion and follow-up include:</p> <ul style="list-style-type: none"> • Check the antenatal care card • Check if the woman took its dose of Nevirapine, if prescribed • Follow the delivery using a partogram • Give Nevirapine to the child., if recommended
Before the mother leaves the health center	<ul style="list-style-type: none"> • If the mother has chosen to breastfeed, examine the breast of the mother for any signs of cracks, abscess or inflammation • Reemphasize to the mother the importance of exclusive breastfeeding and explain how to prevent problems related to poor breastfeeding techniques • Give one dose of 200,000 IU of Vitamin A to the woman and 50,000 IU to the child • Prepare the woman to breastfeed on demand

	<ul style="list-style-type: none"> • Provide advice on maternal nutrition to the mother • Refer the woman to an HIV support group, if available <p>Other areas for discussion and follow-up include:</p> <ul style="list-style-type: none"> • Make sure that the child has received Nevirapine, if appropriate • Give the BCG and the polio vaccine • Set up a time for the next appointment.
Week 1 after delivery	<ul style="list-style-type: none"> • Check to see if the mother has difficulties with the selected infant feeding method and help the mother to solve identified problems • Continue to provide individual demonstrations of the feeding option chosen • For mother's who have opted to exclusively breastfeed, check on breast health • Provide IFA supplementation and advice on maternal nutrition to the mother • Provide vitamin A to the mother if it wasn't done at delivery <p>Other areas for discussion and follow-up include:</p> <ul style="list-style-type: none"> • Provide vaccinations that weren't provided at delivery • Set next appointment at 6 weeks post-partum
Week 6 after delivery	<ul style="list-style-type: none"> • Follow-up on child's growth, including weighing and measuring length • Check to see if the mother has difficulties with the selected infant feeding method and help the mother to solve identified problems • Continue to provide individual demonstrations of the feeding option chosen, if necessary • For mother's who have opted to exclusively breastfeed, check on breast health • Provide IFA supplementation and advice on maternal nutrition to the mother <p>Other areas for discussion and follow-up include:</p> <ul style="list-style-type: none"> • Follow-up on child's vaccination status and umbilical cord • Provide a medical follow-up for the mother (uterine involution, episiotomy healing) • Discuss family planning options • Set next appointment at 10 and 14 weeks post-partum
Weeks 10 and 14 after delivery	<ul style="list-style-type: none"> • Follow-up on child's growth, including weighing and measuring length • Continue to monitor infant feeding • Continue to provide IFA supplementation and advice on maternal nutrition to the mother <p>Other areas for discussion and follow-up include</p> <ul style="list-style-type: none"> • Provide vaccinations • Discuss family planning options • Set next appointment for ANC at the 4th, 5th, 6th, 7th and 8th month post-partum
Month 4-8 once per month	<ul style="list-style-type: none"> • Follow-up on child's growth, including weighing and measuring length • Prepare mothers who have opted to exclusively breastfeed for early cessation, including how to express and heat treat breastmilk and feed

	<p>their infant from a cup</p> <ul style="list-style-type: none"> • Discuss access to and the preparation of replacement feeds and complementary foods with the mother and provide individual demonstrations, where possible • Discuss the need to continue to feed sick children, particularly when they are suffering from diarrhea • Provide 100,000 IU of vitamin A orally to children between the ages of 6-11 months once • Continue to provide IFA supplementation and advise on maternal nutrition to the mother <p>Other areas for discussion and follow-up include:</p> <ul style="list-style-type: none"> • Provide vaccinations • Discuss family planning options • Set next appointment for ANC at the 9th month post-partum
Month 9 -24 once per quarter	<ul style="list-style-type: none"> • Discuss any problems or concerns the mother has about the preparation of replacement feeds and complementary feeding • Follow-up on child's growth, including weighing and measuring length • Provide 200,000 IU of vitamin A orally to children 12 months and older every 4-6 months <p>Other areas for discussion and follow-up include:</p> <ul style="list-style-type: none"> • Provide vaccinations • Discuss family planning options • Discuss HIV testing of the child at 15 months • Set next appointment for consultation at 12-15 months post-partum
Beyond 24 months once per quarter	<ul style="list-style-type: none"> • Continue to monitor child growth until 5 years of age • Continue with child supplementation with vitamin A every 4-6 months until 5 years of age • Continue to set appointments for quarterly follow-up until 5 years of age.

ANNEX 16 : FOLLOW-UP PLAN FOR CHILDREN UNDER ARV TREATMENT

Date	Clinical	Laboratory
J 0	+	CD4, NFS, transaminases, creatinine
J 15	+	NFS if AZT, transaminases if NVP
M 1	+	NFS if AZT, transaminases if NVP
M 2	+	Nothing
M 3	+	NFS if AZT, transaminases
M 4	+	Nothing
M 5	+	Nothing
M 6	+	CD4, NFS, transaminases, CV *
Beyond the sixth month		
Monthly during 1 year	+	CD4: every 6 months Transaminases: M 9 and M 12, stop has to start from M 12 Certain examinations will be directed by clinical data

ANNEX 17. MINIMUM FOOD PACKAGE FOR NUTRITIONAL CARE AND SUPPORT OF PEOPLE (including children) LIVING WITH HIV/AIDS IN FOOD INSECURE HOUSEHOLDS

This package is part of the GOR process of evaluating its options for the integration of nutrition into the essential package of care, treatment and support of people living with HIV/AIDS and efforts to prevent infection. This is in recognition of the fact that adequate nutrition may delay progression of HIV, decrease clinical symptoms and optimize the benefits of ARVs, hence the need to design interventions for improving nutrition by accelerating the training and use of guidelines and tools for infant feeding counseling and maternal nutrition in PMTCT and related programs and also by implementing the Global Strategy for Infant and Young Child Feeding.

This package is in two Parts: **Part I** presents a minimum household food package; while **Part II** presents a replacement feeding package for both HIV-exposed and infected children in food insecure households (HH).

PART I: Minimum Household Food Package for Nutritional Care and Support of PLWHA in food insecure households.

Basis: Adult RDAs for energy were considered and are given below for the various groups. However, considering that the minimum food package is being proposed for PLWHA, the best option is to base our recommendations on a ration that would take into consideration the increased energy needs of PLWHA. As such, the Rwanda Nutrition Working Group agreed to use the HIV+ **pregnant woman as the basis** for this recommendation.

Table 1. Recommended (WHO) RDAs for Energy

Target	Normal	Asymptomatic PLWHA (+10%)	Symptomatic PLWHA (+20%)
Adult	2100	2300	2500
Pregnant woman	2400	2600	2900
Lactating woman	2600	2800	3100

Target groups: Malnourished PLWHA and HIV-positive pregnant and lactating women from households that are determined to be food insecure or households with an HIV-exposed child. Screening is done using the following criteria:

- BMI for adults (≤ 18.5)² or
- Weight loss of 5% or more of body weight or
- HIV-positive pregnant and lactating women or
- HIV-exposed children between the ages of 0-24 months (or beginning at the time their mother ceased exclusive breastfeeding) and HIV-infected children between the ages of 6-24 months.

² This is the standard used in most countries to identify malnourished, non-pregnant adults and is based on the 1996 recommendations of the WHO Expert Committee on Physical Status to determine underweight.

Inclusion should be based on indicators of food insecurity. These indicators can include community specific factors developed with local community social workers/leaders for the identification of food insecure households. These indicators can include such things as reportedly having eaten less than 2 meals on the day preceding the interview, having reduced the portion (size) of food served or resorted to borrowing/bartering for food in the week preceding the interview.

Ration composition: The recommended ration is based on 60% of the WFP PMTCT ration because it is the most comprehensive, complete and balanced ration currently being given in the country (Table 2). This ration is based on the assumption that target HHs source 40% of their RDAs from own resources (own production/family support/purchase, etc).

Table 2. Minimum Household Food Package for Nutritional Care and Support of PLWHA in food insecure households.

Target Group	Food Item (Commodity)	Quantity per HH/month (Kg)	Kcal/pp/day	Unit cost/MT in US\$	Monthly Cost/HH in US\$	Annual Cost/HH in US\$
PLWHA & HH**.	Maize meal	15.0	1572	230	3.45	41.40
	Pulses	15.0		440	6.60	79.20
	SOSOMA	3.0		290	0.87	10.44
	Sugar	1.8		380	0.68	8.16
	Oil	2.2 liters		800	1.76	21.12
					Total	13.36

** Household size is assumed to be 5 persons.

Duration of Intervention: The duration of the intervention will be **6 months** for **malnourished PLWHA and HIV+ lactating women from food insecure household** to give them a chance to rehabilitate their nutritional status, possibly delay the time when they will need to be on ART and to provide an income transfer for the food insecure household, which might help them get back on their feet. If the malnourished PLWHA from a food insecure household is also beginning ART, then the food package may help them better adhere to the medication regimen.

Pregnant or lactating HIV+ women from food insecure households might be screened at anytime during the pregnancy, but ideally should be given the food package from the third trimester through 6 months of lactation (i.e., a maximum of 9 months).

Sustainability: Food and nutrition interventions should be undertaken within the National Nutrition Policy context. That is, for this intervention to succeed and be sustainable, it will require the implementation of the activities detailed in the National Nutrition Strategy by relevant stakeholders.

PART II: Replacement Feeding and Complementary Feeding Packages for Nutritional Care and Support for HIV-exposed and infected children aged between 0 to 24 months in food insecure households.

Basis: Children’s RDAs for energy (WHO 2005 – Table 3) were considered in the proposal of this replacement feeding package and are given below (Tables 4 to 6) for various age groups. However, considering that the target beneficiaries are HIV-exposed and infected children, the best option is to base the recommendations on a ration that would take into consideration the increased needs related to HIV/AIDS infection. As such, the Nutrition Working Group adopted the normal child RDAs for energy **as the basis** for this recommendation and added on energy increases for asymptomatic and symptomatic children.

Table 3: Recommended Daily Requirements for energy (WHO, 2005) for children (under 24 months) exposed to or infected with HIV/AIDS.

Target group	Energy needs for normal or HIV-negative children	Asymptomatic children (+10%)	Symptomatic children (+50%)	From breast milk	From replacement milk	From complementary food
Infant 0-6 months old exclusively breastfed ³	585	644	878	100%	0 %	0 %
Infant 0-6 months old on exclusive replacement feeding	585	644	878	0%	100 %	0 %
Infant 6-8 months old	680	748	1020	0%	60%	40 %
Infant 9-11 months old	830	913	1245	0%	45 %	55 %
Children 12-23 months old	1090	1199	1635	0%	31 %	69 %

Eligibility: Assess the AFASS conditions for mother (household) before recommending replacement feeding for HIV-exposed children between 0-6 months of age.

Inclusion should be based on indicators of food insecurity. These indicators can include community specific factors developed with local community social workers/leaders for the identification of food insecure households and/or such indicators as reportedly having eaten less than 2 meals on the day preceding the interview, having reduced the portion (size) of food served or having resorted to borrowing/bartering for food in the week preceding the interview.

Ration composition: For HIV-exposed children below 6 months, breastmilk or replacement milk or infant formula (according to AFASS conditions) should be the only food given. From 6-24 months, besides replacement milk or infant formula, complementary feeding should be provided. For HIV-infected children the recommendation is to continue breastfeeding until 24 months or longer. The complementary package would be made available for the infant from 6-24 months.

³ HIV-infected infants should be exclusively breastfed until 6 month, with breastfeeding continuing until 24 months or longer

The total package for HIV-exposed and infected children in food insecure households includes the following:

1. The household of a child of an **HIV infected mother who is food insecure and who chooses to exclusively breastfeed** will receive:
 - a. The Minimum Household Food Package for PLWHA to support the mother in **exclusive breastfeeding** and to provide complementary food for the child after 6 months;
 - b. **Replacement milk or infant formula from the time a replacement food is introduced (no later than from 6 months) until the child is 24 months old** according to age specific requirements to cover the child's RDA coming from milk;
 - c. Nutrition counseling
 - d. A follow-up plan to **support the mother in her feeding option choice.**

2. The household of an **HIV infected mother who chooses to exclusively feed with replacement feeding** will receive:
 - a. **Replacement milk or infant formula from birth to 24 months** according to age specific requirement to cover the child age specific RDA coming from milk;
 - b. The Minimum Household Food Package for PLWHA to provide complementary food for the child after 6 months;
 - c. Nutrition counseling
 - d. A follow up plan to **support the mother in her choice.**

3. For **HIV infected children**
 - a. The Minimum Household Food Package for PLWHA to provide complementary food for the child after 6 months
 - b. Nutrition counseling
 - c. A follow up plan to **support the mother with breastfeeding**

Duration of Intervention: The *targeted children* will receive the replacement feeding package beginning from birth or when the mother opts to stop exclusive breastfeeding up to 24 months. The households of these children will also be qualified for the Minimum Household Food Package for 24months. However, these food packages still need to be complemented by foods obtained through the households' own resources to cover the child specific RDA requirements.

Sustainability: Food and nutrition interventions should be undertaken within the National Nutrition Policy context. That is, for food and nutrition interventions to succeed and be sustainable, it will require the implementation of the activities detailed in the National Nutrition Strategy by relevant stakeholders.

Table 4. Replacement Feeding and Complementary Feeding Packages for HIV-exposed children between 0-24 months

Target Group	Food Item (Commodity)	Quantity per child/month (L/tins)	Kcal/day	Monthly Cost/Child in US\$	Annual Cost/Child in US\$	Remarks
Infant 0-6 months who are exclusively breastfed	Breastmilk		585			Breastfeeding on demand, or at least 8 feeds per day, including night feeding
Infant 0-6 months who are exclusively on replacement feed	Replacement milk		585			Counseling provided on safe replacement feeding
<i>Option 1</i>	Cow's Milk	Preparation: Dilution ratio: 1 water + 2 milk + sugar to taste				
		22.5 Liters	495 (85%)	9.9	118.8	Average of 750 ml per day
	Sugar	1.5 kg		1.8	21.6	700 RFW/Kg; 50 g per day
	Safe (boiled or portable) water	11.5 liters		10.1	121.2	RFW 500/Liter
	Feeding Cup	2		2	6.0	3 cups/year
	Flask	1		4	8.0	2 flask per year
	Miscellaneous			5	5.0	Soap, etc...
Sub-Total				35.8	292.6	
<i>Option 2</i>	Infant Formula					
	Commercial formula	7	585	43	516.0	40 tins of 500g/year; an average of 7 tins/month; and RFW 3500/tin
	Potable water	11.5 liters		10.1	121.2	RFW 500/Liter
	Feeding Cup	2		2	6.0	3 cups/year
	Flask	1		4	8.0	2 flasks/year
	Miscellaneous			5	5.0	Soap, etc...
Sub-Total				64.1	656.2	
6-12 months			830			Average energy requirements for age
	Cow's Milk (Litre)	27.0	374 (45%)	11.8	141.6	Average of 900 ml per day (150 ml x 6 feeds) ; 250 RWF per liter of milk
	**SOMA (Kg)	3.8	456 (55%)	3.3	39.7	127 g/day, + other snacks to complete.
Subtotal				15.1	181.3	
12-24 months			1090			Average energy intake between age 12-24 months
	Cow's Milk (Litre)	27.0	338 (31 %)	11.8	141.6	Average of 900 ml per day (150 ml x 6 feeds) ; 250 RWF per litre of milk
	SOMA (Kg)	6.2	752 (69 %)	5.4	64.8	208 g/day, + other snacks to complete.
Subtotal				15.4	206.4	

****SOMA composition** (WFP Rwanda Specifications: 800Kg of maize meal & 200Kg of soya flour plus Vitamin/mineral mix (per 100g of flour mix (finished product) of Vit A (1,664.0 IU), Vit B1 (0.128mg), Vit B2 (0.448), Vit B3 (4.8mg), Folate (60.00µg), Vit C (48.0mg), Vit B12 (1.2µg), Iron - as ferrous fumarate (8.0mg), Calcium – as calcium carbonate (100.0mg), Zinc – as zinc sulphate (5.0mg). Energy

content \cong 380 Kcal/100g. SOMA is WFP's locally purchased from the Duhamic/Adri with WFP specifications for fortification and is similar to the common SOSOMA sorghum product.

Table 5: Complementary Feeding package for HIV-infected, asymptomatic children between 0-24 months in food insecure households.

Target Group	Food Item (Commodity)	Quantity per month	Kcal/day	Monthly Cost/Child in US\$	Annual Cost/Child in US\$	Remarks
Infant 0-6 months	Breastmilk		644			Breastfeeding on demand, or at least 8 feeds per day, including night feeding Provide the <i>qualifying</i> mother with the Household Food Package to support breastfeeding.
			913			Average daily requirement for this age
From 6-12 months	Breastmilk		411 (45%)			
	SOMA (Kg)	2.7	502 (55%)	2.4	28	Average of 3Kg (90 g/day x 30 days) @ \$0.87 per Kg
	Feeding Cup	2		2	6.0	3 cups/year
	Flask	1		4	8.0	2 flasks/year
	Miscellaneous			5	5.0	Soap, etc...
Sub-Total				13.4	47	
From 12 -24 months			1199			Average daily requirement for this age
	Breastmilk		372 (31%)			
	SOMA (Kg)	5.7	827 (69%)	5.7	68	Average of 6.6 (218 g/day x 30 days) x 0.87 \$ per Kg
Sub-Total				5.7	68	

Table 6: Complementary Feeding Package for HIV-infected, symptomatic children between 0-24 months in food insecure households.

Target Group (age)	Food Item (Commodity)	Quantity per month	Kcal/day	Monthly Cost/Child in US\$	Annual Cost/Child in US\$	Remarks
Infant 0-6 months	Breastmilk		878			Breastfeeding on demand, or at least 8 feeds per day, including night feeding
			1245			Average daily requirement for this age.
6-12 months	Breastmilk		560 (45%)			
	SOMA (Kg)	5.4	685 (55%)	5	60.0	Average of 5.4 (180 g per day x 30 days) x 0.87 \$ per Kg
	Feeding Cup	2		2	6.0	3 cups/year
	Flask	1		4	8.0	2 flasks/year
	Miscellaneous			5	5.0	Soap, etc...
Sub-Total				16.0	79.0	
12-24 months			1635			Average daily requirement for this age
	Breastmilk		736(45%)			
	SOMA (Kg)	7.1	899 (55%)	6.2	74.1	Average of 7.1 (237 g per day x 30 days) x 0.87 \$ per Kg
Sub-Total				6.2	74.1	

ANNEX 18: SOME RECIPE SUGGESTIONS

Below are suggestions for foods and drinks that may help to address some of the common complications arising from HIV/AIDS? All recipes may be adapted to locally available foods and taste preferences.

Garlic/ Onions

Garlic and onions strengthens the immune system and can be eaten both raw and cooked.

Garlic can be crushed, stored in oil and used for cooking

Place a slice of onions in hot water for a few minutes and then drink the water

Lemons

Lemons stimulate the liver, clean the digestive tract and help prevent infections. They aid digestion of proteins and fats. The peel of lemons and oranges contains pectin which helps the body to absorb fats and oils.

Gamatungu (Alfalfa)

Gamatungu is grown as livestock feed. It contains almost every vitamin and mineral. Add finely chopped alfalfa leaves to soups, salads and stews as a spice.

Ginger

Chew fresh ginger or use ginger powder or crushed ginger in soups, stews and tea. (See below)

Cultured milk (Ikivuguto)

Cultured milk products such as yogurt, sour milk (Ikivuguto) have friendly bacteria that fight a range of micro- organisms that can cause diseases.

Pumpkin seeds

Remove the outer shell and eat the seeds raw or steamed to provide zinc, essential fatty acids. It also aids in expelling worms.

Sour water

Drink regularly to prevent digestive infections. To make sour water, you can use any grain – millet, sorghum, rice or maize. It is best to use sprouted grain.

Recipe is for sorghum: (Sorghum; potable water)

- Wash the sorghum
- Soak 1-cup sorghum in 3 cups water
- Cover tightly and leave for 2-3 days

- Strain the water from the sorghum. Store the sour water in a cool place or in the fridge.
- Drink ½ cup, 3 times a day for all digestive problems.

The sorghum water is ready to drink when it starts to form bubbles. The warmer the weather, the sooner it will be ready. The water can be mixed with lemon, fruit juice or spice tea for better taste and smell.

Avocado drink

Mashed avocado; sour milk or lemon juice; finely chopped raw onion, garlic and tomato.

Mix all the ingredients together.

Drink with bread, green beans (imiteja), carrots, green pepper or pumpkin.

Peanut (ubunyobwa) sauce

High protein sauce to eat with ugali and raw or steamed vegetables.

Use onions, garlic, oil, water, pounded peanut, lemon, ginger (Use whatever combination that is available)

Fry the onions and garlic in oil until brown

Stir in all the other ingredients and cook the sauce at medium heat until it is smooth

Ndagala (dried fish) stew

Ndagala, onions, tomatoes, oil, water, salt, green pepper

Thoroughly wash the fish, boil until cooked

Fry onions, tomatoes, and green pepper.

Add water and put in ndagala. Boil for 5 minutes.

Ndagala can also be cooked in a groundnut sauce.

Isombe

Cassava leaves (mashed), palm oil, tomatoes, groundnuts, broth (meat or fish), leek and garlic. Cook mashed cassava leaves until smooth. Add other ingredients and cook again and add groundnut and palm oil. Cook the mixture for few hours.

Bean broth (amamininwa)

Beans, water, salt

Boil the beans in more water than usual until they are well cooked. Drink the broth or use it to make other soups. You can also boil rice, maize meal or millet with the broth to add carbohydrates for more energy.

Beef and beans

Minced beef, onion, oil, beans (soaked overnight), carrots, salt, water, spinach or other green leaves, lemon juice, (pepper optional)

Sauté beef and chopped onion. When meat is brown add beans, chopped carrots, salt and pepper. Add water, cover and cook until beans are tender (about 30 minutes). Add chopped green leaves and boil another ten minutes. Add a bit of lemon juice.

Vegetable stew

Greens or other vegetables (such as cabbage, pumpkin, squash, green beans, sprouted beans or peas), onions, garlic, ginger, cinnamon, coriander or mild curry powder, pili-pili (if you like a hot taste), oil, chopped meat (optional; use bones or mince), water, carrots, tomatoes, potatoes, lemon juice

Boil the meat and water until tender. Chop and add the vegetables except the greens. Cover and simmer until the vegetables are soft. Add the chopped greens ten minutes before the dish is ready.

Maize/sorghum/millet/rice/wheat porridge

Maize meal, milk, margarine, salt, sugar

Mix maize/sorghum/millet flour with cold water. Cook the mixture with milk or water for about 15 minutes. Add a little oil and a pinch of salt and sugar to taste. Serve warm.

Sweet potato soup

Sweet potatoes, water, salt, ikivuguto (sour milk).

Peel sweet potatoes, cut them in pieces and cook in a little water until soft. Mash them and add more water to make a soup. Add salt, and sour milk; Serve.

Vegetable stew with meat

Meat, onion, leeks, carrots, potatoes, oil, water, garlic, salt, pepper

Cut meat and vegetables in small pieces. Boil or fry meat until brown, add onion and leek. Then add the other vegetables, water and chopped garlic and cook until soft. Serve

Pumpkin stew

Pumpkin, meat

Boil meat with chopped pumpkin until very soft. Mash the pumpkin. Cut the meat into small pieces and add to the pumpkin.

Rice porridge

Rice, salt, cinnamon, sugar

Add one cup of rice to three cups of salted water. Cover the pot, bring to the boil and cook slowly for one hour. Add cinnamon and sugar when serving.

Banana and papaya drink

Banana, papaya, milk, sour milk or yoghurt

Mash fruit together and mix with milk, sour milk or yoghurt.

Sour cabbage water

Chopped raw cabbage, water

Wash the cabbage and soak one-cup cabbage in three cups water. Cover tightly and leave for two to three days. Strain the water from the cabbage, throw the cabbage away and store the water in a cool place or refrigerator. It is ready to drink when it starts to bubble. Drink 1/2 cup three times a day for all digestive problems.

HERBAL DRINKS FOR COLDS, COUGHS, SORE THROATS AND FLU

For the teas below to have the greatest impact, it is best to prepare them fresh three times a day and drink them hot. However, if this is not possible, prepare them in the morning and heat them up or even drink them cold during the day.

Garlic tea (for sore throats)

Chop 3-4 cloves garlic. Add to one cup boiling water. Boil for ten minutes. Cover and allow to cool. Add honey or sugar to taste. Drink one cup three times a day.

Ginger drink

8 cups clean water, 3 teaspoons fresh crushed ginger, 2 teaspoons sugar, 1 small chopped pineapple

Mix all the ingredients and leave in a warm place for a day in a clean and covered container. Drink the ginger juice.

Ginger tea

Ginger, water

Crush ginger in cold water and boil in water for ten minutes. Place in a covered container, strain the ginger and drink three cups of the liquid per day before meals.

Ginger and cinnamon tea (for chesty colds or coughs)

Add 1/2 teaspoon chopped fresh ginger to one cup boiling water. Boil slowly for ten minutes. Add 1/4-teaspoon ground cinnamon. Cover and allow standing for five minutes. Strain. Drink one cup three times a day. Start drinking the tea as soon as you feel a cold coming.

Guava tea (for a persistent cold)

Add a chopped guava, a slice lemon, and a eucalyptus leaf to a cup of boiling water. Cover and allow to stand for five minutes. Drink three times a day.

Lemon tea (for flu)

Squeeze a lemon. Add the juice to 1/2-cup water that has boiled and cooled slightly. Add sugar or honey to taste. Drink one cup as hot as possible three times a day.

Onion tea (for a blocked and runny nose)

Put 1/4 onion into a cup of boiling water. Cover and leave for five minutes. Strain. Throw the onion away. Drink one cup three times a day.

Thyme tea (for dry coughs)

Add 1/4 teaspoon dried thyme leaves to one cup boiling water. Cover and leave for five minutes. Strain. Drink one cup three times a day.

COUGH SYRUPS

Cough syrup for adults or children

Mix one part honey with one part lemon juice, one part crushed ginger (but not for children) and one part water. Stir well and bring to the boil. Cool, and take one teaspoon three times a day.

(An alternative is to mix one part honey with one part lemon juice. Add two finely chopped garlic cloves. Shake or stir well. Take one teaspoon three times a day.)

FEVER

Neem tea

Cut a fresh twig from a neem tree. Remove the leaves and boil the bark in water; the bark can also be chewed.

Traditional foods can give you a healthy diet. To eat healthy diets avoid eating the following foods.

Avoid as much as possible refined foods or highly processed foods, alcohol. Alcohol prevents the body from using the nutrients in food, stresses the digestive system and stops the immune system from working properly.