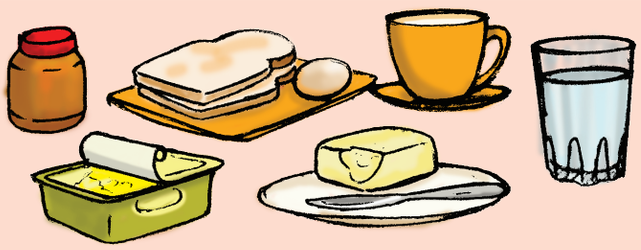
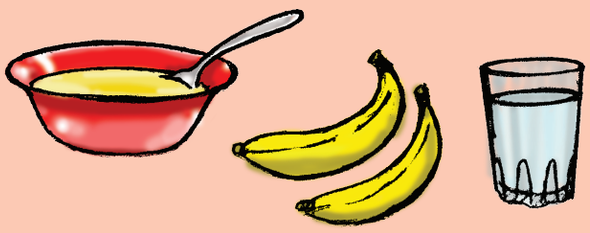
REPUBLIC OF KENYA
MINISTRY OF HEALTH

KENYAN NATIONAL GUIDELINES ON NUTRITION AND HIV

Breakfast



Morning snack



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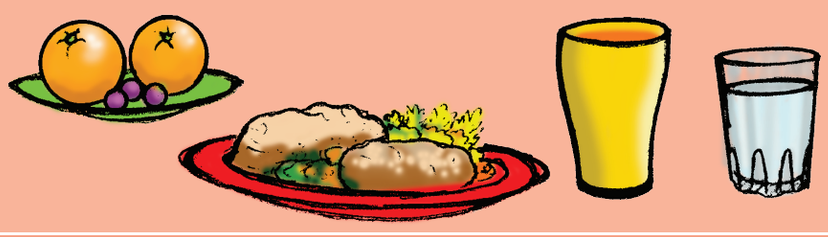
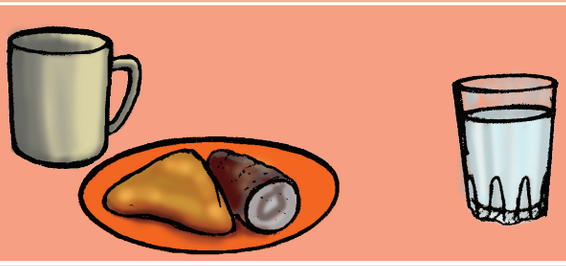


Afternoon snack



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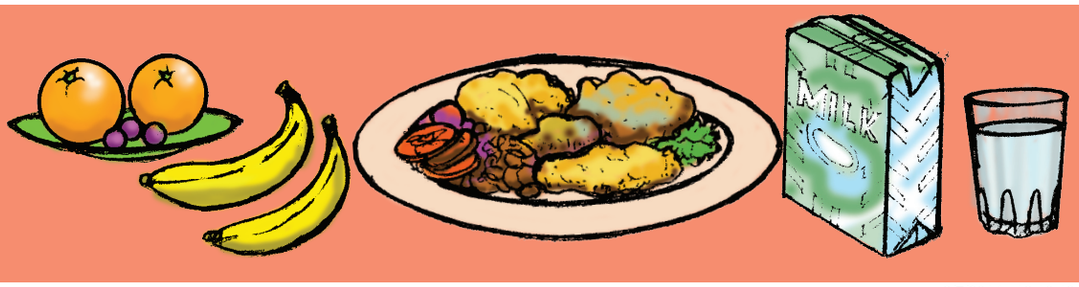


KENYAN NATIONAL GUIDELINES ON NUTRITION AND HIV

2nd EDITION

August 2014

Foreword

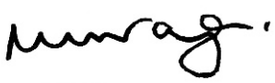
The Government of Kenya has identified good nutrition as a key component of the national response to the HIV/AIDS epidemic. This is in keeping with global recognition that good nutrition is essential for the promotion of health and quality of life of all people, particularly People with HIV (PLHIV).

There is an important relationship between HIV and nutrition. HIV infection increases nutrient requirements, and at the same time impairs nutrient intake and uptake. In turn, poor nutrition increases the risk of opportunistic infections and accelerates the progression of HIV to AIDS. Malnutrition and HIV are synergistic and create a vicious cycle that additively weakens the immune system.

In response to this individual, family, community and even national crisis, the Kenyan government, in collaboration with multilateral and bilateral agencies, NGOS and CBOs spearheaded the first Kenya National Guidelines on Nutrition and HIV/AIDS for harmonized nutrition strategies for PLHIV in 2007. The review process of this guideline involving various stakeholders began 2012.

A Technical Working Group was established under the auspices of NASCOP/Ministry of Health to review, determine and outline the nutritional needs of people affected by HIV/AIDS in a coordinated and optimal manner. These Guidelines are a synthesis of information drawn from an extensive review of local and international knowledge and experience. The Guidelines are written for frontline service providers and for institutions in the health, nutrition, agriculture, education and social services sectors. They are for use by facility and extension workers whose mandates include care and support of PLHIV and home-based care. They give clear direction on nutritional support to PLHIV, including chapters dedicated to vulnerable groups such as children and pregnant or lactating women. The Guidelines are written for all Kenyans, though health workers may have to adapt information to meet the local situation; stress certain issues related to their patients; or translate information to meet various language needs.

Successful nutritional care and support of PLHIV requires an inferred partnership between those affected and different levels of care providers. A coordinated effort is required from people in many disciplines. The wide dissemination and use of these Guidelines, as well as supportive policies and services to implement the recommendations herein, will help all stakeholders to improve the quality of life of People with HIV.



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Acknowledgements

The second edition of the Kenyan national guidelines on Nutrition and HIV were revised with participation of nutrition and health experts from several organizations. The members of the technical working group reviewed all the chapters and in some cases, revised the chapters based on the first edition to make them up to date and in line with current scientific evidence and experience.

We wish to thank WFP for the technical and financial support during the compilation and editing of this guidelines and the following institutions for the technical as well as financial support during the review process of these Guidelines; the UN Joint Programme on AIDS in Kenya, National AIDS and STI Control Programme (NASCOP), Nutrition and Dietetics Unit, The Kenya Methodist University (KeMU), Jomo Kenyatta University of Agriculture and Technology (JKUAT), Feed the Children (FTC), Waltereed Program (WRP), USAID Capacity Kenya, and all the Nutrition in HIV Technical Working Group Members.

We acknowledge the contributors and reviewers of the current edition and the lead Consultant Joyce Meme from the Kenya Methodist University for compiling and finalizing the guidelines.

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Introduction

In the two decades since the onset of the HIV epidemic, there have been significant improvements.in the understanding of its pathogenesis. It is now clear, for example, that HIV infection contributes to malnutrition, wasting away reserves of fat and muscle. Good nutrition, on the other hand, gives strength to help fight opportunistic infections and can enhance the quality of life of a PLHIV.

A varied and healthy diet and adequate micronutrient intake are fundamental to better health for HIV-infected individuals. Education and support about nutrition, particularly in nutritionallyvulnerable populations, is essential. In the management of HIV infection, correct and consistent information on nutrition is part of the continuum of care and support of PLHIV.

The revised Kenyan National Guidelines on Nutrition and HIV/AIDS offers that information, including daily nutritional requirements for various groups (such as the malnourished, children and women), and how to fulfil those requirements. There are clear steps how to assess and analyze a client's nutritional situation, and there are actions recommended to avert malnutrition; reserve nutritional status; or rehabilitate the malnourished. As well, the Guidelines include policy imperatives required to further advocate for better nutrition.

These Guidelines will contribute to realizing the national goals of the Kenya National HIV/ AIDS Strategic Plan: to improve the quality of life of those infected and affected by HIV/ AIDS; and mitigate the socio-economic impact of HIV The Guidelines will help users develop new strategies and activities, or review existing ones, in the nutritional care for PLHIV, and even for the population in general.

To successfully implement the revised Guidelines, partnerships among sectors (such health andnutrition, education, agriculture, and social services) must be continuously involved to bring the issue of nutrition and HIV across all sectors. Nutritionists and health professionals play a pivotal role to develop these partnerships and bring the nutrition Guidelines into multi-sector, national development strategies.

These Guidelines were revised based on updated research and evidence. Periodic reviews of the Guidelines will be necessary to accommodate new information as it becomes available.

Executive Summary

The Technical Working Group for Nutrition HIV and AIDS and stakeholders held a series ofconsultation workshops under the leadership of NASCOP to come up with updated guidelines People infected with HIV are at greater risk of malnutrition than those who are not infected. HIV and opportunistic infections interfere with the desire and ability to eat thus reducing dietary intake; causing mal-absorption of nutrients; increasing energy demand thus increasing nutrient requirements; and causing abnormal use of protein. Limited food security and inadequate knowledge of good nutrition in regions of Kenya where HIV is prevalent, makes the situation worse. The fundamental nutritional concerns for HIV-infected people include: the availability of a balanced diet on a continuous basis; Factors that negatively impact food intake and utilization; drug/nutrient interactions; and interventions to help cope with nutrition-related, chronic conditions such as diabetes mellitus. HIV infection and associated malnutrition progressively weaken the immune system, lowering quality of life and odds for survival, thus infected persons and caregivers need clear, concise information on nutritional care and support. Nutritional care, as an adjunctive intervention to ART viral treatment, will enhance rehabilitation, optimize antiretroviral therapy, and enhance adherence to ART.

The purpose of these Guidelines is to:

- Provide simple and practical ways to assess the nutritional status of HIV-infected clientsand assess the risk of malnutrition;
- Assist service providers to identify locally-appropriate, sustainable ways of increasing dietary intake by those who are infected with HIV; and Mainstream nutrition interventionsinto the national HIV/AIDS response.

The Guidelines' content is summarized as follows;

- Assessment of nutritional status and nutritional risks include determining a client's dietaryintake and global anthropometric and body composition measurements (e.g. weight,body mass index (BMI), weight for age in children and middle upper arm circumference (MUAC). Clinical and laboratory assessment of haemoglobin, blood count, and nutrient biochemistry, among other indicators, are important for early detection of poor nutrition.Ideally, these services should be provided in facilities where PLHIV seek help, for example at counselling and testing sites.
- HIV-infected children and adults who are asymptomatic require about 10% more energymthan their uninfected contemporaries. For symptomatic PLHIV, energy needs increase by 20-30% for adults and 50-100% for children who are experiencing weight loss. Pregnant and lactating HIV-infected women require 23% to 50% additional energy depending on their severity of symptoms, their well being during pregnancy and their lactation status. With adequate intake of staple foods, these needs can be met. By including nutrientdense snacks in the diet; increasing intake of energy rich foods and using innovative food processing practices (such as fermenting, sprouting and blending) it ispossible to meet the energy requirements of PLHIV.

- Protein intake at 12% to 15% of the total energy requirements (50-80 g/day) is adequate to support the growth, maintenance and repair of body tissues, and meet immune functions in both HIV-infected and uninfected persons. Children and pregnant and lactating women require additional proteins. A variety of Kenyan plant source foods is required daily to ensure adequacy and quality of protein. Eating animal source foods, such as dairy products, poultry, meats and fish, enhance the chances of adequate protein intake.
- Vitamins and minerals (micronutrients) are required in the production and function of proteins, enzymes, hormones and the immune system. Vitamins A, C, E, folate and the B group vitamins along with iron, zinc, selenium, iodine, magnesium and calcium are most critical. Requirements for PLHIV should be maintained at one Recommended Daily Allowance (RDA). Consumption of a variety of protective foods daily (consisting of vegetables and fruits along with animal sources) will provide adequate micronutrients and a significant amount of the daily fiber requirement (15-25 g). Dietary diversification, food fortification and multiple micronutrient supplementation, assist in meeting Recommended Daily Allowances (RDA). In addition, HIV-infected lactating women and children should take vitamin A supplementation and iodine supplement as recommended by the MOH and WHO, with iron-folate and iodine supplements also being given during the prenatal period.
- Pregnant women who are HIV-infected should be counselled to choose between exclusivebreastfeeding and exclusive replacement feeding. Breastfeeding mothers should be taught how to optimally breastfeed their infants. Replacement feeding can be used when it is acceptable, feasible, affordable, sustainable and safe (AFASS). If a breastfeeding mother develops AIDS symptoms while breastfeeding, a safe alternative food for her infant should be found, and she should stop breastfeeding with as little mixed feeding as possible. To further promote the well-being of children, all children should receive vaccines and vitamin A according to the national schedule. It is also recommended that HIV-in fected children be given multi-micronutrient supplements daily (RDA). HIV-infected mothers should be informed and supported to introduce nutrient densecomplementary foods in addition to breast milk substitutes when the baby is six months. If there is evidence of growth faltering, the mother should be advised to introduce high nutrient dense complementary food as early as four months.
- With regard to water requirements, PLHIV should take at least 2 liters (8 glasses) of safe clean water per day (boiled or treated). Those with diarrhoea, excess sweating or vomiting and those on medications such as ARVs should take more water to avoid dehydration and related complications. Beverages such as fruit juices, soups and milk are suitable to help achieve the desired fluid intake. Alcohol intake should be discouraged and other beverages such as tea, coffee and soft drinks taken with moderation as they provide little nutritional benefit. Non-dietary interventions also can enhance quality of life for PLHIV. Adequate daily exercise and healthy lifestyle practices such as proper personal hygiene, sanitation, and food handling practices, contributes to breaking the infection and malnutrition cycle.

- Drugs used by PLHIV may adversely alter food intake, nutrient absorption, metabolism rates, distribution and excretion. They may cause loss of appetite, change in taste, and diarrhoea. Conversely, food and nutrient intake may positively alter drug absorption, metabolism, distribution and excretion. This synergetic relationship between medications and nutrition is central to the efficacy and adherence of ARVs and other medicines used to treat HIV and AIDS. Also, undernourished PLHIV require therapeutic nutrition or foodaid before and during the early phase of ART. For individuals who are not able to take food orally, health workers should administer tube and parenteral therapeutic nutrition.
- In order to scale-up nutritional care and support to the national level, a framework for coordination, communication and implementation of the Guidelines is critical. Further, there are several points of summary actions for service providers incorporated into the guidelines specific to the nutritional care and support. This will permit effective multisectoral implementation, monitoring and evaluation in line with the Kenya National AIDS Strategic Plan as well as inform future policy considerations for nutrition care and support in the national response to the HIV/AIDS epidemic.

Acronyms

AED	Academy for Educational Development
AFASS	Acceptable, Feasible, Affordable, Sustainable and Safe
AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-retroviral Therapy
ARV	Anti-retroviral drugs
BMI	Body Mass Index
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization of the United Nations
HAART	Highly Active Anti-retroviral Therapy
Hb	Haemoglobin
HDL	High Density Lipoprotein
HIV	Human Immunodeficiency Virus
KDHS	Kenya Demographic and Health Survey
LBM	Lean Body Mass
MoH	Ministry of Health
MTCT	Mother-to-Child Transmission
MUAC	Mid Upper Arm Circumference
MUFA	Mono-Unsaturated Fatty Acids
NASCOP	National AIDS and STI Control Programme
NCHS	National Centre for Health Statistics
OI	Opportunistic Infection
OVC	Orphans and Vulnerable Children
PI	Protease Inhibitor
PLHIV	People Living With HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
PUFA	Polyunsaturated Fatty Acids
RDA	Recommended Daily Allowance
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Family Planning Association
UNICEF	United Nations Children's Fund
VAD	Vitamin A Deficiency
WHO	World Health Organization

Definition of Terms

AIDS	A combination of illnesses caused by the human immunodeficiency virus (HIV) that weaken the immune system. Antenatal Period during pregnancy and before delivery.
Anthropometry	Tools used to identify malnutrition and monitor body measure ments.
Antioxidant	Compounds that scavenge free radicals (oxygen molecules) in the body.
Anti-retro Viral	Treatment of persons with AIDS using drugs that specifically deals with Therapy treatment of viruses including HIV virus.
Asymptomatic	A person infected with a disease but without clinical signs and symptoms.
Bacteria	Disease-causing micro-organism bigger than a virus and treatable with antibiotics.
Balanced diet	A meal containing all nutrients in adequate proportions to ensure nourishment of the body.
Bioavailability	The degree and rate at which a substance is absorbed into the body at the site of physiological activity and absorption (e.g. gut).
CD4 cells	A subset of specialized lymphocytes that are essential in fighting (attacking) infections used as a marker for HIV progress.
Cholesterol	A fat-like substance that is produced in the liver, and also found in animal-source foods. It circulates in blood as low-density lipopro- teins (LDL) and high-density lipoproteins (HDL).
Diet	Amount and kind of food and/or drink taken by a person.
Disease	Period after infection when signs and symptoms appear.
Entomophagy	The traditional practice of consuming edible insects such as termites and locusts.
Erythropoiesis	The process of red blood cells forming in the bone marrow.
Geophagy	The practice of craving and chewing non-food materials (such as soil and soft rock)
HAART	Highly Active Anti-retroviral Therapy. Combinations of several anti-retroviral drugs which inhibit HIV multiplication in the body, improve health status, and delay development of AIDS.
Haematopoiesis	Process of blood formation.
Health	A state of physical, social and mental well-being (not necessary absence of disease).
Helminths	Intestinal worms.
Home-based care	Care given in the community/home by non-health personnel to people who are sick or recuperating from sickness.
HIV	The human immunodeficiency virus that causes AIDS.

Hypogonadism	Delayed sexual maturity.
Hypothyrodism	Reduced functional activity of the thyroid gland.
Immunosuppression	A weakened body defence system, creating vulnerability to infection and other disorders.
Indigenous foods	Local/native foods grown in a community.
Infant	A child from birth to 12 months of age.
Infection	The presence of disease caused by micro-organisms.
Kcal	Energy taken in food and measured as it's used in daily life.
Lactation	Production of breast milk.
Lactose intolerance	A body's inability to digest lactose, the sugar that is primarily found in milk and milk products
Lean body mass	Weight of the body without fat composed of muscle, bones and other tissues.
Malabsorption	Failure by the digestive tract to absorb nutrients leading to deficiencies.
Malnutrition	A condition in the body brought about by inadequate or excess intake of required nutrients, or malabsorption.
Meal	Food eaten at a particular time, especially breakfast, lunch supper.
Monosaturated	Produce cholesterol in the body that reduce the risk of heart disease, Fats/oils and may protect against certain cancer. They are also referred to as "good" fats.
Morbidity	Sickness or illness.
Mortality	Death, usually expressed as a rate of mortality, e,g. rate of death over a period of time.
Nutrient	A substance or component of food, including carbohydrates, proteins, fats, vitamins, minerals and water.
Nutrition	Process of food ingested, digested and absorbed to provide the body with required nutrients.
Nutritional status	A measurement or the extent in which an individual's physiological needs for nutrients are being met.
Oedema	Swelling due to accumulation of fluids.
Opportunistic	Illnesses caused by various organisms, some of which do not cause disease
Infections	In people with a normal functioning immune system.
Over-nutrition	Excessive nutrients and nutritional stores in the body, causing obesity.
Polyunsaturated	Produce cholesterol in the body that reduces the risk of heart disease
Fats/oils	And may protect the body against some cancers. They are also referred to as "good" fats.

Prebiotics	Nutrients that support growth of healthy bacteria such as lactobacilli in the gut.
Probiotics	Live micro-organisms that, when administered in adequate amounts, confer health benefits on the host.
Quality of Life	Life with minimized burden of illness with respect to daily functioning as valued by individuals.
RDA	Recommended daily Allowance. Average requirement of various nutrients to maintain nutritional status of a healthy person according to international standards.
Red blood cells	Cells that help transport oxygen to parts of the body. Saturated fats Fats responsible for high levels of cholesterol in the body, therefore increasing the risk of heart disease. They are also referred to as "bad" fats.
Snack	Food or drinks readily available, eaten without much preparation and usually taken between main meals.
Symptomatic	Infection with signs and symptoms.
Synbiotics	Combination of Prebiotics and Probiotics.
Trans fats	Solidified and partially-hydrogenated vegetable oils that raise blood LDL cholesterol levels (thus called "bad" cholesterol) and reduce the HDL or "good" cholesterol levels
Under-nutrition	Inadequate nutrients or food intake in the body.
Viral load	Amount of human immunodeficiency virus in blood used as a marker for progress of HIV to AIDS.
Virus	Smallest of all disease –causing micro-organisms.
Vitamins	Nutrients with main function to protect the body against infetion.
White blood cells	Combination of cells that protect the body and fight against infections.

CHAPTER I

1.0 Nutrition and HIV Situation in Kenya

BACKGROUND

Evidence has shown important links between improved HIV and AIDS outcomes and nutrition. Adequate nutrition is necessary to maintain the immune system, manage opportunistic infections, optimize response to medical treatment and sustain healthy levels of physical activity. Good nutrition also supports optimal quality of life for a person living with HIV. Good nutrition may contribute to slowing the progression of the disease (Castleman, T. et al, 2004) (World Bank, 2007). Nutrition interventions can also help to optimize the benefits of anti-retroviral drugs (ARVS) as well as increase compliance with treatment regimens, both of which are essential to prolonging the lives of people living with HIV and AIDS and also preventing the transmission of HIV from mother to child.

HIV, the virus that causes AIDS, "acquired immunodeficiency syndrome, has become one of the world's most serious health and development challenges. The first cases were reported in 1981 and today, more than 30 years later there are approximately 34 million people currently living with HIV Globally. While cases have been reported in all regions of the world, almost all those living with HIV reside in low- and middle-income countries; with around 68 percent of all people living with HIV residing in sub-Saharan Africa, the region carries the greatest burden of the epidemic. Sub-Sahara Africa accounts for 22.9 million people living with HIV (WHO/ UNICEF/UNAIDS., 2011).

The current prevalence of HIV in Kenya is 5.6% and 1,192,000 million people between the ages of 15 to 64 years (excluding North Eastern region) were infected with HIV in 2012 The prevalence among children (18mths-14 years) was estimated to be 0.9%. Among adults, the prevalence among women and men (15-64 years) 6.9% and 4.4% respectively (GOK, 2013). Between 2007 and 2012, there has been an overall decrease in HIV prevalence among both men and women.

HIV

HIV is the etiologic agent for the acquired immunodeficiency syndrome (AIDS); it belongs to the family of retroviruses and the genus of lentiviruses. It is a Ribonucleic Acid (RNA) virus whose hallmark is the reverse transcription of genomic RNA to Deoxyribonucleic Acid (DNA) by the enzyme reverse transcriptase. HIV-1 is the cause of much of the global HIV pandemic and is much more infective than HIV-2. HIV is present in blood, semen, vaginal secretions, breast milk and body fluids and secretions.

AIDS

Acquired Immune Deficiency Syndrome (AIDS) is the name of the fatal clinical condition that results from infection with the human immunodeficiency virus (HIV), which progressively damages the body's ability to protect itself from disease organisms.

1.1 Food Security and Nutrition Situation in Kenya

Food security

The Food security steering group August 2013, estimated that 850,000 people are food insecure out of the approximately; 40m Kenyan (GOK, 2009a). Majority rely on food relief.

HIV/AIDS impacts negatively by reducing the household's ability to produce and buy food.Adults with HIV are less able to work on their land or earn income from other activities. Increased health costs require household money that is needed for food.

Table 1: Nutrition status for children under five 2008/2009

Indicator	Prevalence 2003 (%)	Prevalence 2008 (%)	Remarks
Stunting	30	35	Stunting was most prevalent in children between 18-35 months
Severe	11	14	
Underweight	20	16	Underweight was highest among children aged 24-35 months
Severe	4	4	
Wasted	6	7	Wasting is seen most among children 6-12 months, this is the period in which the child is being weaned
Severe	1	2	

Source: KDHS, 2010

In Kenya, about 35% of children under 5yrs are stunted of which 14% severely stunted, 7%under 5 years are wasted of which 2% are severely wasted and 16% under 5yrs are underweight. (GoK, 2008-2009) Rates of underweight and stunting are approximately 10% higher in rural areas than in urban areas. In addition, anaemia affects three out of every four children under five years, one out of every two women of reproductive age and one man out of every five men. Nationally, Iodine deficiency is 16%, Iron deficiency is 60%, and Vitamin A deficiency is 84% (Ministry of Health, 2008).

It is estimated that over 23,000 deaths of children are related to increased susceptibility toinfections related to vitamin A deficiency, and that approximately 70% of children in Kenyagrow up with lowered immunity. Overall, the nutritional situation of the Kenyan population remains precarious (GOK, 2009b).

HIV and Malnutrition

HIV compromises the immune system resulting in increased susceptibility to severe illnesses. Malnutrition exacerbates the effects of HIV by further weakening the immune system, reducing quality of life and life expectancy. HIV increases the risk of under nutrition by increasing nutrient needs and reducing food intake as well as nutrient absorp-

tion. Nutritional care and support should be an integral component of the HIV/AIDS comprehensive care package Nutritional interventions are required for all infected persons, irrespective of whether they are on anti-retroviral therapy (ART) or not, and at all stages of the disease. In addition, overweight and obesity among PLHIV predisposes them to non-communicable diseases.

1.2 Rationale for the Guidelines

The action framework for the fight against the HIV and AIDS epidemic in Kenya focuses on three priority areas: prevention of new infections, improvement of the quality of life of people infected and affected by HIV/AIDS, and mitigation of the socio-economic impact of HIV/AIDS. A key activity in improvement of quality of life of people infected by HIV is the provision of nutritional interventions (National AIDS Control Council, 2009). The National HIV/AIDS policy and several guidelines have articulated the significance of nutrition within the continuum of care and support for those infected with HIV. Specifically, nutrition interventions are given attention in the Guidelines for Nursing Care and Home Based Care, although limited in scope and coverage, information provided in these guidelines and others developed by service nongovernmental organizations were the primary source of information for service providers.

involved in care and support for People with HIV and (PLHIV). There is need for national guidelines to enable consistent programming and services based on sound technical advice. The Kenya National Guidelines on Nutrition and HIV and AIDS provide recommendations and information on nutritional care and support for PLHIV, including energy and nutrient requirements; the interaction between food, nutrition and drugs (including ART); and nutrition considerations for special groups such as children born to HIV-infected women, children who are HIV positive, pregnant and lactating women. For the Kenyan health worker with the obligation to provide quality and comprehensive care including food and nutritional services these guidelines will be a valuable source of information for enhancing service provision to those infected and affected.

1.3 The Goal and Purpose of Nutritional Care and Support for PLHIV

1.3.1 Goal of the Guidelines

The goal of nutritional care and support for PLHIV is to improve nutritional status, health, quality of life and duration of survival of people infected with HIV.

Purpose of the Guidelines

- To provide a framework for informing policy makers and development partners of plans for nutrition intervention for PLHIV.
- To define actions that service providers need to undertake in order to provide qualitycare for and support to PLHIV at various contact points, including basis for developing communication messages and design of nutrition packages.

- To promote advocacy at all levels and mobilize support for prevention of malnutrition among the general population, with particular focus on PLHIV and for the integration of nutrition and HIV/AIDS services.
- To establish a consistent set of nutrition recommendations for PLHIV in Kenya in order to improve their nutritional status, manage symptoms, and promote response to medical therapy PLHIV.

The Guidelines can be used in conjunction with the following important publications Government of Kenya, Ministry of Health, NASCOP, PMTCT Training Curriculum; Kenya PMTCT project. "A short course for health workers providing PMTCT services in areas with limited resources and high HIV prevalence (2009).

I. Government of Kenya Ministry of Health NASCOP.4th EDITION ART Guidelines2011

II. Government of Kenya Ministry of Health National Home-based Care Programme and Service Guidelines, May 2005(in draft).

III. Government of Kenya Ministry of Health. Home Care Handbook: A Reference Manual for Home-based Care for People with HIV and AIDS in Kenya, (August 2006)

IV. WHO/FAO Living Well with HIV/AIDS: A Manual on Nutritional Care and Support for People living with HIV and AIDS, 2002.

V. Kenya AIDS NGOs Consortium Information Package for People with HIV and AIDS, 2000.

VI. National AIDS Control Council. Kenya National HIV/AIDS Strategic Plan 2005/6 -2009/10. 2005.

VII. Government of Kenya, Ministry of Health, Nutrition Division, UNICEF, WHO. Infant and Young Child Feeding Guidelines in the Context of HIV/AIDS, (2010)

VIII. National Guidelines on Integrated Management of Acute Malnutrition, Version 1, June 2009

IX. Kenya National Clinical Nutrition and Dietetics Reference Manual, 1st Edition 2010

CHAPTER 2

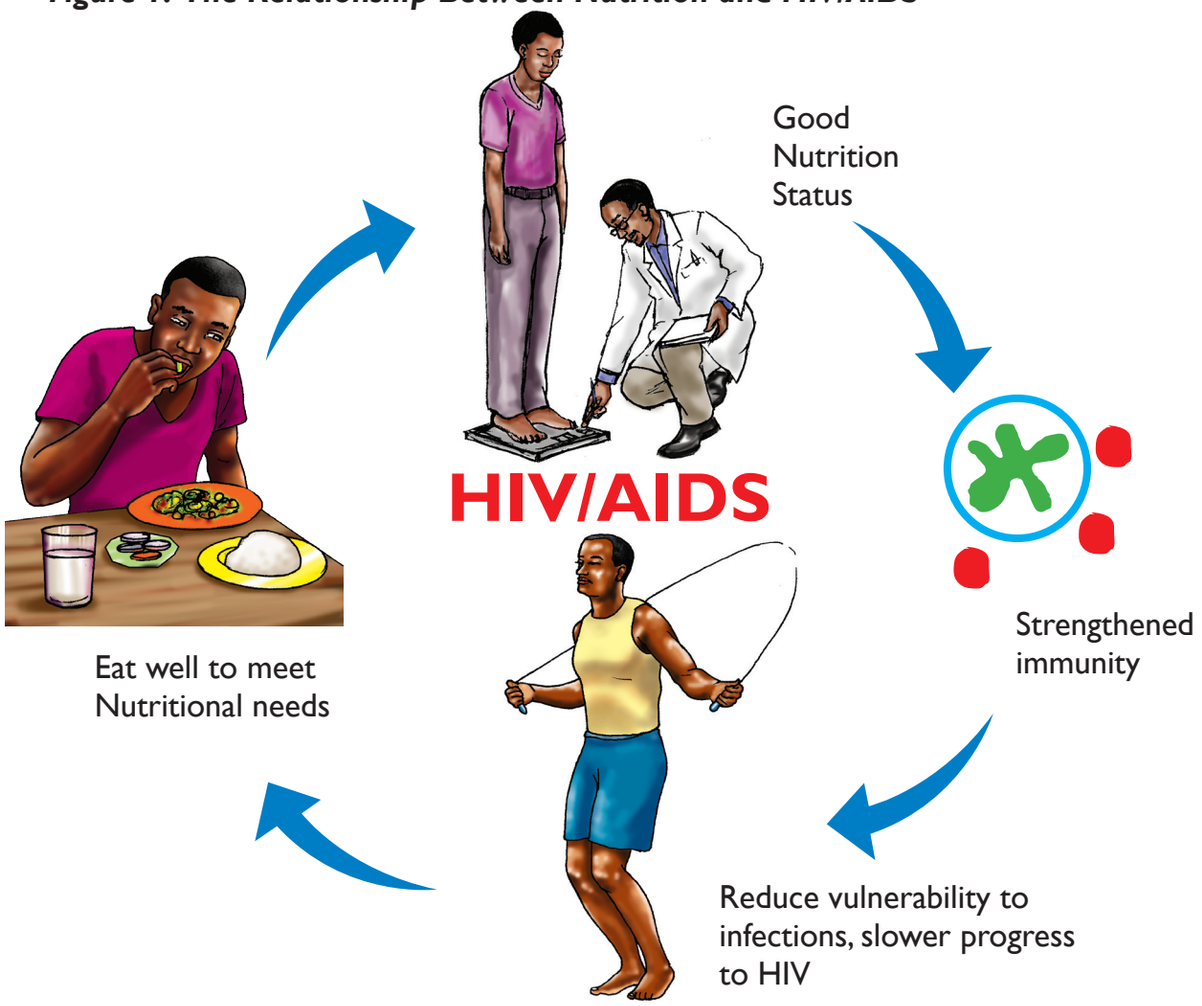
Relationship between Nutrition and HIV

2.0 Introduction

Nutrition is the sum totals of processes involved in taking in and utilization of food substances by which growth repair and maintenance of body tissues are accomplished. It involves ingestion, digestion, absorption and assimilation of nutrients. Nutrients are substance in foods that are essential or non -essential that are required by the body to support the sum processes of nutrition for energy and immune- functions for quality health.

The food pyramid is a graphic presentation of the food groups and the recommended servings per food group per day.

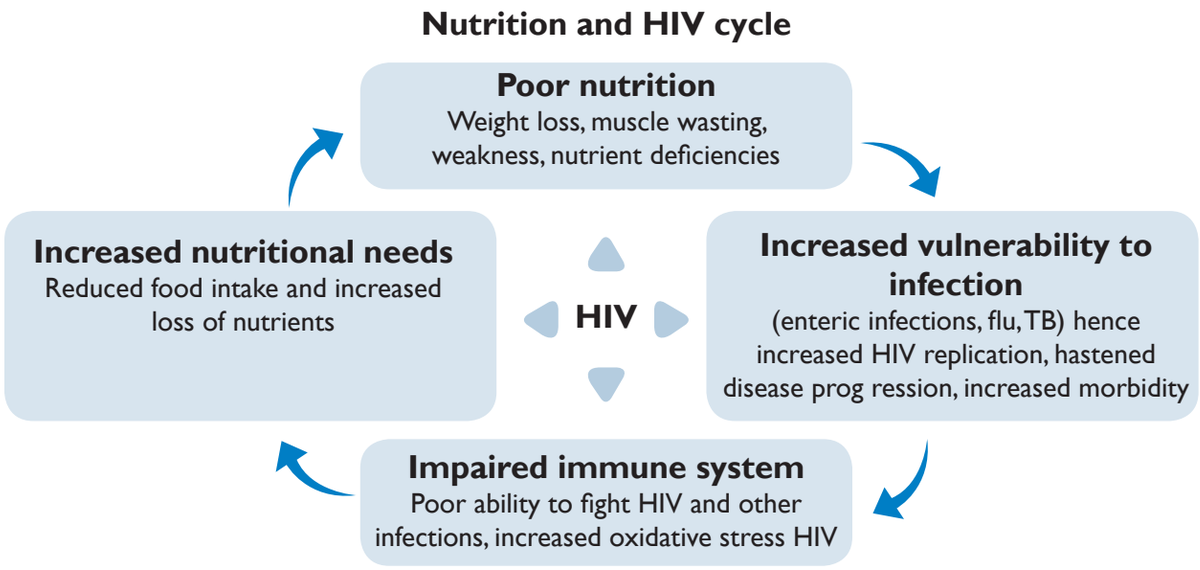
Figure 1: The Relationship Between Nutrition and HIV/AIDS



Nutrition and HIV Cycle

Researches in Africa show that nutritional status of individuals affects progression of HIV disease. Under nutrition among PLHIV is as a result of HIV infection and is among the causes of HIV wasting syndrome (Castleman, T. *et al,* 2004).

Figure 2: The cycle of poor nutrition and infection in the context of HIV/AIDS



■ Nutrition in Care and Treatment of PLHIV

Source: Kenya National Toolkit

2.1 HIV infection and Immune system

HIV attacks and impairs the body's immune system. HIV infection progresses slowly and may take years before the infected person shows persistent signs of illness. During this period, the virus attacks and destroys defense cells known as CD4's. CD4 cells are critical to the immune system functions of the body. Unlike other infections, it is practically impossible for the body to naturally eliminate HIV.

The length of time it takes from asymptomatic HIV to symptomatic disease depends on several factors, including the general health and nutritional status of a person before and during the infection period. In resource-limited settings, HIV's progression to full-blown AIDS may take a shorter time because a majority of people have various nutritional deficits.

Blown AIDS: At this point, the body's ability to fight against infection from viruses, bacteria, and parasites, and against non-infectious diseases such as cancer and blood disorders, is significantly weakened.

When the immune system is functioning optimally, it helps slow the progression of HIV into AIDS, and increases survival. The development and full function of the immune system requires an array of essential micronutrients and adequate macronutrients, achieved through good nutrition. Generally immune suppression responds rapidly to nutrition intervention.

Clinical Staging of HIV/AIDS in adults and adolescents

Clinical Stage 1

1. Asymptomatic
2. Persistent generalized lymphadenopathy (PGL)

Clinical Stage 2

1. Moderate unexplained weight loss (<10% of presumed or measure body weight)
2. Minor mucocutaneous manifestations (seborrheic dermatitis, popular pruritic eruptions,fungal nail infections, recurrent oral ulcerations, angular cheilitis)
3. Herpes zoster
4. Recurrent upper respiratory tract infections (sinusitis, tonsillitis, bronchitis, otitis media,pharyngitis)

Clinical Stage 3

1. Unexplained severe weight loss (over 10% of presumed or measured body weight)
2. Unexplained chronic diarrhea for longer than one month
3. Unexplained persistent fever (intermittent or constant for longer than one month)
4. Persistent oral candidiasis
5. Oral hairy leukoplakia
6. Pulmonary tuberculosis
7. Severe bacterial infections (e.g. pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteraemia)
8. Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis
9. Unexplained anaemia (below 8g/dl) neutropenia (below 0.5 x 109/1) and /or chronic thrombocytopenia (below 50 x 109/1)

Clinical Stage 4

Conditions where a presumptive diagnosis can be made using clinical sighs or simple investigations:

1. HIV wasting syndrome
2. Pneumocystis jiroveci pneumonia (PCP)
3. Recurrent severe bacterial pneumonia (≥2 episodes within 1 year)
4. Cryptococcal meningitis
5. Toxoplasmosis of the brain
6. Chronic orolabial, genital or ano-rectal herpes simplex infection for >1 month
7. Kaposi sarcoma (KS)
8. HIV encephalopathy
9. Extra pulmonary tuberculosis (EPTB)

Conditions where confirmatory diagnostic testing is necessary:

1. Cryptosporidiosis, with diarrhea >1 month
2. Isosporiasis
3. Cryptococcosis (extra pulmonary)
4. Disseminated non-tuberculous mycobacterial infection
5. Cytomegalovirus (CMV) retinitis or infection of the organs (other than liver, spleen, or lymph nodes
6. Progressive multifocal leucoencephalopathy (PML)
7. Any disseminated mycosis (e.g. histoplasmosis, coccidiomycosis)

Clinical Staging of Paediatric HIV/AIDS (Adapted from Guidelines for ART in Kenya 4th Edition 2011 re-print)

Clinical Stage 1

1. Asymptomatic
2. Persistent generalized lymphadenopathy (PGL)

Clinical Stage 2

1. Unexplained persistent hepatosplenomegaly
2. Popular pruritic eruptions
3. Extensive wart virus infection
4. Extensive molluscumcontagiosum
5. Recurrent oral ulcerations
6. Unexplained persistent parotid enlargement
7. Lineal gingival erythema
8. Herpes zoster
9. Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis,tonsillitis
10. Fungal nail infection

Clinical Stage 3

1. Unexplained moderate malnutrition not adequately responding to standard therapy
2. Unexplained persistent diarrhea (14days or more)
3. Unexplained persistent fever (above 37.50C, intermittent or constant, for longer than a month)
4. Persistent oral candidiasis (after first 6weeks of life)
5. Oral hairy leukoplakia
6. Acute necrotizing ulcerative gingivitis/periodontitis

7. Lymph node TB
8. Pulmonary TB
9. Sever recurrent bacterial pneumonia
10. Symptomatic lymphoid interstitial pneumonitis
11. Chronic HIV-associated lung disease including bronchiectasis
12. Unexplained anaemia (8.0g/dl), neutropenia (<0.5x109/L3) or chronic thrombocytopenia (<50x109/L3)

Clinical Stage 4

1. Unexplained severe wasting, stunting or severe malnutrition not responding to standardtherapy
2. Pneumocystis pneumonia
3. Recurrent sever bacterial infections (e.g. empyema, pyomyositis, bone or joint infection, meningitis, but excluding pneumonia)
4. Chronic herpes simplex infection; (orolabial or cutaneous of more than one month's duration, or visceral at any site)
5. Extra pulmonary TB
6. Kaposi sarcoma
7. Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)
8. Central nervous system toxoplasmosis (after the neonatal period)
9. HIV encephalopathy
10. Cytomegalovirus (CMV) infection; retinitis or CMV infection affecting another organ,with onset at age more than 1 month
11. Extra pulmonary Cryptococcus's including meningitis
12. Disseminated endemic mycosis (extra pulmonary histoplasmosis, coccidioidomycosis, penicilliosis)
13. Chronic cryptosporidiosis (with diarrhea)

2.2 Effects of HIV and AIDS on Nutrition

HIV affects nutrition in three overlapping ways:

- It is associated with symptoms that cause a reduction in the amount of food consumed
- It interferes with the digestion and absorption of nutrients consumed
- It changes metabolism, or the way the body transports, uses, stores, and excretes many of the nutrients
- Decreased food consumption
- HIV/AIDS is associated with conditions that result in reduced food intake. Decreased food consumption may result from the following factors:
- Inability to eat or swallow because of painful sores in the mouth and throat

- Loss of appetite as a result of fatigue, depression, and other changes in the mental state
- Side effects of medications, including nausea, loss of appetite, a metallic taste in the mouth, diarrhea, vomiting, and abdominal cramps
- Reduced quantity and quality of food in the household as a result of the inability to work or reduced income because of HIV-related illness

Poor digestion and Nutrient absorption:

HIV infection also interferes with the body's ability to absorb nutrients, an effect that occurs with many infections. Poor absorption of fats and carbohydrates can occur at any stage of HIV infection in both adults and children and results in excess nutrient loss.

Poor absorption is caused by the following:

- HIV infection of the intestinal cells, which may damage the gut, even in people with no other symptoms of infection
- Increased incidence of opportunistic infections such as diarrhea, which is a common cause of weight loss in people living with HIV
- Poor absorption of fat reduces the absorption and use of fat-soluble vitamins such as vitamins A and E. This can further compromise nutrition and immune status.

Changes in metabolism, nutrient assimilation:

Changes in metabolism in HIV-infected people occur as a result of the immune system's response to HIV infection. When the body mounts its acute phase response to infection, it releases prooxidant cytokines and other oxygen-reactive species. These cytokines produce several results, including anorexia (causing lower intake of food) and fever (increasing energy requirements).

If the infection is prolonged, muscle wasting occurs because muscle tissue is broken down to provide the amino acids with the immune protein and enzymes they need. These processes increase energy requirements of people living with HIV/AIDS during the asymptomatic phase by 10 percent over the level of energy intake recommended for healthy, non-HIV-infected peopleof the same age, sex, and physical activity level. They increase energy requirements during the symptomatic phase by 20 percent-30 percent over the level of energy intake recommended forhealthy, non-HIV-infected people of the same age, sex, and physical activity level (Castleman,T. et al., 2004). The body also responds to this release of pro-oxidant cytokines by increasing the demand for antioxidant vitamins and minerals, such as vitamins E and C, beta-carotene, zinc, and selenium. These vitamins and minerals are used to form antioxidant enzymes.

Oxidative stress occurs in an imbalance between the pro-oxidants and antioxidants, when there are not enough antioxidants to meet the demands of the pro-oxidant cytokines. This stress is believed to increase HIV replication and transcription, leading to higher viral loads and disease progression. For this reason, many studies have examined the impact of antioxidant vitamin supplementation on HIV transmission and disease progression.

2.3 Relationship between nutrition and HIV

HIV affects nutrition by decreasing food consumption, impairing nutrient absorption, and causing changes in metabolism, HIV associated wasting. Nutritional status also affects HIV disease progression and mortality. Improving and maintaining good nutrition may prolong health and delay HIV disease progression. The impact begins early in the course of HIV infection, even before other symptoms are observed. Counseling and other interventions to prevent or reverse weight loss are likely to have the greatest impact early in the course of HIV infection.

2.3.1 Under nutrition and HIV

Under nutrition and HIV status have negative feedback loops, resulting in severe effects on the resilience of individuals, households, and communities. Such interactions manifest at both the level of the HIV-infected individual and the level of the affected household in terms of clinical, nutritional, quality-of-life, and economic outcomes.

At the individual level, a lack of access to appropriate food and the direct effect that HIV has on impaired metabolic functions in absorption, storage, and utilization of nutrients can translate into compromised immunity, nutrient deficiencies, and increased vulnerability to infectious diseases. Lack of sufficient food intake and/or mala-absorption leads to weight loss, which further exacerbates the catabolic nature of HIV infection. Weight loss, is itself a significant,independent risk factor for AIDS-related mortality and HIV-associated wasting often persists even with use of ART.

HIV infection reduces the efficiency of nutrient absorption and utilization partly because of frequent diarrhea due to compromised immunity. Mal absorption of fats and carbohydrates is common, with the former adversely affecting the absorption and utilization of fat-soluble vitamins, compromising immunity and worsening nutrient deficiencies. Infections and nutritional deficiencies cause an increase in levels of prooxidants, resulting in oxidative stress, which may indirectly accelerate HIV replication. Metabolic changes, including changes in insulin and glucagon levels, result from both reduced food intake and the immune response to infection and may lead to muscle wasting.

ART itself increases resting energy expenditure independent of viral load, further contributing to HIV-associated weight loss. In addition, under nutrition increases the probability of developing hepatic toxicity to nevirapine. As HIV infection progresses, it can cause a catabolic state that is compounded by inadequate caloric and nutrient intake, increasing the severity of preexistingnunder nutrition. In children, advanced HIV infection often presents with clinical features that are indistinguishable from severe under nutrition. These facts further highlight the particular need to ensure adequate calorie and nutrient intake in adults and children living with HIV infection.

Over nutrition and HIV

HIV-infected patients are experiencing rising rates of obesity globally. Overall, levels of obesity and overweight seem to be increasing in several sub-Saharan African countries which also have high prevalence of HIV. For both HIV+ve and HIV-ve persons, obesity leads to negative health consequences such as heart disease, diabetes, certain cancers

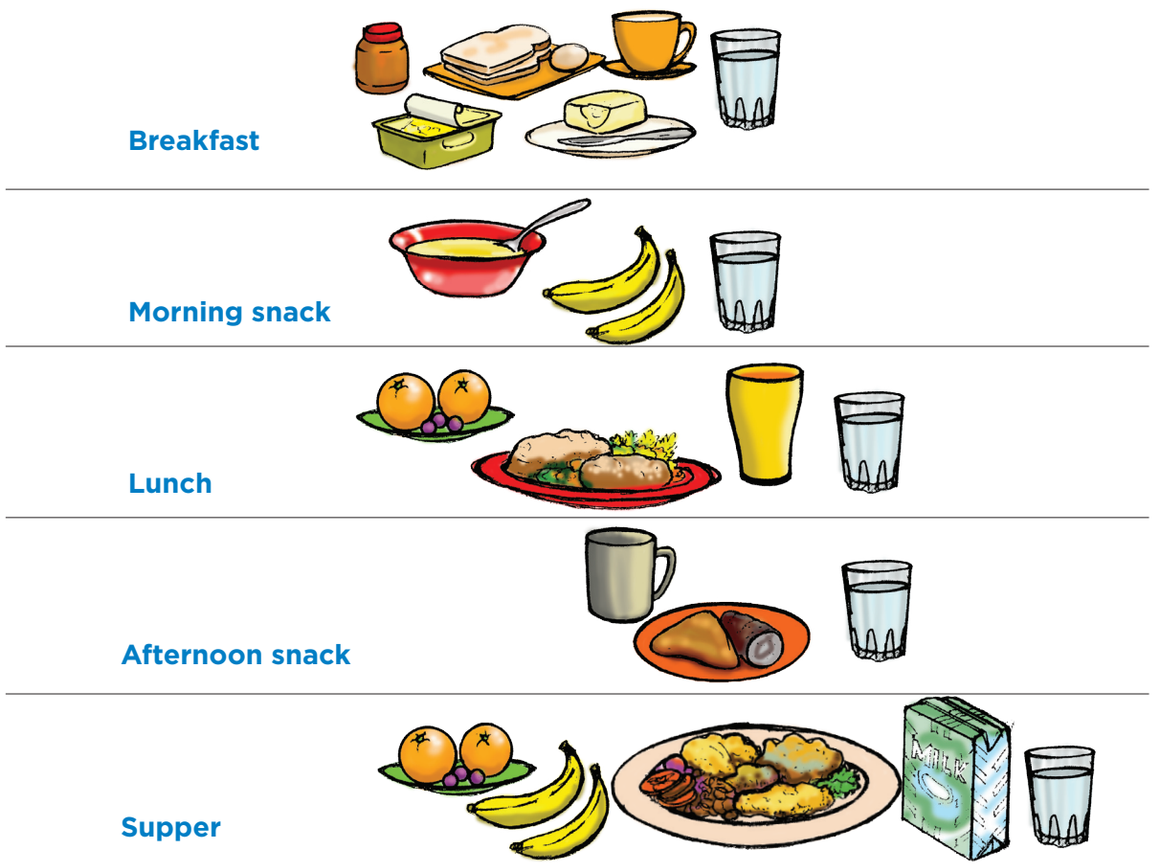
and potential negative effects on the patients' immune system. HIV infected patients who are obese are more likely to have lower mean CD4 counts than those whose weight is appropriate. After beginning HIV medications for the first time, obese persons are likely to gain fewer CD4 cells than overweight persons. Those who are obese are likely to have fewer CD4 counts over time than those who have normal weight thus; the lower CD4 counts the increased risk of obese and adverse consequences of obesity (NASCOP, 2011).

Benefits of good nutrition

Food provides nutrients that are required for growth, repair and maintenance, as well as health and well-being. Food also, facilitates the absorption and effectiveness of drugs, and increased appetite is an intended and desirable effect of drug therapy, one that is needed to reverse loss of body mass and to promote recuperation and enhanced immune function.

2.4 Relationship between HIV and Co-morbidities

Figure 3: Optimal Nutrition



HIV increases the risk of co-morbidities, including both communicable and non-communicablediseases. A non-communicable disease (NCD) is defined as a disease which is not infectious thatmay result from genetic or lifestyle factors. Current evidence indicates that four types of NCDs (i.e. cardiovascular diseases, cancers, diabetes and chronic respiratory diseases) account for almost two third of all deaths globally, with 80 per cent of these deaths occurring in low-income and middle-income countries. By eliminating shared risk factors such as tobacco use, unhealthydiet, physical inactivity and the harmful use of alcohol, almost 80 per cent of heart disease, stroke and type 2 diabetes and over a third of all cancers could be prevented. (WHO, 2010).

In developing countries many people infected with HIV contract TB as the first sign of AIDS. At least one-third of the 38.6 million HIV-positive people in the world are also infected with TBand are at greatly increased risk of developing TB disease (the active and contagious form ofTB). TB is the leading cause of illness and death among people living with HIV in Africa and a major cause of death in HIV-positive people living elsewhere (WHO, 2012). In some settings, TB kills up to half of all AIDS patients. In addition, improved disease management can reducemorbidity, disability and death and contribute to better health outcomes.

Optimal nutrition positively impacts the immune system which helps slow the progression of HIV into AIDS, improves quality of life and increases survival. The development and full functionof the immune system requires an array of essential micronutrients and adequate macronutrients,achieved through good nutrition. Generally, immune suppression responds to nutrition interventions.

CHAPTER 3

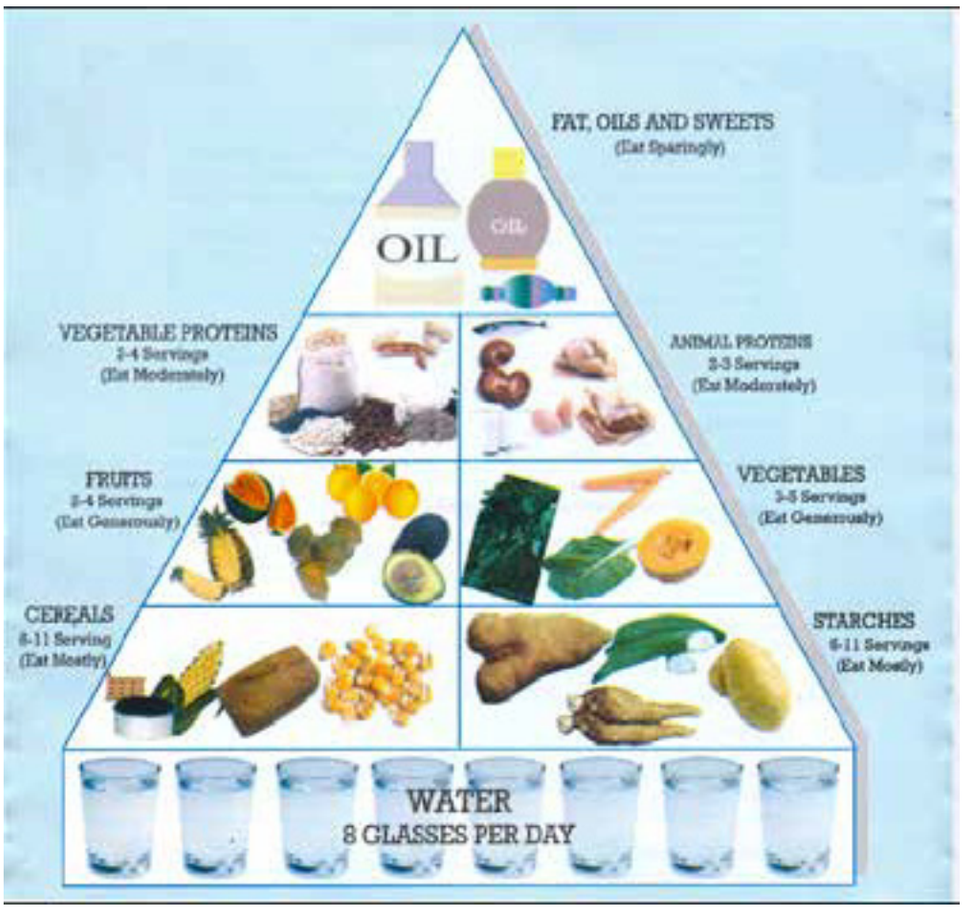
Nutrient Requirements of PLHIV

3.0 Introduction

A well-nourished person has a stronger immune system for coping with HIV and fighting illness.Malnutrition leads to immune impairment, worsens the effect of HIV and contributes to more rapid progression of HIV to AIDS.

Malnutrition among PLHIV manifests itself most commonly as weight-loss, wasting in adults and children, and faltered linear growth (stunting) in children. HIV infection affects the nutrition status of an individual through increased energy requirements, breakdown of muscle protein and subcutaneous fat, usage of vitamin, trace elements and minerals and mal-absorption of nutrients. Timely nutrition interventions can help strengthen the immune system thereby reducing the incidence of infection, preventing loss of weight, preserving lean body mass, and delaying disease progression (Castleman, T. et al, 2004).

Figure 4: Food Pyramid



The nutritional needs of PLHIV are influenced by factors such as age, sex, physiological-changes, level of physical activity and an individual's clinical state of health, including the metabolic rate and viral load count. The fundamental concerns are to maintain a balance of foods from each food group, and to consume a variety within each food group daily as shown in the food pyramid.

3.1 Energy Requirements for PLHIV

The human body expends energy, even when resting. Infections, including HIV and AIDS, increase the body's energy needs depending on the severity of the infection. Basically, PLHIV's energy needs increase with the progression of the disease, especially during episodes of opportunistic infections.

Energy requirements for symptomatic and asymptomatic HIV stages are described in detail in Annex1.

Nutritional needs of PLHIV are influenced by several factors including age, physiologi-calchanges, level of physical activity and an individual's clinical state of health (including the metabolic rate and viral load count).

Table 2: Nutritional requirements for PLHIV

Stage/category	Requirement/day
Healthy HIV-Uninfected Adults	1,990 and 2,580 kilocalories (Annex 1)
Adult, HIV-Infected (early/ asymptomatic stage)	10% additional kilocalories (200-260 kilo calories). This translates into a food equivalent of about an additional one mug of thick enriched porridge taken during the course of the day
Adults, HIV-Infected (advanced/ symptomatic stages)	20-30% additional kilo calories (420 to 630 kilo calories), depending on severity of condition. This translates into a food equivalent of an extra two to three mugs of thick enriched porridge taken during the course of the day.
HIV – Infected Children	Asymptomatic: 10% more kilo calories to maintain growth if the child is Symptomatic: energy needs increase by about 20-30% more per day. Symptomatic and experiencing weight loss: 50-100% more kilo calories per day.

Main Sources of energy in the Diet

All foods provide some energy, but particular energy-giving foods maximize the energy per serving. Energy giving foods include cereals, tubers, seeds, sugars, fats and oils (Figure 5).

Carbohydrates-rich foods and Fats/oils

Carbohydrates rich foods are a main part of the diet in Kenya and include: maize, rice, beans, peas, potatoes, sorghum, cassava, wheat, sweet potatoes (orange or white fleshed sweetpotatoes), millet and green bananas. Sugars and sugary foods are rich sources of energy and include table sugar, honey, jam, cakes and biscuits.

Sugars and sugary foods as sources of energy should be taken in moderation. Table sugar is easily broken down to simple sugars, which the liver transforms into fat. Sugars should also be moderated in case of oral thrush or sores in the mouth. After the condition is cured, normal sugar consumption can resume.

Fats and Oils provide more than twice the energy of an equivalent amount of carbohydrates. They add flavor and taste to food, which helps to stimulate appetite. They also maintain the function and integrity of cell membrane structure. Fats and oils enhance absorption of fatsoluble vitamins (A, D, E and K). Sources of fats/oils in Kenya are predominantly vegetable and animal based.

There are different types of fats and oils. The "good" fats are unsaturated while the "bad" fats are saturated. The unsaturated or good fats include polyunsaturated oils (PUFAs), which are not hydrogenated and include vegetable oils such as corn, simsim, sunflower, and cotton seed oil and omega- oils found in fish and soy beans. PUFA lower the cholesterol levels in the bodymhence decrease the risk of heart diseases.

Monounsaturated oils (MUFAs) also reduce the risk heart disease. Foods rich in MUFAs include peanuts, coconuts, olives and avocados. It is worth noting that MUFAs are more likely than PUFAs to be converted to low density lipoprotein or 'good fats'.

The saturated or "bad" fats include the trans fats and oils in margarine and shortening, red meat, poultry (skin), butter, whole milk and palm oil. Excessive consumption of saturated fats increase' bad' cholesterol in the body, increasing the risk of heart diseases and obesity. A high fat intake (over 30% of daily energy requirements) may cause steatorrhea (loose stool) and worsen diarrhea. High fat intake has also been associated with immune-suppression. Excess fat may alter production of immune substances known as cytokines.

Figure 5: Foods that provide Energy

Carbohydrates

Fats and Oils

Strategies to Meet Energy Requirements of PLHIV

The following are some strategies to assist the PLHIV meet their energy needs to sustain the increased basal metabolic rates, and to boost the immune system:

- For everyone, irrespective of their HIV-status, adequate energy intake is the first critical step to prevent weight loss and wasting.
- Consume two or more snacks between meals to help meet increased energy requirements.
- Diversify the diet using locally available foods
- Use fat and oils to prepare low energy carbohydrate foods such as potatoes. However, fats should be used moderately as they increase the risk of heart problems. Oils (olive oil, corn oil, flax seed and canola oil, and fats from fish and soya beans) are much healthier.
- Adopt food preparation methods that add nutritional value, for example: sweeten porridge or add nuts
- Promptly seek treatment/ manage any condition that may reduce food intake or nutrient absorption or utilization, such as diarrhea, oral sores, and candidiasis.
- If an individual is losing weight (has lost 10% or more of their usual weight) and cannot access enough food to meet his or her energy needs, whether due to lost productivity or illness, efforts must be made to provide additional food support (see Chapter 8).
- For PLHIV with chronic diarrhea, limit the intake of oils temporarily and resume intake in moderate amounts when diarrhea is better.

Note: *Eating staple foods alone may not provide all the essential nutrients the body needs.*

3.3 Protein Requirements for PLHIV

Proteins are made up of amino acids. Amino acids are utilized in the body as building blocks of protein synthesis inside the cell. There are 20 different types of amino acids that help the body make the hundreds of types of proteins, 9 of which are critical and must be obtained through dietary sources. These 9 essential amino acids are found predominantly in animal food sources (milk, eggs, and meat) and to a lesser extent in plant sources (e.g. soy, amaranth).

Protein requirements increase with age from early childhood to adolescence. An optimum protein intake is about1 gram of protein per kilogram (g/kg) of body weight per day. Pregnant and lactating women require more protein. A high protein diet for adults (not pregnant and not lactating) is1.2to1.5g/kg body weight per day; for children requirement is 2.5 to 3g/kg bodyweight per day.Protein requirements for different population groups are summarized in Annex 1.

Consumption of large amounts of protein-rich foods (which generally are more expensive thanstaple foods) is not necessary for balancing nutritional requirements. Excess protein is treatedas a source of energy and stored as fat in the body.

- Recommended protein intake for both infected and uninfected is 12 to15 % of the totalenergy intake. On average, this means a range of 50 to 80g of protein daily.
- According to WHO, there is insufficient evidence to support the need for increased protein requirements for PLHIV over and above that of un-infected persons (WHO, 2007 reference).
- Combining sources of protein (i.e. meat, dairy and legumes) helps to ensure the adequacy of essential amino acids which maintain body cell functions.

Main Sources of Protein in the Diet

Protein-rich foods are both animal and plant based (Fig 6). Animal source proteins (complete proteins) contain the 9 essential amino acids (EAA) while plant sources (incomplete proteins) lack one or more of the EAA.

Animal source foods: Milk and milk products (e.g yoghurt, *mala*, butter, cheese), beef, poultry, chicken, eggs, fish, dried small fish (sardines, omena) and edible insects such as termites.

Plant source foods: Pulses and legumes which include beans, pigeon peas, cow peas, green grams, lentils, soya beans and groundnuts. Plant source foods are often deficient in one or more amino acids. These deficiencies can be overcome by consuming a wide variety of plant foods.

> ***Note:*** *While a proper mix of amino acids is important, it is not necessary to consume them all at the same time. Their consumption can be spread throughout a day.*

Figure 6: Body Building Foods: Proteins

Animal Source Foods

Plant Source Foods

Strategies to Meet Protein Requirements of PLHIV

The following are some strategies to assist the PLHIV meet their protein needs.

- Eat both plant and animal source protein rich foods every day. Plant source foods should include legumes and nuts.
- Consume at least 0.8-1g of protein per kilogram body weight per day (palm size) at least 3 times per day. A small amount of meat, fish, eggs, poultry, and/or milk as part of the main meal consumed as frequently as possible is also beneficial.
- Consume animal source proteins to enhance the bioavailability of iron from plant source foods, and also provide a better balance of essential amino acids.
- Use fermented milk or yoghurt which is easily digested and helps in the digestion and absorption of other foods; they may also inhibit the growth of harmful organisms common in PLHIV.
- Some PLHIV may be intolerant to fresh milk (called "lactose intolerance") and should try to moderate amounts of fermented milk or yoghurt. Sometimes it's best to avoid the intake of milk or milk products within an hour of taking certain drugs, as milk products make some drugs less effective, such as Tetracycline.

3.4 Vitamin and Mineral Requirements for PLHIV

Micronutrients play a significant role in immune system functions. They include minerals and vitamins. Water soluble vitamins (Vitamin C and B complex) must be consumed in the diet daily because the body does not store them and any excess is excreted. Other vitamins, such as vitamin A, D, E and K, are fat-soluble. They are stored for longer periods in the body, but regular optimum intake is still required. Important minerals include iron, selenium, zinc, iodine, magnesium and calcium.

Annex 3.2 lists important vitamins and minerals. Requirements for key micronutrients are listed in Annex 3.3and3.4. According to WHO, there is insufficient evidence to support the need for increased micronutrient requirements for PLHIV.

- WHO recommends consumption of one's Recommended Daily Allowance (RDA) of all micronutrients (vitamins and minerals) for both infected and non-infected.
- However, therapeutic intervention (>1 RDA supplementation) should be considered, preferably with a multiple micronutrient supplement, for those with a vitamin or mineral deficiency, or those who are vulnerable to a micronutrient deficiency.

Main Sources of Micronutrients in the Diet

Normally, an adequate micronutrient intake is achieved through a healthy, balanced diet. Fruitsand vegetables contain essential vitamins, minerals and trace elements and are commonly referred to as protective foods (Annex 3 and 4). Animal source foods are also important sources of micronutrients. PLHIV should be encouraged to eat a balanced diet that includes a variety of vegetables and fruits every day in adequate amounts. WHO/FAO recom mends consumption of a minimum of 400g of vegetables and fruits every day.

Vegetables

The deep coloured varieties of vegetables contain abundant minerals and vitamins. Common vegetables in Kenya include kale (*sukuma wiki*), spinach, pumpkin leaves, cow-pea leaves, carrots, cassava leaves, green pepper and the following are some indigenous vegetables which are rich in micronutrient value: Bush okra (*mrenda*), Black nightshade (*managu*), Pig weed (*terere*), and Spider weed (*saga*).

Fruits

Fruits rich in micronutrients include oranges, passion fruit, mangoes, pineapples, avocados, paw paws, guavas and ripe bananas. Deep yellow or orange fruit such as mangoes, pawpaw, passion fruit and red watermelon are rich in vitamins, and in particular ß-carotenes which help the body produce vitamin A.

Fruits and Vegetables

Figure 7: Protective Foods

Vitamins and minerals are also obtained from animal source foods such as milk, eggs, liver, kidney, fish, bone soup, beef, mutton, pork, chicken and edible insects.

Fortified foods

In populations where many are at risk of micronutrient deficiency, adding selected vitamins, minerals and trace elements to staple foods increases nutrient content in a cost-effective manner.

For example, fortification of sifted maize flour restores the nutrients lost during milling; and most cooking fats and oils in the market are fortified with vitamins A and D. Combining types of foods may also enrich their nutrient value. (For example, taking vitamin C-rich food, such as mango, with iron-rich food increases the absorption of iron).

Micronutrient Supplements

Appropriate micronutrient formulations may be helpful for adults, children or pregnant and lactating women who are vulnerable to micronutrient deficiency or who are unable to meet micronutrient needs through dietary sources (Annex 3 and 4).

Multiple micronutrient supplements which meet the Recommended Daily Allowance (RDA) should be recommended for PLHIV. However, when there is a specific deficiency, a single micronutrient may be prescribed.

Strategies to Meet Micronutrient Requirements of PLHIV

The following are some strategies to assist the PLHIV meet their micronutrient needs.

- Advocate for consumption of a balanced and diversified diet to ensure adequate intake of micronutrients
- Promote food preparation methods that improve nutrient value, digestibility and bioavailability of nutrients, as well as reduce non-nutrients. Such methods include precooking, soaking, sprouting and fermenting of cereals and legumes
- Encourage consumption of fortified whole foods, e.g. fortified maize flours, where available.
- Recommend utilization of prescribed food supplements (where PLHIV meet the criteria) such as the fortified blended flours, Ready to Use Supplementary foods (RUSF) and Ready to Use Therapeutic Foods (RUTF)
- Provision of micronutrient supplementation. This should be restricted to one Recommended Daily Allowance unless therapeutic intervention for micronutrient deficiency is required. Therapeutic intervention may be required for PLHIV who are severely deficient in a specific nutrient (e.g. anaemic or vitamin A deficient) or for those who have infections (e.g. Malabsorption, diarrhea, specific intolerances, severe malnutrition).

If a service provider must recommend supplements, take in to account the following:

- Supplements are not an alternative to a balanced and varied diet.
- Supplements do not treat HIV/AIDS, but only improve immunity to fight opportunistic infections (OIs).
- Taking supplements beyond the prescribed level per day can lead to toxicity. Toxicity is especially possible with vitamin A, B3 (niacin), B6 (pyridoxine), D, iron, zinc, selenium and copper. Side-effects, such as fatty liver changes, have been observed in individuals taking more than the Recommended Daily Allowance (reference).
- Prescriptions should be restricted to supplements that are recommended by MOH and dispensed according to the national GOK schedule.

Consult a qualified health practitioner before taking any supplements because nonprescribedsupplements can be harmful to your health.

3.5 Dietary Fiber Requirements and Sources

Dietary fiber, or "roughage", is a food component that cannot be fully broken down by digestive enzymes. There are two types of dietary fiber, soluble and insoluble fiber. Soluble fiber, such as pectins and gums, dissolves and swells in water and is easily digested by bacteria in the colon. Insoluble fiber, such as cellulose and lignin, generally do not dissolve in water.

Dietary fiber is important because it enhances bowel movement and the overall health of the digestive system. However, fiber also creates a sense of fullness and may lead to eating less, which may not be desirable for PLHIV who need to increase their food intake.

For individuals with diarrhea, insoluble fiber from whole grains, cereals and legumes may make the diarrhea worse. Fiber from fruit, which is more soluble, binds water in the gut and should be recommended.

Individuals with constipation should eat foods high in whole fiber foods (e.g. whole meal bread, vegetables, boiled whole maize, oatmeal bran, beans, fruits, and nuts). Fiber supplementation (e.g. methylcellulose or psyllium) may be necessary if dietary fiber is not helping to resolve constipation.

Dietary sources of fiber

Sources of Soluble fiber: Examples are oats, pawpaw, beans, apples carrots, oranges and other citrus fruits.

Sources of Insoluble fiber: Examples are whole grain products including whole rice (Whitney R, 2011). Whole grain cereals and cereal products, unrefined flour, vegetables and some fruits are good sources of non or partially digestible and insoluble fiber.

3.6 Water Requirements

Figure 8: Recommended 24 Hour Fluid Intake

Water is an essential important nutrient which helps to transport nutrients, remove waste, provide lubrication to moving parts, regulate body temperature and assist in metabolic activities. It is recommended that an individual takes two liters of safe clean water per day (8 glasses) spread throughout a 24 hour day. Drinking water must be clean and safe in order to avoid water-borne diseases.

The following measures make water clean and safe:

- Boil drinking water to kill infectious micro-organisms.
- Store water in clean and covered containers.
- Filter water using approved filtration methods.
- Add suitable water treatment chemicals (such as chlorine) to kill bacteria.
- Industrially sterilized and bottled drinking water can also be used.

PEDIATRIC WATER REQUIREMENTS

Pediatric water requirements are shown in the table below.

Table 3: Paediatric water requirements

Weight	Baseline daily fluid requirement
1-10 kg	100ml per kg body weight
11-20 kg	1000ml +50ml per kg for each kg over 10 kg.
Over 20 kg	1500 ml +20 ml per kg for each kg over 20kg

(Roberson J and Shilkofski N, 2005)

Strategies to Meet Water Requirements of PLHIV

The following are strategies to meet water needs:

- Drinking clean, safe water (8 glasses per day)
- Consumption of other beverages such as fresh fruit juices, soups and milk are also-beneficial to PLHIV
- Increased consumption of water and other fluids during sickness such as diarrhea to avoid dehydration
- Increased intake of water for PLHIV on ARVs to help flush out the by-products of-medicines from the body and to prevent damage to the kidney.
- Coffee and tea are not alternatives to water intake. They have low nutrient value; tanninsin the tea may inhibit the absorption of iron; and the caffeine they contain may causedehydration. Squashes (artificial fruit juices) and fizzy drinks such as soda are not suitable because of the unknown effects of preservatives used, and the effect that gases from these drinks may give a false sense of satiety, reducing food intake.

- Alcoholic beverages are not suitable because:
  - *They dehydrate the body*
  - *May interfere with the metabolism and effectiveness of medication*
  - *Are contraindicated with many medicines used to treat OIs and ARVS*
  - *May worsen side effects.*
  - *Interferes with food intake, digestion, absorption and storage of certain nutrients in the body.*
  - *May also increase risky behavior.*

3.7 Quantities of Food for a Balanced Diet

Estimates of food quantities can be based on portions called 'servings'. A serving is measured using common utensils such as cups and spoons, or is determined by weight of solid food items (Table 4). The energy and protein values of commonly consumed foods in Kenya are presented in Annex 5.

Table 4: Example of a Healthy Diet for One Day

Energy foods	Body building foods	Protective foods
6 servings of whole maize meal (or 3 cups= 1288 kcal, 30 g protein)	1 serving dried beans (or 1/2 cup =275 kcal, 17 g protein)	1 1/4 cups of cooked vegetables without water (5 cups of raw sliced Vegetables). (or 5 servings= 140 Kcal, 7 g protein
5 teaspoons of fat or 25 ml oil = 225 Kcal	1 serving meat or fillet (50 g meat or 20 g fillet=110 Kcal, 15 g protein)	2 servings of fruit e.g. oranges (or 2 pieces =88 Kcal)
	1 serving of milk (or 1 cup =73 Kcal, 3 g protein)	

3.7.1 Estimates of Food Quantities

The volume of different foods varies after cooking. For example the volume of green fresh peas remains unchanged, dry foods such as rice, beans and peas doubles upon cooking while for vegetables the volume is halved (see table 5 for more examples).

Table 5: Food Exchange Guide.

Exchange list	Quantity in house hold measures	Carbohydrates (g)	Protein (g)	Fat (g)	calories
Starch/ Breads	1 slice bread, ½ cup cooked rice, 2 medium biscuits	15	3	Trace	80
Meat Lean Medium fat High fat	30g (match box size), 1 egg	 - - -	7 7 7	3 5 8	55 75 100
Vegetables	1 cup	5	2	-	25
Fruits	1 medium banana	15	-	-	60
Milk Skim Low fat Whole	1 cup ½ cup ice cream	 12 12 12	 8 8 8	Trace 5 8	 90 120 150
Fat	1 tea spoon	-	-	5	45

CHAPTER 4

Nutrition Assessment, Counseling and Support for PLHIV

Figure 9: Nutrition Counseling Session

4.0 Introduction

The nutrition assessment, counseling and support (NACS) approach aims to improve the nutritional status of individuals and populations by integrating nutrition into policies, Programmes and the health service delivery infrastructure. The NACS approach strengthens the capacity of facility- and community-based health care providers to deliver nutrition-specific services. It links clients to nutrition-sensitive interventions provided by the health, agriculture, food security, social protection, education and rural development sectors.

The NACS approach also strengthens the broader health system by

- Building technical capacity that can be applied to other nutrition interventions,
- Identifying referral pathways,
- Establishing protocols for supervision and commodity management,
- Improving client flow within health services
- Improving data management.

4.1 Components of NACS

4.1.1 Nutrition Assessment

Nutrition assessment is a process that determines a client's nutritional status and the causes of any nutritional problems. The major purpose of a nutrition assessment is to determine the severity of nutritional impairment and probable causes.

The following are the main goals of a nutrition assessment:

- To confirm an adequate nutrient intake, improve eating habits, and help build and maintain stores of essential nutrients.
- To confirm correct weight status, and maintain a healthy weight by preventing overall weight loss particularly of muscle mass (lean body mass, LBM) or development of obesity.
- To confirm absence of illnesses that aggravate nutritional wasting
- To assist the patient in accessing treatment for illnesses that reduce food intake.
- To adjust meals and meal plans for other chronic illnesses associated with HIV.
- To facilitate provision of both supplementary and therapeutic nutritional care and support during advanced stages of HIV
- To help the service provider design nutrition interventions for care and support of PLHIV

A nutrition assessment focuses on:

- Anthropometric assessment
- Biochemical assessment
- Clinical assessment
- Dietary assessment
- Environmental and psychosocial assessment
- Functional assessment

4.1.1a Anthropometric Assessment

Several body measurements are taken in nutrition assessment. The values obtained are used to show changes in body mass and dimensions. The measurements include weight (Fig 9), height/ length, mid upper arm circumference (MUAC), skin fold thickness (SFT), waist circumference and hip circumference.

Weight: A client's absolute weight and the degree of weight change over time assists the service provider to understand the baseline and stability of nutritional status, impact of illness and response to interventions. Changes can be expressed as a percentage weight loss or gain. Rapid weight loss of more than 5% of usual body weight over a 2 to 3 month period is highly associated with OIs and hospitalization. This symptom warrants a carefully executed diagnostic evaluation to determine any correctable or treatable confounding conditions. More than a 10% decrease in body weight over 2 to 3 months is a criterion of wasting syndrome. However, loss of body weight may also be a side effect of Highly Active Anti-retroviral Therapy (HAART). In children, weight and age are used to compute weight for age, an indicator of undeweight.

Take and record the weight of PLHIV at each visit. Body weight assessment is required to:

- Identify those whose growth patterns are outside the normal values, indicating either over-nutrition or under-nutrition.
- Identify individuals at risk of malnutrition using previous measurement(screening) over time.
- Monitor effects of nutrition interventions on various anthropometric measurements.

Note: *For a client with oedema, net weight gain should be assessed after oedema has disappeared to ensure accuracy of the measurements obtained (i.e. that the weight is not a reflection of excess fluid retained by the body).*

Keeping record of the weight of a PLHIV should not be the only method to detect theirbody nutritional deficiencies. Loss of body weight in PLHIV usually signifies a change of more than one body compartment (fluids, fats, lean body mass), and sometimes a loss in one compartment is counterbalanced by a gain in another, with little change in the measured body weight. The lean body mass (LBM) (weight of the body without fat) is essential for the effectiveness of medicine and is linked to time of progression to the endstages of AIDS.

Height/Length

Height or length of children changes over time and is dependent on their nutrient intake and utilization. The height measurement can be used in conjunction with the weight measurements to compute the weight for height index which is an indicator for wasting. Height measurement can also be used together with age to compute the height for age index, an indicator for stunting.

Weight and height measurement are used to compute Body Mass Index (BMI) for adults and BMI-for-age for children (tables 6 and 7).

Table 6: weight and Height measurements for children

	Classification (Z score)			
Indicator	<-3	-3 to-2	>2-1	>1
Weight/age (underweight)	Severe	Moderate	Mild	Normal
Height/Age (stunting)	Severe	Moderate	Mild	Normal
Wight/height (Wasting)	Severe	Moderate	Mild	Normal

Source: (WHO, 2007).

Table 7: Weight and height measurements for Adults

Classification	BMI (kg/m^2)	Risk of co-morbidities
Severe malnutrition (Grade III)	<16.0	Very high
Moderate malnutrition (Grade II)	16-16.9	High
Mild Malnutrition (Grade I)	17.0-18.4	Moderate
Underweight	<18.5	Risk of clinical complications increased
Normal range	18.5-24.9	
	25.0-29.9	Mildly increased risk of co-morbidities
Obese	>30	Risk of co-morbidities associated with weight

Source:(WHO, 2007)

HIV-infected individuals with a BMI of less than 18.5 kg/m2 and children with weight-for-height (wt/ht) of less than -2 Z scores (see Annex 4.1) should be supported with therapeutic food supplement for the purpose of improving their nutritional status to BMI above 18.5 kg/m^2 and wt/ht of > -2 Z score.

Table 8: BMI For Age cut off points for children 5-17 years

Cut-off points	Interpretation
< -3 OR Oedema	Severe thinness*
-3 to < -2	Thinness (wasting)
-2 to < +2	Normal
+2 to < +3	Overweight
≥ +3	Obese

Source: (WHO, 2007)

> ***Note:*** *BMI is not applicable for pregnant women. Middle Upper Arm Circumference (MUAC)is the preferred measure.*

Table 9: Mid Upper arm circumference (MUAC)

Category	Cut-off point	Interpretation
Children (0-5 years)	<11.5cm	SAM
	11.5-12.5cm	MAM
	>12.5 CM	Normal
Pregnant and lactating women	<23cm	Malnourished
	>23cm	Normal

Source: (WHO, 2007)

The use of Middle Upper Arm Circumference is recommended for adults and children (see below) who cannot stand up for weight and/or height measurements.

Skin Fold Thickness

This is a measure of indirectly estimating the percentage of body fat by measuring the thickness of a double fold of skin and compressed subcutaneous adipose tissue on the triceps. The measurement is taken using the skin fold calipers. Skin thickness below 5 mm for men and 8 mm for women indicates risk of malnutrition. Low measurements may indicate under-nutrition or changes in a person's metabolic function.

Table 10: Waist and Hip circumference ratio.

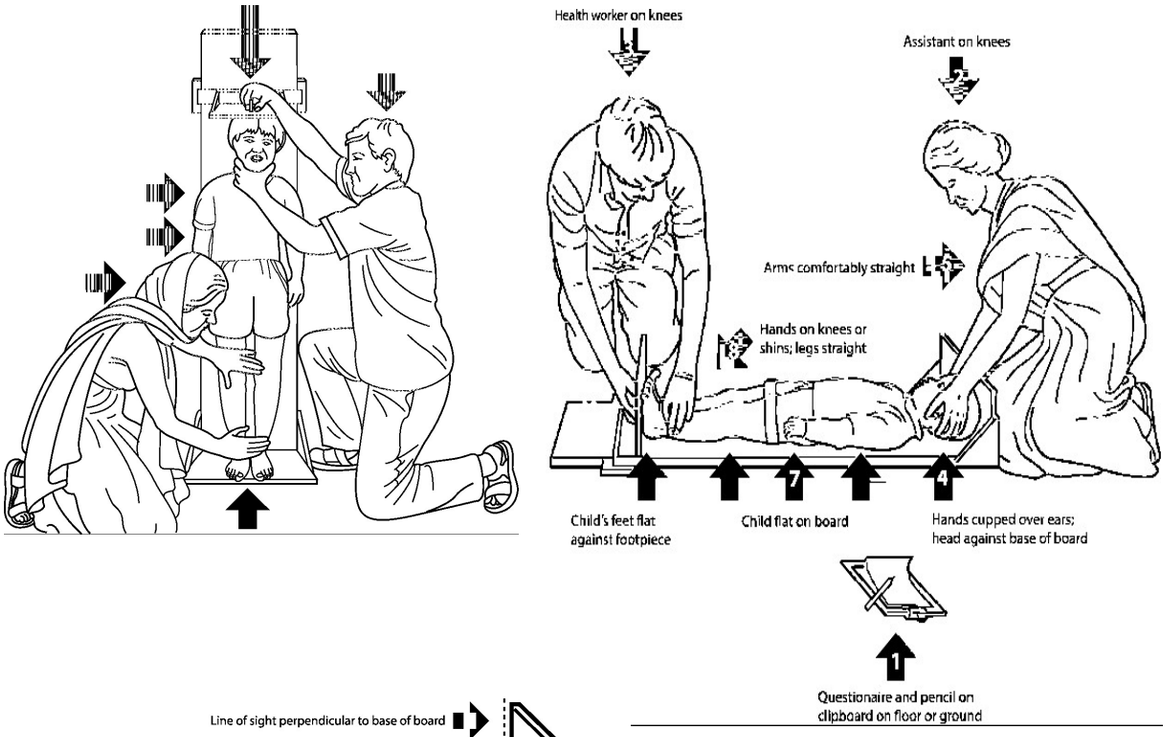
Category	Cutoff (cm)	Interpretation
Waist circumference		
Women	<80	Normal
	80-88	Increased risk
	>88	High risk
Men	<90	Normal
	90-102	Increased risk
	>102	High risk
Waist hips ratio		
Women	<0.8	Normal
	>0.8-0.88	Increased risk
	>0.88	High risk
Men	<0.9	Normal
	>0.9-1.02	Increased risk
	>1.02	High risk

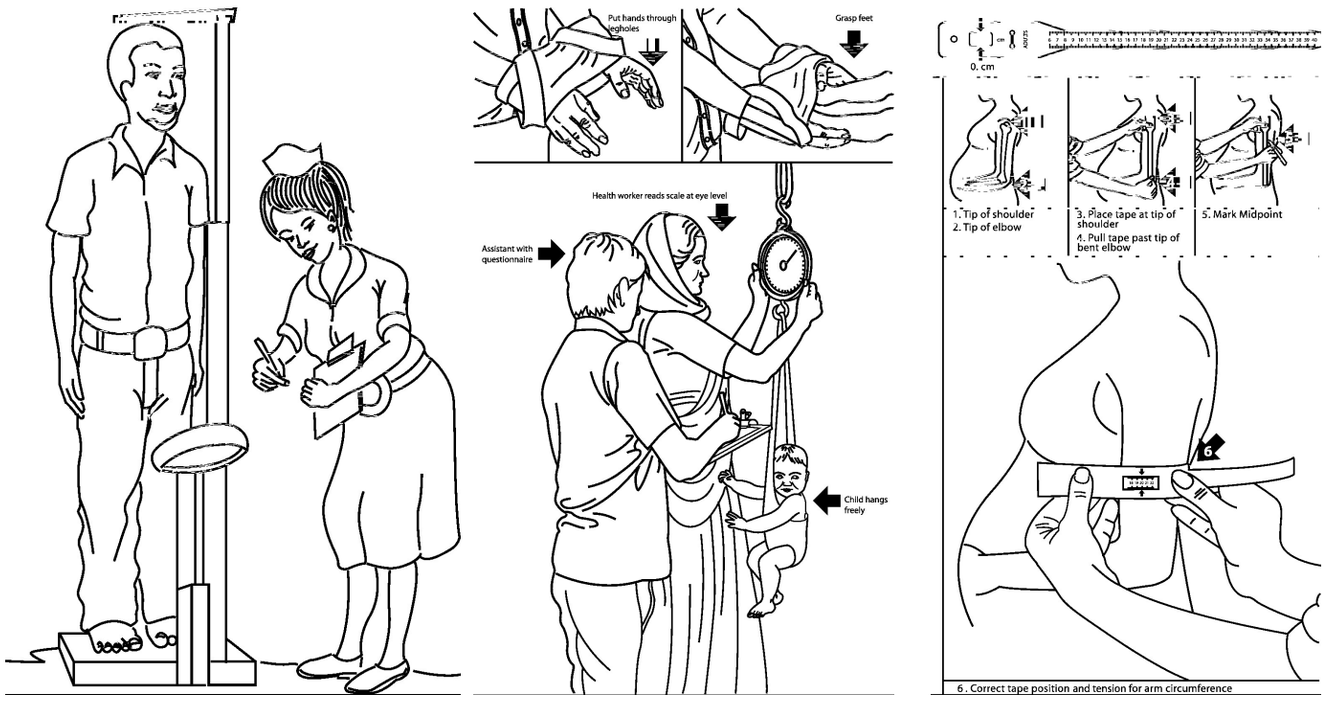
(WHO, 2008)

Equipment for anthropometric assessment

- A calibrated Salter scale for weighing children to the nearest 100 g or a bathroom scale for adults;
- A height meter for measuring height/length board
- Waist tapes
- A tape measure for measuring mid-upper arm circumference
- Skin fold calipers for measuring skin fold thickness (Figure 10).

Figure 10: Taking Anthropometric Measurements (height, Weight, MUAC)





Measuring Body Composition

Bioelectric impedance analysis (BIA) is a non-invasive tool for assessing body composition currently available in a limited number of settings in Kenya. The machine measures indicators including the client's total body water, fat free mass, percentage body fat, basal metabolic rates, and ideal weight taking into account his or her weight, height, gender and age.

4.1.1b Biochemical assessment

This section focuses on diagnostic tests that evaluate nutritional status and guide nutritional interventions for PLHIV.

It is recommended that PWHA have their body composition (at least the fat mass, the body cell mass) taken at least every three months after starting ARVs.

Importance of Biochemical assessment

- To assess nutritional status
- To monitor OIs and disease progression.
- To provide information on a client's risk of nutrient deficit long before anthropometric changes can be detected
- To complement other tests such as clinical presentations.
- To monitor the effects of treatment.

Priority Laboratory Investigations

The commonly used laboratory tests in nutritional care and support of PLHIV include:

- Assessment for anaemia
- White blood cell count
- Micronutrients status
- Nutrition biochemistry
- Detection of infective organisms

Anaemia: Anaemia is common in PLHIV and is a side effect of some ARVs. Who's recommended haemoglobin cut-off points for anaemia are:

- < 11g/dL for pregnant women and six to 60 month-old children.
- < 12g/dL for non-pregnant women.
- < 13g/dL for men.

With iron deficiency many red blood cells are relatively small and pale in colour.

PLHIV on Zidovudineor Lamivudine should be referred for an assessment of haemoglobinat least every 6 to 8 months. If they are anemic, initiate low levels of iron and folic acidsupplementation to the client. Clients should also be advised to eat foods rich in iron, vitamin B12 and vitamin A.

4.1.1c Clinical Assessment

Clinical assessment, consisting of current, past medical history and related clinical examination, is vital in gauging nutritional risk. Of importance are the following:

- Illnesses and deficiencies that may be aggravated by HIV infection or its consequences. For example, oral and pharyngeal infections that reduce food intake, and chronic diarrhoea caused by gastrointestinal OIs and malabsorption of nutrients
- Long term use of drugs and/or traditional therapies may have side effects that have a negative impact on nutritional status.
- Clinical staging of the disease.

Assessment for Fat Redistribution Syndromes

The common and prominent signs of lipodystrophy (redistribution of fat stores) include facial and limb fat wasting, central and/or localized fat deposits, and visceral fat accumulation. Localized fat accumulation may include enlarged breast in both men and women (see Chapter 7) and elevated blood triglycerides and total cholesterol. Lipoatrophy syndrome is the predominant loss of subcutaneous fat and leads to a loss in total body weight, also a side effect of HAART.

4.1.1d Dietary Assessment

Dietary assessment is a proxy indicator of a client's nutrient intake and risk of energy and nutrient deficiency. The following methods are used in dietary assessment:

- 24-hour recall. The client is asked to recall in detail foods and beverages consumed within the previous 24 hours, including quantities
- Food record. The client is asked to keep a record of all foods and beverages consumed over three consecutive days.
- Food frequency. The aim is to assess the amount and frequency of foods consumed that are rich in key nutrients (e.g. animal proteins, fortified foods, vegetables, fruits, water intake), and also to assess intake of foods that may be harmful to the body (e.g. alcohol, strong teas and coffee, soda).

A PLHIV whose weight has unintentionally declined in two or more consecutively months (or has lost more than 5% of their usual weight in two to three months) should have a dietary assessment conducted by a qualified dietician/nutritionist, with a related assessment of the causes of any reduced food intake.

- Possible causes/ underlying factors of inadequate dietary intake:
- Poor appetite,
- Pain from sickness,
- Co-existent gastrointestinal disease;
- Psychiatric disorders including depression,
- Use of non-prescriptive drugs and alcohol
- Dietary restrictions mandated by HAART.
- Food attitude,
- Food insecurity,
- Unavailability of water and fuel
- Client too weak to prepare food
- Food intolerance: Many PLHIV are unable to properly digest nutrients because of damage to the gut and intolerance to specific foods
- Common causes of reduced food intake and actions to take are detailed in Table 11

Table 11: Management of common HIV-Related Problems

If the cause of reduced intake is:	**Then take this action:**
Diseases and/or inability to eat.	If OIs, refer the client for appropriate treatment of the
	▪ Infections.
	▪ For psychological disorders including depression, refer to counseling; provide reassurance and hope.
	▪ For medical toxicity in patients on HAART, counsel the patient.
	▪ Counsel if taking non-prescribed substances or too much alcohol.
	▪ Refer persistent cases for medical care.
Poor attitude on food intake or taboos that affect food intake in sickness.	▪ Provide nutrition counseling to both the client and
	▪ Care-givers to change attitude and any eating taboos
Complex medical regimens (for treatment of OI or ARVs, renal disease, pancreatitis).	▪ Assist clients in making a plan for daily intake of foods
	▪ That are locally available and meet nutritional needs. Advise caregivers of PLHIV to regularly supervise their meals to ensure adequate food consumption.

Unavailability of food in the household, or not able to prepare food due to illness	▪ Refer "food insecure" client for supplementary food
	▪ Support or Programmes.
	▪ Refer or provide client with ready to use therapeutic food.
Voluntary intake is not possible due to disease.	▪ Enteral or parenteral feeding routes can be used by
	▪ Health staff to stabilize and improve nutrition status of the subject.
All PLHIV	▪ Advice PLHIV to drink at least eight glasses of clean and safe water every day.
	▪ Provide them with user-friendly, up-to-date pamphlets and literature on nutritional care.
	▪ Refer them to providers who addressthe comprehensive 'holistic' needs of PLHIV.

Strategies to Support Adequate Dietary Intake

Educate clients on food, diet, nutrition and healthy eating so they can make the best choices from their available options (see Chapter 3).

- Assist clients on how to make decisions to meet their nutritional requirements and build their capacity to implement their decisions (see Chapter 3).
- A client with clinical manifestations of deficiency of any nutrient should be given nutritional advice, supplements where appropriate, and/or referred to a clinician for further examination.

Environmental and physical assessment

The environmental and psychosocial assessment will identify factors that might be supporting or weakening the resolve of PLHIV. Assessment of a client's living environment should accompany the nutritional management of PLHIV. This includes assessment of personal hygiene, sanitation, housing environment and food handling practices that affect susceptibility to infection.

Educate and counsel PLHIV to change unfavorable lifestyle habits that may affect food intake, nutrient absorption and utilization, and to adopt a healthy living lifestyle.

Strategies to Improve Sanitation and Hygiene

- Always wash and rinse fresh fruits and vegetables or clean with mild disinfectants, and thoroughly rinse in clean water
- Practice good hygiene, especially hand washing with soap and thoroughly rinsing before preparing and consuming meals and after visiting the toilet.
- Store food appropriately to prevent contamination of food by bacteria and moulds.
- Avoid eating any food that may seem spoilt, e.g. moldy foods or stale left-overs, even if they are reheated.
- Avoid spending long hours in crowded rooms, poorly ventilated rooms, or interacting with TB infected persons.

Table 12: Interventions to Improve Positive Living

Assessment	Strategy
Self-esteem, social support, stigma and isolation that affect appetite and access to food.	• Provide nutrition counseling to the client and caregivers and educate the general public to change attitudes towards PLHIV.
Access to health care amenities that stabilize health and address concerns of PLHIV	• Refer to community based support groups and/or home-based care initiatives.
Poor habits such as smoking, alcohol consumption and drug abuse that may affect food and nutrient intake, increase oxidative stress and decrease the efficacy of some medications and immunity.	• Counsel PLHIV to stop consuming alcohol, smoking or chewing tobacco and using illicit drugs and substances. Smoking increases the risk of heart disease and high blood pressure. • Recommend moderation in the consumption of tea, coffee, sodas or other related drinks that may interfere with food intake, absorption and utilization.
Risky sexual behavior of the client and partners, as this can cause re-infection with different HIV strains.	• Practice safer sex (use condoms) in order to avoid infecting others and to avoid infection with new strains of HIV.

4.1.1f Functional assessment

Progressively resistant exercises reduce fat levels in blood, hence decreasing the risk of heart disease and diabetes, and improving lean body mass (LBM). Therefore the impact of physical activity leads to a better quality of life. It is recommended that service providers assess a client's level of physical activity and encourage appropriate forms of physical activity.

Physical activity is important because it:

- Improves physical and mental health
- Improves physical fitness
- Lessens depression

- Improves appetite
- Relieves constipation
- Improves intestinal absorption
- Improves muscle tone
- Eliminates excess fat
- Promote weight reduction among the overweight

Physical activity and exercise should always be within sufficient energy intake, otherwise it may cause unwanted weight loss (Fig. 11).

Figure 11: Physical activities and exercises for PLHIV

Weak, bed-ridden and hospitalized individuals should be encouraged or assisted to carry out light exercises to strengthen their muscles and prevent bedsores. These exercises include the following:

- ***Leg stretch exercises:*** repeat bending and stretching the legs 5 to 10 times.
- ***Arm stretch exercises:*** repeatedly raise the arms over the head, then lower sideways parallel to the trunk until they meet.
- ***Curl ups:*** repeatedly bend the knees while lifting the head and shoulders forward with stretched hands. To improve the exercise efficiency, retain that position for between 5 to 10 seconds.
- ***Abdominal exercises:*** lie on back with body and legs straight to permit repeated deep breathing to expand the chest and pull the abdominal muscle

Table 13: Nutritional management of specific HIV/AIDS related symptoms.

Problem	Potential Causes	Interventions
Anaemia (Pale hands and fingernails)	• Lack of adequate iron or blood in the body • Malabsorption of B12 • Illness like malaria, worm infestation • Side effects of some ARVs (zidovudine or lamivudine)	Ensure they are treated for malaria and were dewormed in the last 4 to 6 months If taking Zidovudine or Lamivudine, you should recommend hemoglobin assessment at least once a year Recommend Increased consumption of: • Animal protein (red meat) ▪ Dark green vegetables, especially traditional vegetables ▪ Fruits rich in vitamin c, e.g. citrus fruits, mangoes • Reduced consumption of tea, coffee after meals. • Iron/folate and B12 supplementation.
Anorexia (loss of Appetite)	Side effects of • Side effects of medication • Medication • Chronic infections • OIs of the oral cavity, upper gastrointestinal • Tract, endocrine or • Central nervous system, especially if CD4<200) • Active substance abuse • Monotonous meals • Stress, anxiety, depression • Noxious smells	**Recommend:** • Small frequent meals. • Energy and nutrient-dense foods • Eat favourite foods • Nutritious snacks between meals and plenty of fluids • Avoid smoking and alcohol. • Eating in the company of friends or relatives Advise simple exercise, if possible. Provide or prescribe multivitamins (e.g. vitamin B) Prescribe appetite stimulants/drugs (Megesterol acetate and Dronabinol) for short term use and under the supervision of a qualified clinician. If related to depression or another psychological condition, refer to a counselor or psychiatrist.

Constipation (irregular passage of stool, or passing too small and hard stool)	• Side effects of medication. • Eating highly processed, refined foods with little • Fiber and fluids	**Recommend** • Maintain a regular eating schedule and don't skip meals. • Drink plenty of fluids (about 8 glasses/day), especially if on di-retics. • Eat foods high in fiber e.g. whole meal bread, vegetables and fruits, oats, nuts and avoid highly refined foods. • Exercise as much as possible. • Avoid laxatives as they cause loss of fluids from the body • If dietary fiber does not resolve the problem you may prescribe fiber supplementation e.g. methylcelluloseor psyllium).
Diarrhoea	• Bacterial, viral, or fungal infections (because of poor hygiene, waterborne OIs) • Effects of HIV on the gut • Side effects of medication • Food poisoning • Mal-absorption of nutrients e.g. lactose, fats, sugars • Intolerance of nutrients e.g. lactose	• Advise to drink plenty of fluids (boiled water, soups, herbal teas) • Provide ORT solution or if unavailable, advise how to make it (1 liter boiled water, 4 tsp. sugar, 1/2 tsp. salt) • Assess and advise on food/water safety and personal hygiene to ensure it is not cause of diarrhoea. • Advise to continue feeding during and after illness. • Treat for bacterial, viral and fungal infections • Identify whether diarrhoea is an effect of drugs. **Recommend** • Small frequent meals, with plenty of fiber from fruits and vegetables (e.g. mangoes, pawpaw, pears, oats, carrots, pumpkins, potatoes). • Foods rich in potassium, e.g. bananas. • Avoiding alcohol. • If there is blood in the diarrhoea or if symptoms persist, advise to immediately seek medical care.
	If diarrhoea is chronic and nutrition interventions are not effective, refer for mal-absorption tests (e.g. D-Xylose)	
	Absorption test, (3 day faecal fat measurements), and lactose intolerance tests	

Table 4.3b: Nutritional Management of Specific HIV/AIDS Related Symptoms

Problem	Potential Causes	Interventions
Dry Mouth	• Effect of disease or medication • Eating very salty, dry foods like nyama choma; or drinking a lot of caffeinated drinks	• Advise to rinse mouth with warm salted water • Avoid very hot foods, sweets, caffeinated drinks like coffee, strong tea, sodas • Avoid alcohol
Fatigue (tired, lethargy/general-body weakness)	• HIV-infection • Side-effect of medication • Stress caused by the virus • Depression and anxiety • Malnutrition (inadequate intake of food • Anaemia • Hormonal changes (e.g. testosterone and thyroid) caused by HIV-infection • Loss of body muscle	***Discuss possible causes of fatigue.*** ***Recommend:*** • Eat snacks between meals. • Eat high energy and protein foods: • Bananas, nuts, yoghurt. • Eat ready-to-eat foods from shops where possible • Some exercise to increase energy • Stretching. • Rest, with ready-to-eat food kept in closed containers next to the bed. • Drink plenty of safe water.
	If symptoms persist. Recommend haemoglobin test.	
	If you suspect psychological factors, refer for psychosocial care.	
Fever	• Disease (HIV, especially at high viral loads malaria; ARIs, OIs)	• Advise to seek immediate care(have malaria and other OIs promptly treated) • Advise to drink plenty of fluids(safe water) • Eat foods rich in energy, like groundnuts, millet/maize porridge. • Rest in an area that is well ventilated and with cool air.

Mouth sores/ thrush	• Infection • Antibiotic therapy	***Recommend:*** • Good oral hygiene and gargling with a pinch of salt in warm water (lemon juice can be used). • Eat garlic or drink raw garlic tea to relieve the pain. • Eat fermented foods like yoghurt. • Eat mashed, soft, smooth foods at room temperature • Drink fluids with a straw to ease swallowing. • Avoid spicy, sugary and acidic foods and drinks. • Avoid alcohol and cigarettes.
		Advise to seek medical treatment if the patient can't swallow food; if there is a burning pain in the chest; or deep pain on swallowing.
Muscle wasting / Weight loss	• Effect of disease · • Inadequate intake or poor quality diet • Malabsorption • Disturbance in utilization of the nutrients (due to chronic infections) • Side-effects of certain drugs (lipodystrophy) • Hormonal changes in the body (e.g. testosterone and thyroid)	***Refer for ARV assessment if BodyMass*** • Index is less than 16.5. • Advise to prevent infections and treat infections promptly. • Assess possible causes of weight loss. If due to dietary intake, recommend: • Eating balanced meals and increase quantity of intake • Improving nutrient density of food by adding peanut butter, skimmed milk or eggsnin porridge or soups • Taking snacks that are nutrient rich between meals, • Eating favourite foods • Advise simple exercises (walks) to improve muscle. • Weigh client at least every 2 months.
	• Refer for assessment of hormonal replacement, or use of steroids to restore body weight and body cell mass.	

Nausea and vomiting (feeling of vomiting when supposed to be eating)	• Infections (including • Malaria, candidiasis, etc. • Side effects of medication • Food with strong aromas • Food intolerance • Food poisoning	***Recommend:*** • Take small quantities of dry, bland or lightly salted foods (bread or toast), and boiled foods at frequent intervals. • Take plenty of fluids after meals such as diluted fruit juice, or water especially with lemon. • Sucking a lemon: the sour taste reduces nausea. • Avoid greasy, fried foods and foods with strong odour. • Avoid coffee and alcohol.
	• If vomiting continues for more than a day; if there is blood in the vomit; or if there is fever, the client must seek medical care.	
Overweight	• Energy intake is more than needs • Side-effects of Medication • High levels of fat in the blood, also a sideeffects of certain ARVs.	• Assess possible cause. • Advise exercise (or physical activity) at least three times a day. • Advice reduced portions of food.
	• Recommend a variety of foods and limit foods high in fat, sugars and sweetened foods/fluids.	
	• Recommend regular weight monitoring to detect early unhealthy weight gain.	
Taste Changes (changes in taste of food, food tastes too sweet or too salty)	• Side effects of medication • Poor nutrition • Common cold or flu • Malaria	***Recommend:*** • Good oral hygiene (e.g. rinsing mouth after meals) • Seasoning food for flavour and different varieties of foods. • Chew food well and move around in to stimulate taste buds mouth to stimulate taste buds. • Use lemon, tonic water, vinegar or raw tomatoes to stimulate the taste buds • Take small sips of liquid between meals

4.2 Nutrition Counseling and Education

Importance of Nutrition counseling:

- Improves body weight and body cell mass in PLHIV
- Helps mitigate the effects of HIV and AIDS-related symptoms such as diarrhea, vomiting anemia, oral thrush, loss of appetite and fever

Implementing nutrition counseling: Refer to Nutrition and HIV/AIDS Tool Kit for Service Providers in the Comprehensive Care Centers

4.3 Nutrition Support

Nutrition support

Diagnosis and management of malnutrition in HIV infected children and adult patients should be conducted asoutlined in the national protocol for FBP.

CHAPTER 5

Maternal Nutrition in the Context of HIV

5.0 Introduction

Good maternal nutrition before, during pregnancy and lactation is vital for the survival andwell-being of the mother and the developing foetus. The nutritional status of an HIV infected woman before and after pregnancy may influence her own health and the risk of transmitting HIV to her infant. Maternal nutrition status is poor according to (GOK, 2003) indicated that between 3.6-20.4% of women in Kenya had mild to severe malnutrition. The HIV positive pregnant and lactating woman is at a higher risk of malnutrition and mortality.

In Kenya in 1999 the micronutrient status shows that 9.1% of the women have severe Vitamin A deficiency. In 1994, 16 % of the population had goiter (Iodine deficiency) while in the year 2004 the rate went down to 6%. Among pregnant and lactating women iodine deficiency leads to reduced mental capacity of the infants, poor physical performance, and increased fatigue and also causes goiter. Iron deficiency among women is at 43% out of whom 70% are pregnant women. Moderate to severe anemia is high among pregnant women. According to the USAID Task Order Malaria report of 2007 (Banda, Marlon, Tim Davis, and Kathleen Tilford., 2007) 46% of mothers consumed iron supplements but only 2.5% consumed the supplement for 90 days as recommended in the pregnancy period. Thus pregnant and lactating women who are HIV positive have challenges in meeting their macro and micronutrient intakes. It is the role of the health workers and all care takers of HIV positive women to ensure adequate food intake. Table 14 shows the recommended energy intake for pregnant women and the increased energy needs according to HIV disease status.

5.1 Nutritional Care for Women Infected with HIV

The following issues are pertinent to the nutritional care and support of women:

- HIV infected pregnant and lactating women have a higher risk of malnutrition, morbidity and mortality.
- Fetal growth and lactation impose high nutritional demands on the mother.
- HIV infections and related OIs impose additional energy and nutrient needs.
- The nutritional status of an HIV-infected woman before, during and after pregnancy may influence her own health and the risk of transmitting HIV to her infant.

- Pregnancy and HIV infection worsen nutritional deficits and increase vulnerability for several health dangers that are associated with pregnancy, for example: Low birth weight, miscarriages.
- Anemic pregnant women who are HIV-infected are six times more likely to die in the year after delivery than a woman with adequate iron, and also more likely to transmit HIV infection to their infant (Banda, Marlon, Tim Davis, and Kathleen Tilford., 2007).

5.2 Energy and Nutrient Requirements during Pregnancy and Lactation

Daily Energy Requirements

Healthy pregnant women require 13% more energy (290 Kcal) than women who are not pregnant. If they have multiple pregnancies the requirement is increased by 15% (i.e. additional 320 kcal per day). Lactation demands an additional 20% (or 500 kcal) energy. (Table 14).

Table 14: Energy Requirements per Day HIV-Infected Women under Different Physiological

Pregnant	Average Energy Intake	Additional energy required for pregnancy/ lactation	Additional energy requirements of HIV	Total energy intake
Uninfected Pregnant	2140	280	0	2420
Asymptomatic	2140	280	210	2630
Early Symptomatic	2140	280	430	2850
Symptomatic	2140	280	640	3060
Lactating				
Uninfected Pregnant	2140	500	0	2640
Asymptomatic	2140	500	210	2850
Early Symptomatic	2140	500	430	3070
Symptomatic	2140	500	640	3280
Woman not breastfeeding				
Uninfected Pregnant	2140	0	0	2140
Asymptomatic	2140	0	210	2350
Early Symptomatic	2140	0	430	2570
Symptomatic	2140	0	640	2780

These additional energy and nutrient needs lead to significantly higher food requirements. Almost one additional meal is required daily to meet the extra nutrient demands of pregnancy; lactation and HIV infection (see Chapter 3).

Provide micronutrient-fortified food supplement providing not less than 40% of their daily caloric requirement to:

Pregnant, HIV-infected women who do not gain weight for 2 to 3 months, especially in the second and third trimester, or have a BMI < 18.5kg/m2 and Women who are breastfeeding exclusively the first six months after delivery and have a BMI <18.5 kg/m2. Or, suggest an appropriate Multiple Micronutrients Supplement and food ration to meet 40% of caloric needs.

Daily Protein Requirements

- Daily recommended protein intake is 0.8-1 g/kg body weight in healthy normal women.
- Non HIV-infected, healthy, pregnant and lactating women require an additional 6 g/kg body wt/day and 16 g/kg body wt/day of protein respectively.
- Additional protein is reduced to 12 g/day for lactating mothers after the sixth month and to 11 g/day after the 12th month.
- The protein should contain the entire range of essential amino acids. This requires consumption of a variety of plant source foods, and preferably a mixture of plant and animal source foods (see Chapter 4).
- Table 15: Recommended energy and Protein Requirements for women during pregnancy and lactation.

Table 15: Recommended energy and Protein Requirements for women during pregnancy and lactation.

	Energy requirements		Protein requirements	Extra energy for HIV positive women	
				Asymptomatic	Symptomatic
Pregnancy	Total nutrient requirements	36-40 kcal/kg/day	0.8-1.0g/kg/day	10%	20-30%
	First trimester 0-12wks	+150kcal/day	+0.7g/day	10%	20-30%
	Second trimester 13-27wks	+300kcal/day	+3.3g/day	10%	20-30%
	3rd trimester 28-40wks	+300kcal/day	5.8g/day	10%	20-30%

5.3 Micronutrient Requirements: Kenya national micronutrient supplementation schedule

An adequate intake of vitamins and minerals is crucial for pregnant and lactating mothers.

Table 16: Micronutrient Requirements

Please note that the new Iron and Folic acid policy requires that mothers received combined dose of iron and folate tabs rather than single dose regimens

Micro-nutrient	Dosage	Frequency	Frequency Timing and schedule
Vitamin a	200, 000 Iu	Single dose	At delivery (not later than 4-6 weeks after delivery)
Iron	60Mg	Daily	From 1st month of pregnancy or on 1st contact
Folic acid	400Mg	Daily	From 1st month of pregnancy or on 1st contact
	120Mg iron 400Mg folic acid (Adole-scent adAdults including Pregnant women With anaemia)		3Months

5.4 Key Points in Nutrition Care for HIV Positive Pregnant and Postpartum Mothers

- Dietary management and appropriate interventions of diarrhea, nausea, vomiting, malabsorption, loss of appetite and oral thrush as these conditions may prevent weight gain as well as have a profound impact on nutritional status.
- Practice food safety and hygiene.
- Encourage mothers to start clinic in the first three months of pregnancy.
- Folate and iron supplementation should be administered within the first 90 days of pregnancy.
- Promptly get treatment for malaria and the use of insecticide treated mosquito net (ITNs).
- Provide with information on hookworm infestations and deworming.
- Families and communities should be sensitized on the importance of good feeding practices for pregnant and lactating women.
- All positive pregnant women should be provided with evidence based objective and unbiased infant feeding information and supported for option chosen.
- All HIV positive pregnant or lactating mothers' weight should be monitored at every visit.
- Mothers with poor nutritional status who are exclusively breastfeeding should be given nutritional support.

CHAPTER 6

Nutritional Support for the HIV Exposed and Infected Child

6.0 Introduction

Strategies to improve the nutritional status of children at risk of HIV infection, begins with the prevention of transmission of HIV to children. Service providers must work to prevent low birth weight (LBW), inappropriate feeding practices before six months of age, inadequate dietary intake during the introduction of complementary foods and prevention and care of infections. Further details of feeding practices to prevent and decrease transmission can be found in the Kenya national Infant and Young Child Feeding guideline in the Context and HIV and AIDS (Ministry of Health, 2010) and the Kenya National Guidelines Prevention of Mother-to-Child Transmission (Ministry of Health, 2009).

6.1 Modes of Transmission of HIV from Mother to Child

Table 17: Timing and Risks of HIV Transmission in the absence of Intervention

During Pregnancy	5-10%
During Labour and delivery	10-15%
During Breast feeding	5-20%
Overall Without Breast feeding	15-25%
Overall with Breast feeding until six months	25-35%
Overall with breast feeding until 18 -24 months	30-45%

Source: (Ministry of Health, 2010)

Besides the risk of transmission of HIV from the mother to the child during pregnancy, delivery and through breast milk, children born to HIV-positive mothers have higher morbidity and mortality rates. Health Care providers therefore should ensure:

a) HIV-infected children receive routine nutritional assessment

b) Mothers and caretakers increase energy intake for the child by 25 – 30%

c) HIV-infected children who are severely malnourished are provided with 50-100% (refer to National Guidelines for Integrated Management of Acute malnutrition, 2009).

d) All HIV-infected children receive one recommended daily allowance (RDA) of micronutrients daily and follow the national micronutrient supplementation schedules.

e) Upscale and enhancement of community level support and mechanisms for optimal infant and young child feeding practices of HIV exposed children

6.2 Infant and Young Child Nutrition context of HIV and AIDS

Breastfeeding with appropriate use of anti-retroviral drugs for the mother and baby is the best option for overall well-being and survival of HIV exposed children. All HIV positive pregnant women shall be put on ART and the child will receive prophylaxis for six months.

The following policy guidelines shall be used in the feeding of children in the context of HIV/AIDS;

i. All mothers who are HIV negative or are of unknown status shall be encouraged and supported to exclusively breastfeed for the first 6 months and continue breastfeeding with appropriate complementary feeding after 6 months and continue breast feeding for a period of 24 months and beyond.

ii. Mothers known to be HIV-infected shall exclusively breastfeed their infants for the first 6 months of life, introducing appropriate complementary foods after 6 months, and continue breastfeeding up to 12 months of life. Both mother and their infants shall receive prophylaxis or anti-retroviral treatment in line with the national recommendations.

iii. HIV positive women, **who choose not to breastfeed**, shall be given information on the special conditions AFASS (Affordable, Feasible, Acceptable safe and sustainable) that shall be met. If these conditions are met, she shall be counselled and supported to do exclusive replacement feeding using infant formula for the first 6 months and appropriate complementary feeds introduced at 6 months. Infants of these mothers shall also be provided with appropriate anti-retroviral prophylaxis for 6 weeks.

iv. Health workers shall ensure that counselling on replacement exclusive feeding complies with the Breast Milk Substitute Regulation and Control (BMS) Act.

v. Mothers known to be HIV-infected who decide to stop breastfeeding at any time shall stop gradually. Mothers or infants who have been receiving ARV prophylaxis shall continue prophylaxis for one week after breastfeeding is fully stopped. Stopping breastfeeding abruptly is no longer advisable.

vi. Mothers known to be HIV-infected (and whose infants are HIV infected) shall exclusively breastfeed their infants for the first 6 months of life, introducing appropriatecomplementary foods after 6 months, and continue breastfeeding up to 12 months oflife. Mothers shall be assessed for appropriate anti-retroviral treatment and infants shallbe started ARVs in line with the national recommendations in the PMTCT guidelines, (MOH, 2009).

Guiding Principle include: Promoting integration of PMTCT interventions into all MCH services and provide information and supportive counseling to mothers who are HIV positive on optimal infant feeding.

In order to achieve the objective of evidence based interventions on optimal infant feeding practices for the HIV positive mother, the government shall ensure health care providers:

i. Protect, promote and support exclusive breastfeeding for all infants in the first 6 months of life regardless of the HIV status of their mothers.
ii. Incorporate PMTCT interventions in all their health care practices.
iii. Encourage caregivers/mothers that are HIV positive to timely introduce appropriate complementary foods while continuing with breast-feeding as the most appropriate of their infant or the feeding of choice.
iv. Provide information on mother to child transmission of HIV to pregnant and lactating women utilizing MCH or family planning services and those considering becoming pregnant.
v. Provide counseling and psychosocial support to mothers who are HIV positive to sustain their feeding option.
vi. Ensure that counseling of HIV positive mothers on infant feeding options shall be on a one-to-one basis either before or during pregnancy and follow up even at the postnatal period.

Benefits of Breast Feeding

Adequate Nutrition

- Breast feeding is the best source of food security for the infant.
- Breast milk provides complete nutritional needs for up to six months.
- Breast-milk contains enough water, approximately 87%. As a result no
- No additional water is required by the baby if exclusively breastfed even in very dry and hot areas.
- Breast-milk is easily digested and its composition changes to meet the developmental needs of the growing infant.
- Breast-milk contains enzymes that help complete digestion of fat.
- Breastfeeding is natural and most economic method of feeding the infant.

Protection Against Infections for Infant

- Colostrum, the milk produced during the first week of the infant's life contains
- High level of immunoglobulin, which are essential for the immune systems.
- Breast- milk provides vital protection against deadly childhood infection particularly diarrhea and respiratory infections.
- Breast- milk protects the baby against viruses, bacteria and allergies.

Benefits to the Mother

- Breast-milk promotes bonding between the mother and baby
- Exclusive breastfeeding no demand, including day and night, for six months,
- May help prevent the mother from getting pregnant.
- Breastfeeding helps the uterus to contract after delivery and reduces Postpartum bleeding.
- Breastfeeding reduce the risk of breast, ovarian and other reproductive cancers

Benefits to the community

- Cost effective
- Lowers morbidity and infant mortality rate

Service Providers' Actions to Support Exclusive Replacement Feeding of Infants (0-6) Born to HIV-Infected Mothers.

Do a careful assessment of a mother's capacity for AFASS before recommending exclusive replacement feeding. To consider exclusive replacement feeding requires assessment of the following support: WHO recommends: "When replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS), it is best that HIV-infected mothers avoid breastfeeding. When replacement feeding is not AFASS, HIV-infected mothers should practice exclusive breastfeeding with ARVs for the first six months of the baby's life and discontinue as soon as AFASS becomes practical."

Whatever infant feeding choice a mother makes, she should be supported.

6.3 Complementary feeding

After six months, breast milk and other forms of milk alone are not adequate to meet a baby's nutritional requirements. Complementary foods should be introduced after 6 months of age with continued breastfeeding or replacement feeding until a nutritionally adequate diet can be sustained without breast milk. Abrupt cessation of breastfeeding should be discouraged to avoid undue traumatic effects on both the mother and the infant.

Table 18: Quantity, Variety and Frequency of Feeding

Amounts of Foods To Offer			
Age	**Texture**	**Frequency**	**Amount of food an average child will usually eat at each meal***
6-8 months	Start with thick porridge, well mashed foods Continue with mashed family foods	2-3 meals per day plus frequent breastfeeds Depending on the child's appetite, 1-2 snacks may be offered	Start with 2-3 tablespoonful per feed increasing gradually to1/2 of a 250ml cup
9-11 months	Finely chopped or mashed foods and foods that baby can pick up	3-4 meals plus breastfeeds Depending on the child's appetite, 1-2 snacks may be offered	½ of a 250 ml cup/ bowl
12-23 months	Family foods, chopped or mashed if necessary	3-4 meals plus breastfeeds Depending on the child's appetite, 1-2 snacks may be offered	½ of a 250 ml cup/ bowl

• If baby is not breastfed, give in addition: 1-2 cups of milk per day and an extra meal per day

Milk should continue as an important component of the diet. It should provide up to onehalf or more of the nutritional requirements for children 6 to 12 months old and up to onethird of the requirements for children aged 12 to 24 months.

Preparation of the meals should take account of the following: Choice of food, Amount of food, Food, safety and hygiene.

6.4 Nutritional Care and Support for HIV-Infected Children

Energy

Asymptomatic:	10% more energy
Symptomatic with no weight loss	20 - 30% more energy
Symptomatic with weight loss	: R 50 - 100% more energy.

Protein

Protein requirements are the same as those for an uninfected child. It should be based on an individual's symptoms and needs.

Micronutrients

Micronutrient requirements are the same as those for an uninfected child. It should consider possible deficiencies. The following should be considered in the nutritional care and support of

HIV-infected children:

1. Nutritional assessment and growth monitoring.
2. Assess feeding practices and dietary intake with every contact, including dietary-related problems (e.g. poor appetite, chewing, swallowing, intolerance, food taboos and history of nutritional supplementation).
3. If the growth of a child is faltering:
   - A clinician should carry out a physical examination to rule out infections and health problems such as thrush or oral ulcers, gastrointestinal bleeding, and signs of systemic infections.
   - Support the mother/caregiver to ensure the child receives the adequate amount of energy, protein and micronutrients to meet increased demand. Intake should be based on locally available foods. Children should also receive universal vitamin and supplementations and targeted multiple micronutrient supplementation as recommended.

If the child is losing or has lost Lean Body Mass (LBM), it is possible he/she is having symptoms of AIDS. Take the following actions:

- Provide oral nutritional supplementation. Enteral and parenteral feeding option should be considered in severe cases.
- Refer the child for ARV assessment and recruitment to the treatment program, if they meet the national criteria.

6.5 Nutritional Care for Severely Malnourished HIV-Infected Children

General Principles for the Routine Care or Management of Severely Malnourished.

Care of severely malnourished child is accomplished in two phases, an initial stabilization phase where acute medical conditions are managed (at the hospital or health facility) and a longer rehabilitation phase (See Guidelines for Integrated Management of Acute Malnutrition).

Ten Essential Steps for Management of Severely Malnourished Children:

i. Treat/prevent hypoglycemia.
ii. Treat/prevent hypothermia.
iii. Treat/prevent dehydration.
iv. Correct electrolyte imbalance.
v. Treat/prevent infection.
vi. Correct micronutrient deficiencies.
vii. Start cautious feeding
viii. Achieve catch-up growth.
ix. Provide sensory stimulation and emotional support.
x. Prepare for follow-up after recovery.

Key actions by a trained health care provider addressing the needs of a severely malnourished child are detailed in the guidelines by National Management of Acute Malnutrition. Further, guidance for community based care of a child with malnutrition and management of moderate malnutrition has been recently integrated into the care of children.

A nutritional action for a child that is malnourished includes specialized care from a trained health care provider and would include:

- Stabilizing blood sugar levels
- Rehydration and correction of electrolyte imbalances
- Micronutrient supplementation as per the government's schedule.
- Nutritional rehabilitation by nutritionist
- Provision of community based therapeutic support
- Provision of supplementary food support
- Advise to the caregivers about the importance of seeking care immediately from a health care provider for a child with signs of malnutrition.
- Advise to mothers/caregivers on the importance of taking children for growth monitoring and seeking health care and support.
- Refer severely malnourished children with HIV/AIDS who are not on ARVs to providers of anti-retroviral therapy services.

- *HIV exposed or infected children with weight-for-height of less than -3 Z scores should be provided with institutional nutritional management for at least seven days and supported with therapeutic food for not less than a month.*
- *All children, including the HIV exposed and infected, should receive vitamin A, presumptive de-worming, and all vaccines according to the national schedule for children. It is also recommended that HIV-infected children are given a suitable multi-micronutrient supplement daily at one Recommended Daily Allowance.*

CHAPTER 7

Drug Nutrient Interaction for PLHIV

7.0 Introduction

Interactions between anti-retroviral therapy (ART) and food and nutrition can affect medication efficacy, nutritional status, and adherence to drug regimens. Drug-food interactions consist of the effects of food on medication efficacy, the effects of medication on nutrient utilization, the effects of medication side effects on food consumption, and unhealthy side effects caused by medication and certain foods. As ART interventions scale up in resource limited settings, addressing food and nutrition implications becomes a critical component of care and support Programmes and services. Service providers can help address these implications by working with people living with HIV/AIDS (PLHIV) and caregivers to identify the specific c food and nutrition requirements of the medications being taken and to develop feasible food and drug plans to meet these requirements. Programmes working with people taking ART may need to strengthen human capacity to address nutritional issues, establish linkages to food and nutrition Programmes, and incorporate information about drug-food interactions into communication materials, staff training and orientation, and supervision systems.

7.1 Food and Drug interaction

Anti-retroviral drugs have been shown to significantly reduce the rate of replication of HIV in the body of an HIV-infected person. ARVs do not completely destroy the virus and do not cure the disease, but they can greatly decrease the viral load and significantly slow the progression of the disease, thereby increasing life expectancy and improving the quality of life of PLHIV. There are two classes of commonly used ARVs – reverse transcriptase inhibitors (RTIs) and protease inhibitors (PIs) – and each acts at a different stage in the replication of HIV. A third class of ARV, fusion inhibitors, is seldom used at present.

7.1.1 Effects of ARVS and OI drugs on Food intake, metabolism and utilization

Certain ARVs affect nutrient utilization by affecting nutrient absorption, metabolism, distribution, or excretion. For example, certain protease inhibitors, such as ritonavir and nelfinavir, can cause changes in the metabolism of lipids (fats), resulting in an elevation in blood cholesterol and triglyceride levels. Elevated blood cholesterol and triglyceride levels can increase the risk of coronary heart disease. Such interaction may call for nutritional responses, such as reduced consumption of saturated fats, if other food options are available. Lipodystrophy, characterized by changes in body fat distribution, has been associated with the use of some PIs and NRTIs. The use of some protease inhibi-

tors has been associated with changes in carbohydrate metabolism leading to insulin resistance.12 Insulin resistance is associated with increased risk of diabetes.

The side effects of some medications can lead to reduced food intake or reduced nutrient absorption that exacerbates the weight loss and nutritional problems experienced by PLHIV. ARV side effects, such as nausea, taste changes, and loss of appetite may reduce food consumption, while side effects such as diarrhea and vomiting may increase nutrient losses. For example, the NRTI zidovudine can cause anorexia, nausea, and vomiting, and side effects of the NRTI didanosine include diarrhea and vomiting, loss of appetite, and dryness of the mouth.

Some studies have shown that certain ARVs increase the risk of osteopenia and osteoporosis, though further research is continuing on the subject. These conditions lead to poor bone health. Ensuring adequate vitamin D and calcium intake is a recommended nutritional response for patients with osteoporosis.

7.1.2 Effects of Food and Nutrition on Efficacy of medication

Some ARVs can create dangerous side effects when combined with certain foods. For example, consuming drinks that contain alcohol while taking didanosine 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. For example, as mentioned above, taking the PI indinavir with a high energy, high fat, and high protein meal reduces its absorption; studies have shown a 77% reduction in absorption of indinavir when taken with such a meal. But when indinavir is taken in combination with the PI ritonavir, then food has no effect on the absorption of indinavir, and it may be taken with or without food.

7.2 Management of drug nutrient interactions

Recommendations to manage food and nutrition interactions for the combination of zidovudine, lamivudine, and Abacavir as a HAART regimen are:

- Take on an empty stomach if possible. If this is not possible because of gastrointestinal (GI) side effects, then take with low fat meals.
- Do not consume alcohol.

Side effects may include: nausea, vomiting, abdominal pain, diarrhea, anorexia, fever, bone marrow suppression, anemia, rash, and hyperlactacemia (potentially fatal).

The dietary management of common side effects includes:

Nausea: Take the medication with food.

Vomiting: Eat small quantity of food at frequent intervals.

Diarrhea: Drink plenty of fluids and continue eating.

Anorexia: Eat small, frequent meals.

Fever: Drink plenty of fluids and eat energy and nutrient dense foods.

Abacavir has been associated with fatal hypersensitivity reactions, so people who develop a rash, fever, respiratory symptoms or GI problems should stop taking the combination regimen and be checked for hypersensitivity. Continuation of the regimen with dietary management of side effects is only recommended if hypersensitivity has been ruled out.

Based on information about the specific food and nutrition interactions of the ARVs and other drugs that an individual is taking, an appropriate diet should be identified and a drug and meal timetable planned. This may involve:

- Adjusting the timing of drug and food consumption to enable specific drugs to be taken with or without food as required;
- Increasing or decreasing consumption of certain foods (or supplements) to compensate for drug effects on nutrient absorption;
- Changing the pattern or content of meals to address drug side effects;
- Avoiding certain foods contraindicated by a drug;
- Other responses as required by the food and nutrition interactions of the specific drugs the PLHIV is taking and the individual PLHIV's needs and reactions.

7.3 Nutritional Supplements

Vitamins and minerals are essential for sustaining life. They have important role in building cellular structures, generating biological energy and acting as biocatalyst for multiple enzymatic processes in the body. Although vitamins, minerals and trace elements are required in much smaller quantities than proteins, fats or sugars, without them none of the food component can be identified.

Dietary supplements are available as single or multiple micronutrients alone or with herbal formulations. Also available are supplements containing micronutrients and selected amino acids alone or with herbs. Selected health promoting bacterial cultures (probiotics) and materials that promote growth of bacterial associated with good gut flora (prebiotics) or their combination (synbiotics) may also play a significant role in nutritional care of PLHIV.

7.4 Food security constraints to management of drug-nutrient interaction

People living with HIV/AIDS in resource limited settings may often be unable to follow optimal food and nutrition recommendations for ARVs due to lack of access to the foods required. For example, PLHIV may not be able to increase intake of foods rich in energy or specific micronutrients.

Food insecurity limits the capacity of PLHIV to comply with special food requirements for ART, which can result in reduced drug efficacy, compromised drug regimen adherence, aggravated side effects, or a negative nutritional impact.

While lack of information about drug-food interactions is a constraint that must be addressed, merely providing information about optimal food and nutrition responses is often insufficient to enable proper drug food management by PLHIV. It is necessary to understand the specific constraints.

7.5 Herbal Remedies

Many Kenyans use herbal and traditional medicines to remedy ailments. Annex 8 lists the common herbs and spices, their benefits and preparation methods. Many of these have not been subjected to formal clinical research, however, and their effect on the course of the HIV infection and toxicity is unknown.

CHAPTER 8

Food Security for Households Affected by HIV/AIDS

All persons living with HIV have a right to access food of high quality as enshrined in the current Kenyan constitution.

8.0 Introduction

Food security means that people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive life. HIV and AIDS can reduce the food security of PLHIV and affected households .Food insecurity limits the capacity for nutritional care and support.

"Household food security" requires that a household has access to enough quality and culturally acceptable food, for all people in the home (including young children), throughout the year. Household food security often depends on adequate income and assets, including land and other productive resources.

The following are components of household food security:

- Availability: An adequate amount and variety of foods are supplied consistently through production, import, or aid.
- Access: Every member of the household has resources to obtain an adequate quantity and variety of food.
- Utilization: Household members are able to properly use the food biologically, which depends on diet, overall health, sanitation, storage, processing, preservation, preparation, and marketing.

8.1 Food Security for PLHIV and HIV-Affected Households

A majority of households with PLHIV are chronically food insecure. HIV/AIDS reduces a household's productive labor, income and food stores, undermining food security. Where prevalence of HIV/AIDS is high, a whole community's ability to produce and buy food is reduced. As a coping strategy, PLHIV and their families are often forced to resort some of the following unfortunate measures:

- Reduce food intake at each meal, or skip meals.
- Adopt risky behaviors, such commercial sex, to raise cash for food.
- Withdraw children from school, which advances child labor practices, and escalates crime and migration.

- Disregard nutrition recommendations.
- Consume wild foods/fruits to cope with hunger.
- Sell key assets for short-term food security, thereby increasing poverty and long-term food insecurity.

Ways to improve food security for PLHIV and their affected families should be designed and implemented at the household and community level. Options include: diet diversification; increased production of nutrient rich crops (i.e. sukuma wiki, amaranths); small, income generating activities; improve access to appropriate paid labor; rearing animals both as source of food and income. Sometimes the actions may involve changes in use of household resources so as to buy additional food that may be useful to the nutrition of the PLHIV.

8.1.1 Actions to Improve Food Security of HIV-Affected Households

1. Assess the severity of the household's food insecurity and the factors that are causing it, including dietary practices. Take account of the following:
   - Main sources of food: home production, purchase, remittances, begging, and/or food assistance/aid.
   - Food production patterns: assess in terms of quantity of food produced, as well as food variety and seasonality, and also food availability in the neighborhood or community in general to ensure food diversification and sustainability.
   - Food utilization: how is food used? Is it sold; shared with others; is there wastage Assess any situation that limits the best use of available food.
   - Assess the consequences of food insecurity and the coping mechanisms of affected households and take appropriate action.
2. Help PLHIV and their families to:
   - Optimally use the available household resources to access food that is good for PLHIV.
   - Use nutrient adding techniques such as pre-cooking, sprouting, fermentation, and household/community food fortification.
   - Improve on intra-household food distribution to ensure good and adequate nutritious foods
   - Address constraints on dietary practices such as social-cultural factors.
3. Link households to other Programmes that provide related services such as health care, water, growth monitoring and promotion, food assistance Programmes.
4. In rural areas, promote the production and consumption of indigenous foods, for example:
   - Practice kitchen gardens and mixed cropping for production of micronutrient rich foods.

- Produce crops that are nutritious and require low agricultural inputs such as vegetables, cassava, sorghum and millet, and rear small animals like goats, rabbits, chicken.
- Dry and store vegetables and tubers for use during lean times.
- Assist affected households to plan for food lean periods, when availability of some foods is very limited or non-existent: for example to use traditional practices of harvesting and preserving edible insects, such as flying termites.
- Employ low cost agricultural techniques to improve yields and reduce inputs such as essential microbes to speed up compost formation, bucket irrigation and animal ploughing.
- Mobilize the community to support with labor for food crop production, and, where practical, maintain commercial farming for affected households.

5. Link clients to peer support groups of PLHIV and AIDS support organizations such as faith based organizations (FBOs), community based organizations (CBOs) and non-government organizations (NGOs) working in the area:
   - Communicate information regarding HIV/AIDS, and the importance of nutrition in mitigation against the effects of AIDS on household resources, social networks, and food security.
   - Help peer groups to assess local food resources and design food strategies that are appropriate to the community.
   - Link these groups with agricultural extension officers and other relevant sectors to advice on new crop breeds and increase of crop yields.
   - Link the support groups to micro-credit schemes to set up income generating activities among households with PLHIV.
   - If necessary, link these institutions and affected and infected households to organizations that provide food assistance.

8.2. Food Assistance to Support Clinical and Social Objectives

In some cases, households require food assistance to prevent malnutrition of PLHIV and household members. This should be a short to medium term intervention. There should be criteria for recruitment into and exit from a food assistance program.

8.2.1 Purpose of Food Assistance

Depending on the country and policy context, food aid can strengthen interventions to:

1. Prevent HIV Infection

   Programmes may help some people avoid HIV infection: help with access to nutritious food can save income which may avoid high risk situations or behavior .Food acts as an income transfer and asset protection.

2. Support Positive Living with HIV through Care and Support

   The period between HIV infection and the on-set of AIDS-related illnesses is often years, and sometimes the PLHIV or affected homes may need care and support during this period: access to sufficient, nutritious food can significantly help to prolong the period for healthy living for PLHIV.

   - Food to supplement daily nutritional requirements (e.g. proteins and micronutrients) and fulfill special dietary needs, such as increased energy requirements, which would otherwise not be met with usual food in the household.
   - Food for nutritional management of symptoms of opportunistic infections (e.g. anorexia, diarrhea, nausea).
   - Food for use in hospitals and hospices as part of inpatient or palliative care.
   - Food to provide as safety net, income transfer and asset protection.
   - Food for training in life skills, life planning, alternative livelihood strategies (especially as a bridge in adopting new technologies and practices). This also applies for orphans and vulnerable children (OVC) and street children.
   - Food for education to encourage school attendance by OVC.
   - Food as a guardian incentive or voluntary care providers for people to come out to support and care for OVC or sick people.

3. Treatment Support

   In most cases, the uptake and adherence to treatment protocols (e.g. ARVs and TB treatment) is improved when PLHIV have adequate food. Therefore, food can be used to:

   - Improve adherence to drug intake, especially for TB drugs, but also for ARVs.
   - Improve treatment efficacy.
   - Help manage drug side effects.

4. Lessen the Impact of Illness

   A secure supply of food helps minimize the impact of illness or death in a family or community by:

   - Reducing the pressure to sell assets.
   - Reducing the pressure to engage in activities that increase risk to HIV infection.
   - Training in life skills, life planning and alternative livelihood strategies.

8.2.2 Who Needs Food Assistance?

Not all PLHIV or affected households need food assistance. By considering the specific purpose/ objective of food assistance in a given context, those who will benefit can be determined. Targeting with food assistance should always be done with care, as non-HIV-affected households, who are equally vulnerable and/or poor, can be marginalized or denied assistance.

1. Food for Therapeutic Purposes

   Food for therapeutic purposes, that is food to reduce mortality and severe malnutrition, should rely on nutrition and health indicators as criteria for inclusion. Criteria include:

   Weight loss- However, although nutritional supplementation is indicated for all patients with weight loss, PLHIV should not receive supplementation without first addressing any reversible causes of weight loss.

Table 19: Criteria for Nutrition Supplementation

Diagnosed Classification	Children 6-59 months	Adult (non-pregnant)	Pregnant and early postpartum MUAC cm
Severe acute malnutrition	<-3SD or MUAC<11.5	<16 (BMI) kg/m2 MUAC <16cm	<19cm
Moderate acute malnutrition	<-2SD MUAC11. 5to12.4cm	16-17 (BMI) MUAC 16 -18.5cm	19 - <22cm
Mild acute malnutrition	-2 to <-1SD or MUAC 12.5 to 13.4cm	17.1 - <18.5 (BMI) 18.5 – 23 cm (MUAC)	22-23cm

MUAC is an alternative way to measure "thinness" (alternative to weight-for-height). It is especially used for children six months old to five years old (Table 9 How to Measure MUAC)

- Ask the mother to remove any clothing covering the child's left arm.
- Calculate the midpoint of the child's left upper arm: first locate the tip of the child's shoulder with your fingertips.
- Bend the child's elbow to make the right angle.
- Place the tape at zero, which is indicated by two arrows, on the tip of the shoulder and pull the tape straight down past the tip of the elbow.
- Read the number at the tip of the elbow to the nearest centimeter. Divide this number by two to estimate the midpoint. As an alternative, bend the tape up to the middle length to estimate the midpoint. A piece of string can also be used for this purpose; it is more convenient and avoids damage to the tape.
- Mark the midpoint with a pen on the arm.
- Straighten the child's arm and wrap the tape around the arm at the midpoint. Make sure the numbers are right side up. Make sure the tape is flat around the skin.
- Inspect the tension of the tape on the child's arm. Make sure the tape has the proper tension and is not too tight or too loose. Repeat any step as necessary.
- When the tape is in the correct position on the arm with correct tension, read and call out the measurement to the nearest 0.1cm
- Immediately record the measurement.

2. Food to Improve Household Food Security and Prevent Malnutrition

   Food can be provided as an income transfer to improve household's access to food, especially to address HIV-related causes of food insecurity such as reduced labour, savings, and productive assets. In this case beneficiary selection criteria should focus on identifying households who are food insecure or vulnerable to food insecurity. A range of indicators are available tomassess household access to food. Food can also be used to prevent or reduce malnutrition and prevent malnutrition from becoming severe. In addition to household food security criteria, other criteria such as nutritional status (based on anthropometric and dietary assessments) may be used to target beneficiaries.

3. Food for Incentive Purposes

   Food can be provided as an incentive for participation in particular services/education. In this case, criteria for beneficiary selection can include individuals/households who are most in need of the services/education offered, and those who require supplemental food.

8.2.3 What Food to Provide?

The kind of food and amounts to provide will depend on the objective of the food assistance. The common food ration package used by World Food Programme (WFP) and other agencies is composed of corn-soy blend fortified with micronutrients, cereal and a pulse and vegetable oil, which may be fortified with vitamin A and other micronutrient supplements like salt and blended food (such as corn soy blend). The package is normally supplied in quantities to last 15 days or a month.

Food supplements for PLHIV have the criteria:

- Easily digestible and tolerated by PLHIV and/or children who are in need in the house.
- Food that is energy dense, high in protein, and fortified with multiple micronutrients is preferred.
- Food that is culturally acceptable.
- The household's ability to process, store and prepare the food should be considered. Food that requires simple preparation and less cooking time, such as pre-cooked or blended foods, are advisable for PLHIV and their households.

To calculate the size of the ration, consider the following:

- The objective of food assistance.
- The average household requirement in the catchments, including the increased energy needs of household members infected by HIV.
- Aim for food assistance to fill the average energy deficit in the area, or the food supplement to cater for 30 - 40% of energy needs for targeted beneficiaries.
- Take into consideration wastage, spoilage, and leakage of the food through selling and sharing.

Types of rations include:

- Take-home rations: Food is provided to the household to take home for storage, preparation, and consumption. A drawback is the risk that the food does not reach the targeted beneficiary as it may be sold, shared with other households, or spoilt.
- On-site feeding: Food is prepared in a central place and the beneficiaries consume the meal or snack at the site. The food will reach the targeted beneficiary, but logistics may be expensive.
- Food-by-prescription: Food is provided depending on individual assessment. It is packaged in small quantities (as a medicine) to take home and consume as preascribed. The best place for this is a health facility.

8.3 Integrate Food Assistance Activities with Local Services

Integrate food security and food assistance Programmes into existing local services as much as possible and where appropriate. However, sectors should not be over-strained; have each sector do what best fits its mandate.

Actions by service providers include:

- Make community Programmes and government sectors aware of the need for food assistance.
- Educate the recipients and families of the purpose of the food.
- Promote the inclusion of food assistance for PLHIV in other Programmes, especially community-based food and nutrition projects such as nutrition gardens, livestock rearing, and income-generating activities.
- Use community-based approaches as often as possible in the implementation of these actions.

Key Messages: Adequate nutrition for HIV infected

Adequate nutrition for HIV infected people is critical in maintaining person immune systems to sustain healthy levels of physical activity and optional quality of life.

- Food insecurity and poverty may lead to high-risk sexual behaviors and migration; increase the risk of acquiring HIV. At the same time, HIV weakens a household's ability to provide for basic needs.
- Micronutrients intake at daily recommended levels need to be assured in HIV-Infected adults and children through consumption of diversified diets, fortified food and micronutrient supplements as needed.
- Community Mobilization and participation in food production to meet the needs of PHL is important and an effective strategy to improve food security for PLHIV
- Thus, maintaining adequate nutrition and food security can be instrumental in mitigating the impact of HIV and caring for PLHIVs, their affected households, and communities (World Bank, 2007).

Figure 12: Food security for children from affected and infected families is crucial.

CHAPTER 9

Communication about Nutrition for PLHIV

9.0 Introduction

The success of nutritional care and support depends on how efficiently and effectively the information in these guidelines reaches the clients in ways that will encourage adoption and compliance. Commitment to effective and caring communication must come from everyone involved in the fight against HIV donors, health workers, policy makers, teachers, and families each in their own way. Communication at the national and the local level is critical to successful nutritional care and support for PLHIV and requires significant financial investment.

The discussion of nutrition's role in the health of PLHIV should be integrated into messaging on HIV and AIDS, at both individual and national level. Each visit with a PLHIV or their caregivers must include a discussion about nutrition. On a broader level, when discussing HIV with donors, government or journalists, nutrition must be an integral part of the message.

The following objectives will guide the communication strategy that will need to accompany these guidelines:

1. Who needs to know? Identify the target. Be clear on the reasons as to why the different target groups need the information.
2. What is the current situation regarding nutritional knowledge and practice in your target group? An understanding of the prevailing situation and 'why' this is so, will assist in defining a focused communication strategy.
3. What information needs to be imparted? Not all the information may be needed for all the different groups. Emphasis may be placed on certain topics of the manual for certain target/ user groups.
4. How does one reach the target group? Carefully assess all potential channels of communication that may be used to reach your target/user group.
5. How should the information be packaged? This will vary according to target group, levels of literacy, culture, means of communication and other factors.
6. How will the effectiveness of the strategy be monitored? As the appropriate strategy is being developed, there is also a need to develop a monitoring system that will be sensitive to changes in knowledge, attitudes and practices.
7. Advocacy at the various levels.

9.1 Communication about Nutrition for PLHIV

9.1.1 Who Needs to Know?

The Kenyan National Guidelines on Nutrition and HIV/AIDS has been compiled to enhance the knowledge and skills of health providers, communities and the public at large. To be effective, the Guidelines' information must be shared with many people, in many sectors.

The information contained herein, can be packaged for decision makers at policy level given the critical role of nutrition in the management of HIV and AIDS.

Programme managers will find useful information on integrating nutrition into HIV and AIDS care and support interventions.

Service providers will benefit from re-orientation, and in some cases new training, on updated nutrition interventions. At the local level, service providers need to continually reinforce the Guidelines' information.

The general public will understand the importance of good nutrition in remaining healthy and those affected by HIV and AIDS will have important and practical information on how to adopt a healthier lifestyle and good nutrition practices.

9.2 What is the Current Knowledge among the Target Group?

Recognizing that in general, information on nutrition and HIV and AIDS is not widely available, known and applied in programmes, it is useful therefore, to determine what the current 'gaps' are within different target groups. The gaps should be identified with a clear understanding of the role of the target group in advancing the nutritional care and support of HIV and AIDS.

9.3 Message Content

The overall message will include:

- The vulnerability of different population groups to HIV and malnutrition;
- The interaction between HIV/AIDS and nutrition;
- The opportunities available and the potential to improve nutrition, health, the quality of life and survival of PLHIV;
- How to take action based on information provided in the Guidelines;
- How to coordinate with existing interventions.
- The content of an information package can vary. For example, an information package for journalists, goodwill ambassadors and others willing to advocate may include the following: key facts on malnutrition, HIV and AIDS and the interaction of the two; how good nutrition is a critical part of HIV and AIDS management; how much a good simple balance diet may cost per person/day and so on.

- A booklet of essential information from the Guidelines for health workers may include other information including: key facts, practical tips, best practices by the community and service providers. The booklet would be part of a coordinated effort which includes posters, brochures, leaflets, and radio messages.
- Messages must be grounded in the reality of the population. If having meat in the daily diet is beyond the means of most, for example, stress instead the alternative protein sources and having a balanced diet from commonly available foods.

9.4 How to Get the Message Out

To effectively share the Kenya National Guidelines on Nutrition and HIV/AIDS, the following suggestions are made:

- At the national level, use television and newspapers to help advocate to government and donors for increased awareness and investment in food security, nutrition, health and HIV/AIDS; use radio as the key mass medium for reaching the most vulnerable populations. Engage local or popular radio stations as full partners to reach PLHIVMake the messages about essential nutrition simple, clear and straightforward.
- Make simple information on essential nutrition available to every person with HIV/AIDS and all health workers. Present all written information (leaflets, newsletters, and posters) with engaging illustrations for those who have difficulty reading.
- Translate messages into local languages for broad outreach.
- Present information in a creative manner. Use a photo or an image that people value along with information on nutrition. (The image doesn't have to necessarily correspond with the subject of nutrition.) For example, a photo of a popular football player alongside nutrition tips may be valued and not discarded by young men.
- Use goodwill ambassadors, celebrities and opinion shapers to promote nutrition for
- PLHIV. Celebrities who have recognizable voices (e.g. radio morning show hosts) and do many spots on a subject could be effective.
- Identify special days for nationwide nutrition-promoting activities. Link the day with existing material and activities, such as the messages being broadcast by radio, stickers, posters and celebrity visits.
- Use existing recreational activities framework: youth HIV/AIDS football (soccer) programmes and cookery competitions as entry points for messages.
- Set up good, strong displays in health centers, schools and meeting places. Put up posters, with information that is renewed regularly, to use as a teaching aid in school, or to refer to during discussion in a health facility.
- Target activities to reach out to professional groups, programme managers, trainers and learning institutions. Advocate for nutrition as part of training of health professionals doctors, nurses and volunteers and for nutrition to be part of the medical training curriculum.

9.5 Communicate to Children and Adolescents

In many cases, children are the caregivers of PLHIV at home, responsible for preparing food and water. A sound understanding of the importance of nutrition for the young generation, regardless of HIV status, will lead to healthier population in the future.

- Rely on schools to promote information on nutrition and HIV/AIDS to children and adolescents; integrate with existing programmes at the school (such as the school feeding program, life skills education etc.).
- Involve the subject of nutrition and HIV in existing youth Programmes such as guides and scouts (create a badge for nutrition and HIV!).
- Advocate for key nutritional messages to be included as part of a lesson on biology. Include questions on biology exams about nutrition, such as: 'Why is good nutrition especially important for people living with HIV/AIDS?'
- For out of school children use places where they may congregate such as community centers, vocational skills training places.

9.5.1 Network to Share Information Effectively

- Design strategies that take advantage of a network for information dissemination.
- Use inter-sectoral approach: ensure key messages are integrated in school health
- Programmes, existing media, health promotion materials, and special day events.
- Form partnerships with other providers and develop a consensus on common strategies to disseminate information.
- Organize meetings for the network of nutrition service providers.

9.5.2 Document Information

- Organize and index existing materials so that service providers and PLHIV can easily access information.
- Collate reading materials about nutrition care and support collected from all sources and distribute these to strategic information outlets at the local level.

9.5.3 Monitor the Communication Strategy

- Keeping in mind your objective for the different target groups (e.g. greater resource
- Allocation to nutrition by policy makers or improved and balanced food intake by PLHIV) develop simple indicators that can be used to monitor the desired changes amongst your target.
- Decide upon qualitative and quantitative indicators.
- Decide also on how often you wish to monitor the indicators. Remember that continuous feedback on the different avenues / approaches used for communication will help to sharpen your strategy and make it effective.

CHAPTER 10

Monitoring and Evaluation

10.0 Introduction

The National AIDS Control Council, in collaboration with various partners, has established a framework for the National Nutrition Intervention in the Fight against HIV/AIDS to coordinate the response in the fight against HIV/AIDS from the national to the community level.

This framework will help harmonize nutrition interventions within the continuum of care and support services for PLHIV. The Kenyan National Guidelines on Nutrition and HIV/AIDS will help initiate new, or strengthen existing, coordinated nutritional care and support services for PLHIV.

To keep track of the Guideline's reach and impact, a systematic assessment, analysis, and documentation of the Guideline's dissemination and implementation is required. Continual monitoring and periodic evaluations are fundamental to assess the Guidelines' success and reach.

10.1 Monitoring and Evaluation of Kenya National Guidelines on

10.1.1 Nutrition and HIV/AIDS

Monitoring is the continuous process of measuring progress in achieving specific results in relation to a programme or project plan. In this case we would like to monitor the progress made in the use of the Kenyan National Guidelines on Nutrition and HIV/AIDS Guidelines at the different levels of dissemination and application to nutritional care and support services. Monitoring activities assist national policy makers, district and provincial planners, programme managers and others in setting priorities for capacity building, service provision, resource allocations and standards of care.

The monitoring process reports on the progress made towards realizing the following objectives:

- Effective and widespread dissemination of guidelines.
- Practical application of the guideline recommendations in the on-going programmes and services.
- Proper implementation of the guidelines by the service providers and clients.
- Improved well-being of PLHIV due to improved nutritional practices

A variety of indicators can be used to monitor the use of the national guidelines and to monitorthe progress and outcomes of nutritional care and support. Examples of indicators that can beused are listed below. Programmes should select and adapt indicators based on the outcomes desired and on the feasibility of measurement.

Types of monitoring indicators for these guidelines would include:

- Number of health programmes implementing nutritional care services for PLHIV in bothpublic and private sectors (Annex 9).
- Number of training institutions with nutritional care and support incorporated intheir
- Training programmes
- Number of training sessions/workshops organized for service providers from both
- Public and private sectors.
- Number of service providers (counselors, health educators, extension workers, teachers,social workers) trained in the use of the guidelines.
- Number of initiatives such as home based care and workplace education initiatives in both public and private sectors that include nutritional care and support activities.

10.2 Evaluation

Determines the worth of an intervention, strategy or policy. This will look at the relevance ofthe guidelines in Kenya, efficiency in dissemination and use, effectiveness of the guidelines in achieving set objectives, impact of the guidelines and sustainability of application of the guidelines.

Evaluating the effectiveness of these guidelines may include the following:

- Changes in policy and service provision supporting nutritional care and support for PLHIV.
- Increased resource allocation for nutritional action in support of efforts to combat HIV and AIDS. Costs of implementing the guidelines to measure efficiency or cost effectiveness
- Changes in stake holder's knowledge and practice regarding nutritional care and support of PLHIV.
- Impact of strengthened nutritional care and support on the quality of life of PLHIV
- Inclusion of nutritional care and support as an integral part of comprehensive service provision to PLHIV.

Evaluation indicators for these guidelines would include:

- Percentage of PLHIV (adults and children) receiving nutritional support
- Percentage of ART clients with improved nutrition status
- Percentage of HIV exposed Infants by feeding type.
- Number of eligible clients who received food and/or nutrition support (Ministry of Health 2010).

10.3 Overview of the HIV Nutrition Service Data management system

Nutrition service data is collected through the normal MOH reporting levels, i.e. Facility –> District (Sub-county) –> County –> National level. Data is captured at facility level using data collection tools and then collated and aggregated at facility level using the facility data reporting tools. The facility data is entered into DHIS-2 at district levels. It is important to note that;

- Data is accessible from and used at all levels
- Follow the Nutrition & HIV Policy and Guidelines
- Harmonization of the multiple data systems at all levels
- The tools cover all patient Nutritional requirements, including HIV & AIDS

Purpose:

- Harmonization of Data Collection & Reporting at all levels
- Ensure clinics can track appointments as well as document what occurs at every visit
- Enhancing coordination of Nutrition & HIV services at all levels

Harmonized Nutrition service tools are as follows;

- Prescription form (MoH732)
- Used to collect service and dispensing data
- Harmonized list of commodities and use quantities

Facility Nutrition Service Register (NSR)

- MOH 407A Adult (>15yrs)
- MOH 407B Children (<=15yrs)

Nutrition Services Patient Appointment card

- Enables follow-up and continuity of care

Monthly Summary reporting tools:

- Facility Monthly Summary for Nutrition services (MOH 733B)
  - *The tools are completed at the end of every month and they cover the full reporting-period.*
  - *The cumulative numbers are obtained from page summary section at the bottom of every NSR page and send to District/Subcounty on 5th day of every new month.*
- District Monthly Summary Tool for Nutrition Services (MOH 733A)
  - *Completed at the end of every month*
  - *Covers the full reporting period*
  - *Cumulative district numbers are obtained from MOH 733B*

Roles and Responsibilities

Activity	Data Collection tools used	Responsible person(s)	Frequency	Reports to
Assessment, Diagnosis, follow-up	MOH 407A, MOH 407B, MOH 732	Nutrition service provider	Daily	Nutritionist in charge
Aggregation and reporting at facility	MOH 733B	Nutrition Service provider & HRIO	Before 5th of every new month	District
Aggregation and reporting at District level	MOH 733A	District Nutrition officer & DHRIO	Before 15th of every new month	National level/ county level

10.4 Overview of Nutrition Logistics Management System

A logistics system is the structure through which supplies are moved to different levels according to a specified schedule. The purpose of a logistics system is to obtain and move supplies in atimely manner to places where they are needed at a reasonable cost. Information about thequantities issued or dispensed to users at each level is collected and transmitted upwards to inform future deliveries.

A commodity logistics system encompasses all activities that occur between the manufacture of goods and the point at which the commodities are delivered to consumers. These include:

- Selection of appropriate commodities
- Determining needs: current and future
- Setting up logistics management procedures
- Establishing an efficient warehousing system
- Ensuring reliable transportation

The Nutrition Logistics Management Information System (LMIS) in Kenya is an organized system for collecting, processing, and reporting on the use of commodities to inform decisionmaking. The LMIS improves quality of Nutrition commodity management decisions since it provides a means of tracking commodities as they enter and leave the supply system. The following are official Nutrition - MOH numbers for all tools.

Table 20: Official MOH Numbers for Tools

Name of Tool	Type	Function	Number
Facility Prescription Form for Nutritional Commodities	Nutrition services and LMIS	Data collection	MOH 732
Facility Daily Activity Register for HIV Nutrition Commodities	LMIS	Data collection	MOH 409
Facility Consumption Data Report and Request for HIV Nutrition Commodities for Satellite Sites	LMIS	Reporting	MOH 734B
Facility Consumption Data Report and Request for HIV Nutrition Commodities- for Standalone Sites	LMIS	Reporting	MOH 734
Central site consumption data report and request for HIV Nutrition Commodities	LMIS	Reporting	MOH 734A
Adult Nutrition Services Register (Facility)	Nutrition services	Data collection	MOH 407A
Child Nutrition Services Register (facility)	Nutrition services	Data collection	MOH 407B
Facility Monthly Summary for Nutrition Services	Nutrition services	Reporting	MOH 733B
District Monthly Summary for Nutrition Services	Nutrition services	Reporting	MOH 733A

Supportive Supervision:

- The Process of ensuring that personnel have knowledge and skills required to carry out their responsibilities effectively
- A process that promotes quality at all levels of the health system by strengthening relationships within the system
  - Focuses *on the identification and resolution of problems, and providing relevant support to personnel as needed.*
  - *Helps to optimize the allocation of resources*
  - *Promotes better 2-way communication, sharing of best practices, high standards and team-work*
- For effective supervision to take place, the Supervision team personnel should have knowledge in Nutrition commodity and service management
- It is through supervision that one ensures that personnel at all levels carry out their responsibilities adequately

- For effective supervision, the supervisor should have the same knowledge and skills as the person doing the job
- The supervisor must be able to effectively carry out the responsibilities of the personnel at the lower level.
- Supervisor should spend time providing on-the-job training (OJT) to personnel manning the facilities, as required

Feedback:

- At the end of the supervision, give the feedback to the facility staff that were supervised

The feedback should include:-

- Brief of the supervision exercise findings
- Areas that require action and the staff to take action and the timelines

After the feedback

- Compile report
- Provide copy to the facility and send copy to relevant offices

ANNEXES

Annex 1: Energy and Protein Requirements

Group of people	Energy requirement (kcal/day)	Asymptomatic Energy requirement (kcal/day)		Symptomatic Energy requirement (kcal/day)		Protein requirement (g/day)
		10% extra	Energy	20% - 30%	Energy	
ADULTS						
Male (Light activity)	2580	260	2840	520-780	3100-3360	57
Male (Moderate activity)	2780	280	3060	560-840	3340-3620	57
Female (Light activity	1990	200	2190	400-600	2390-2590	48
Female (Moderate activity)	2240	220	2460	440-600	2680-2900	48
Pregnant women	2280 (290 extra)	200	2480	400-600	2680-2880	55
Lactating women	2490 (500 extra)	200	2480	400-600	2890-3090	68
CHILDREN BOYS[2]				20% extra		
6-11 months	760-970	80-100	840-1070	150-190	910-1160	10
1-3 years	1200-1410	120-140	1320-1550	240-280	1440-1690	25
2-5 years	1410-1690	140-170	1550-1860	280-340	1690-2030	26
5-10 years	1810-2150	180-220	1990-2370	362-430	2170-2580	35
10-14 years	2500-2800	250-280	2750-3080	500-560	3000-3360	64
15-18 years	3000-3100	300-310	3300-3410	600-620	3600-3720	84

Group of people	Energy requirement (kcal/day)	Asymptomatic Energy requirement (kcal/day)		Symptomatic Energy requirement (kcal/day)		Protein requirement (g/day)
		10% extra	Energy	20% - 30%	Energy	
GIRLS						
6-11 months	720-910	70-90	790-1000	140-180	860-1090	10
1-3 years	1140-1310	110-130	1250-1440	230-260	1370-1570	25
2-5 years	1310-1540	130-150	1440-1690	260-310	1570-1860	26
5-10 years	1630-1880	160-190	1780-2070	330-380	1960-2260	35
10-14 years	2300-2450	230-250	2530-2700	460-490	2760-2940	62
15-18 years	2340-2500	230-250	2570-2750	470-500	2810-3000	65

Source: Energy and protein requirements. Report of a Joint FAO/WHO/UNU Expert Consultation. WHO Technical Report Series, No.724, 1985.

Garrow JS and James WPT (editors), Human nutrition and dietetics. Churchill Livingstone 9th edition, 1993

NB: Energy and protein requirement values may vary slightly among different sources.

1. HIV-infected adults may require increased protein and micronutrient intake, but research has not yet proven this.
2. Children figures (FAO/WHO) include an extra 5% energy for desirable level of physical activity.

Annex 2: Important Micronutrients

Micronutrient	Sources	Functions	Markers of Deficiency
Vitamin A	Full-cream milk, fish oil, eggs, liver, carrots, mangoes, papaya, pumpkin, yellow sweet potatoes, green leafy vegetables.	Maintenance of epithelial cells, mucous membranes and skin, immune system function, ensures good vision and bone growth	Poor dark adaptation, night blindness, growth failure, reduced resistance to infection.
Vitamin B_1 (Thiamine)	Whole-grain cereals, meat, poultry, fish, liver, milk, eggs, oil, seeds, and legumes.	Energy metabolism, supports appetite and central nervous system functions	Beriberi, muscle weakness, anorexia, oedema, enlarged heart, confusion.
Vitamin B_2 (Riboflavin)	Milk, eggs, liver, meat, fish, yogurt, green leaves, whole-grained cereals, and legumes.	Energy metabolism supports normal vision, health and integrity of skin.	Inflammation of the tongue, angular stomatitis, oedema and hyperaemia of pharyngeal.
Vitamin B_3 (Niacin)	Milk, eggs, meat, poultry, fish, peanuts, wholegrained cereals, unpolished rice, mushrooms.	Energy metabolism supports health and integrity of skin, nervous and digestive systems.	Pellagra, (3D's – Dermatitis, Diarrhoea, Dementia)
Vitamin B_6 (Pyridoxine)	Legumes, potatoes, meat, fish, poultry, watermelon, oil seeds, maize, avocado, broccoli, green leafy vegetables.	Metabolism and absorption of fats and proteins, converts tryptophan to niacin, helps to make red blood cells.	Inflammation of the tongue, lesions on the lips and corners of the mouth, peripheral neuropathy.
Vitamin B_{12} (Cobalamin)	Meat, fish, poultry, shellfish, cheese, eggs, milk	Required for synthesis of new cells, maintenance of nerve cells, metabolism of fatty acids and amino acids.	Anaemia, inflammation of the tongue, degeneration of peripheral nerves, skin hypersensitivity, dementia weakness and confusion.
Vitamin C (Ascorbic acid)	Citrus fruits (guava, oranges etc); vegetables such as cabbage, green leaves tomatoes, peppers; Potatoes, yams and fresh milk.	Antioxidant, helps the body to use calcium and other nutrients to build bones and blood vessel walls, important for protein metabolism, increases non-heme iron and selenium absorption.	Scurvy, poor appetite, fatigue, retarded wound healing, bleeding gums.

Micronutrient	Sources	Functions	Markers of Deficiency
Vitamin E (Tocopherol)	Liver, milk fat, peanuts, green vegetables, corn oil, vegetable oils, whole grain products, egg yolk, nuts, soya, sunflower seeds, cotton seeds,coconut, tomatoes, sweet potatoes	Protects red and white blood cells membranes (antioxidant), DNA synthesis, stimulates the immune system.	Anaemia in infants Abnormality of nerves and muscles, irritability, oedema.
Zinc	Organ meats, fish, poultry, eggs, whole grain cereals, legume, nuts, milk, yoghurt, vegetables, corn, guavas, pumpkin seeds,	Important for the function of many enzymes (antioxidant), involved in making genetic material, immune system function, smell and taste acuity, wound healing, important for growth and development,	Reduced resistance to infection, skin ulceration, stunted growth.
Selenium	Meat, eggs, seafood, whole grains, chicken liver, cooked sunflower seeds, plants grown in selenium rich soil.	Antioxidant, prevents the impairing of heart muscles, synthesis of glutathione peroxidase, phagocytic functions.	Reduced resistance to infection, joint deformities in children, damage to heart and skeletal muscles, lightening of skin and hair pigmentation.
Iron	Red meat, liver, fish, poultry. Eggs, legumes, peanuts, cereals and dried fruits. Vitamin C, heme iron foods and fermented foods increase non-heme iron absorption.	Synthesis of haemoglobin, energy metabolism and utilization, antioxidant.	Anaemia
Folate	Liver, green leafy vegetables, fish, legumes, groundnuts, oil seeds.	Synthesis of red blood cells, gastrointestinal cells and DNA.	Anaemia, neural tube defects in newborns.

Annex 3: Micronutrient Requirements for Adults[a]

Target micronutrient	Non pregnant, non lactating women	Pregnant women	Lactating mothers	Men
Vitamin A (µg RE)	500	800	850	600
Vitamin B_1 (mg)	1.1	1.4	1.5	1.2
Vitamin B_2 (mg)	1.1	1.4	1.6	1/3
Vitamin B_3 (mg)	14	18	17	16
Vitamin B_6 (mg)	1.3	1.9	2.0	1.3
Vitamin B_{12} (µg)	2.4	2.6	2.8	2.4
Vitamin C (mg)	45	50	70	45
Vitamin D (µg)	5	5	5	5
Vitamin E (mg)	5	7.5	7.5	10
Vitamin K (µg)	55	55	55	65
Calcium (mg)	1000	1200	1000	1000
Iodine (µg)	110	200	200	130
Ironb (mg)	20	c	32	9
Zincd (mg)	6.4	1st trimester 3.4 2nd trimester 4.2 3rd trimester 6.0	0–3 months 5.8 4–6 months 5.3 7–12 months 4.3	9.4
Magnesium (mg)	220	220	270	260
Folic acid (µg)	400	600	500	400
Selenium (µg)	26	42	30	34

Source: Food and Agricultural Organization of the United Nations and World Health Organization: Human vitamin and mineral requirements. Report of a joint FAO/WHO consultation. Bangkok, Thailand 1998.

NB: Bioavailability is the degree to which a nutrient is absorbed or becomes available at the site of physiological activity after intake.

a Based on a 65 kg man and 55 kg woman.
b Based on 15% bioavailability
c It is recommended that iron supplements in tablet form be given to all pregnant women because of the difficulties in correctly evaluating iron status in pregnancy. In the non-anaemic pregnant woman, daily supplements of 37 mg of iron (e.g. as ferrous sulphate) given during the second half of pregnancy are adequate.
d Based on high dietary bioavailability.

Annex 4: Micronutrient Requirements for Children

Target micronutrient	0-3 months	4-6 months	7-9 months	10-12 months	1-3 years	4-6 years
Vitamin A (µg RE)	375	375	400	400	400	450
Vitamin B_1 (mg)	0.2	0.2	0.3	0.3	0.5	0.6
Vitamin B_2 (mg)	0.3	0.3	0.4	0.4	0.5	0.6
Vitamin B_3 (mg)	2	4	4	4	6	8
Vitamin B_6 (mg)	0.1	0.1	0.3	0.3	0.5	0.6
Vitamin B_{12} (µg)	0.4	0.4	0.5	0.5	0.9	1.2
Vitamin C (mg)	25	25	30	30	30	30
Vitamin D (µg)	5	5	5	5	5	5
Vitamin E (mg)	2.7	2.7	2.7	2.7	5	5
Folic acid (mg)	80	80	80	80	160	200
Vitamin K (µg)	5	5	10	10	15	20
Calcium (mg)	300	300	400	400	500	600
Iodine (µg)	15	15	135	135	75	110
Iron (mg)	a	a	a	10	6	6
Zinc b (mg)	2.8	2.8	4.1	4.1	4.1	5.1
Magnesium (mg)	26	26	53	53	60	7.3
Selenium (µg)	6	6	10	10	17	21

Source: Food and Agricultural Organization of the United Nations and World Health Organization: Human vitamin and mineral requirements. Report of a joint FAO/WHO consultation. Bangkok, Thailand 1998.

NB: Bioavailability is the degree to which a nutrient is absorbed or becomes available at the site of physiological activity after intake.

*A. Neo*natal iron stores are sufficient to meet the iron requirement for the first six months in full term infants. Premature infants and low birth weight infants require additional iron. Based on 15% bioavailability.

B. Base*d on high dietary bioavailability*

Annex 5: Summary of Energy and Protein Values of Commonly Consumed Foods in Kenya

	Common foods	Energy, Kcal per 100 g	Protein g per 100 g	Possible consumption amount permeal (g)	Nutrient output per meal	
					Energy, Kcal	Protein, g
Cereals	Whole maize meal	370	9	50	185	5
	Maize grain	370	9	50	185	5
	Rice	359	8	75	270	6
	Wheat flour (Home baking)	340	11	50	170	6
	Wheat whole grain	334	17	50	167	9
	Millet	336	9	60	202	6
	Sorghum	306	8	60	183	5
Roots and tubers	Cassava	375	2	75	281	2
	Arrow roots	125	2	75	94	2
	Sweet potatoes	131	6	75	98	6
	Irish/English potatoes	81	2	60	49	1
	Banana raw (matoke)	109	1	60	65	1
Others	Cane sugar	375	-	20	75	-
	Cooking fat	900	-	20	180	-
Animal source foods	Fish fillet	244	72	50	122	36
	Meat (beef)	180	20	75	135	15
	Chicken	163	25	75	122	19
	Egg	154	12	100	154	12
	Cow whole milk	73	3	200 mL	150	6
Plant source food	Green grams	352	24	50	176	12
	Lentils	350	24	50	175	12
	Beans	347	18	50	173	9
	Cow peas	297	23	50	151	12
	Soya	429	30	50	215	15
	Pigeon peas	399	23	50	199	11
Fruits	Avocado	128	1	100	128	1
	Banana ripe	94	1	50	47	1
	Oranges	89	1	40	36	-
	Passion	87	1	40	35	-
	Mangoes	60	1	60	36	-
	Pawpaw	32	0.4	40	12	0.2

	Common foods	Energy, Kcal per 100 g	Protein g per 100 g	Possible consumption amount permeal (g)	Nutrient output per meal	
					Energy, Kcal	Protein, g
Nuts and seeds	Ground nuts	554	10	50	277	5
	Coconut	544	6	50	314	17
	Cashew nuts	569	21	50	285	11
	Simsim	544	20	50	272	10
Vegetables	Spinach	32	3	200	64	6
	Cabbage	24	2	150	36	3
	Kales (Sukuma wiki)	52	4	150	73	6
	Cow peas leaves	43	6	100	43	6
	Amaranth (terere)	45	5	100	45	5
	Pumpkin leaves	36	5	100	36	5

Adapted from: Sehmi JK. National food composition tables and the planning of satisfactory diets in Kenya. Ministry of Health, Government of Kenya, 1993

Annex 6: Estimation of Z-Score Using the NCHS/ WHO Reference Curve

1 Weight for age all ages
2 Length for age < 24 months
3 Weight for length < 24 months
4 Height for age > 24 months
5 Weight for height > 24 months (limit 10.5 years)

Calculating Z-scores

$$Z\ score = \frac{actual\ values\ (weight, height/length) - expected\ values\ (weight, height/length)}{Standard\ deviation}$$

The expected values (weight, height/length) are represented by the 50th percentile. Standard deviation is estimated from the difference between the 97th and 3rd percentile values divided by four (4) or an example:

$$SD = \frac{97th\ percentile - 3rd\ percentile}{4}$$

Example A boy child aged 6 months is 67 cm long and weighs 6.4 kg. Estimating his nutritional status using Z-scores for length-for-age is as follows:

Length for age Z score: Actual length – Expected length = 67 - 67.8 = - 0.32

The Z-score for length for age=-0.32 hence the child is within the normal range i.e.

between 2 and -2 Z – score

Length (cms) for age for children under 24 months

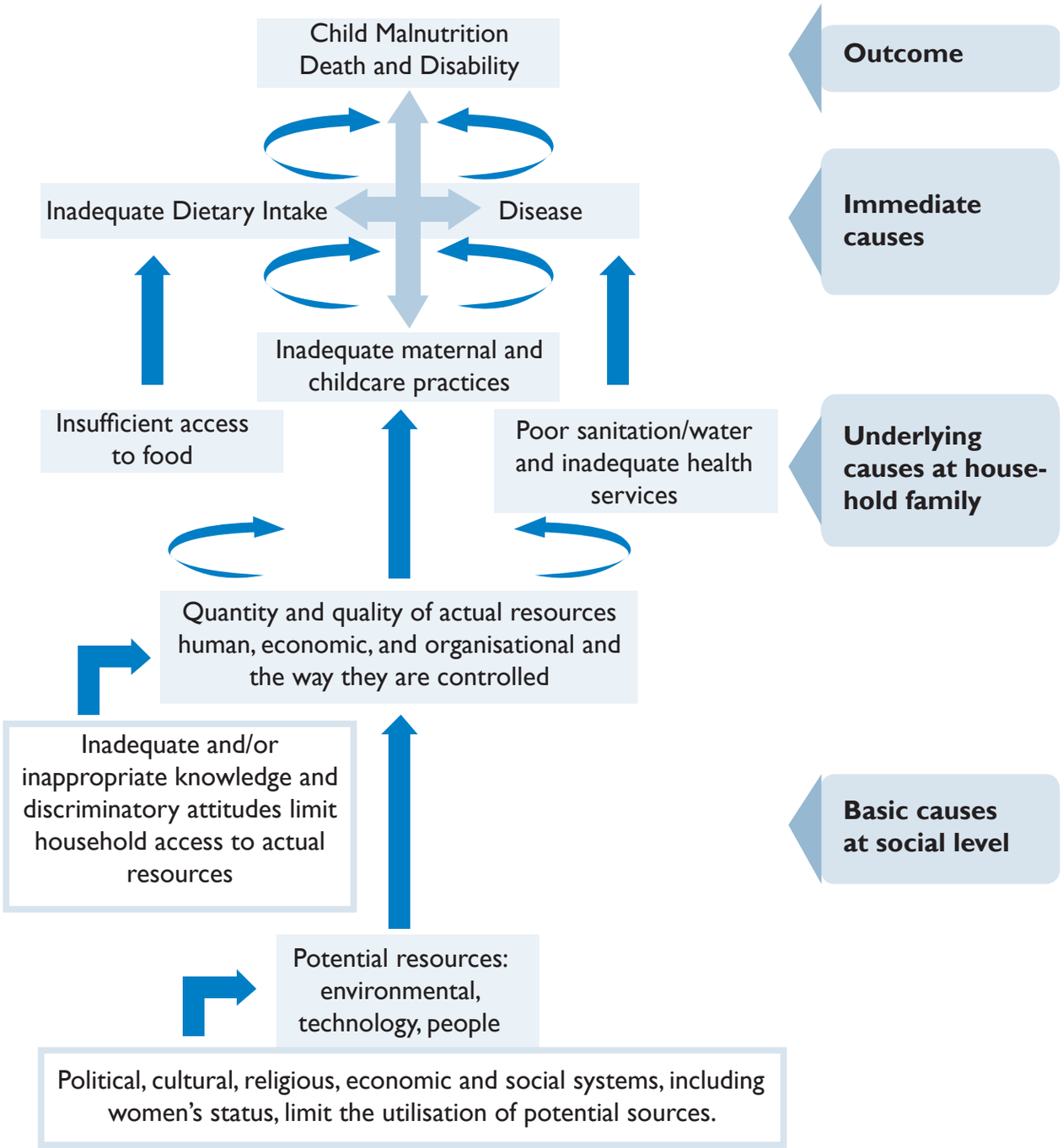
Age in months	Male, percentiles			Standard Deviation	Female, percentiles			Standard Deviation
	3rd	50th	97th		3rd	50th	97th	
0	46.2	50.5	54.8	2.15	45.8	49.9	53.9	2.03
1	49.9	54.6	59.2	2.32	49.2	53.5	57.9	2.18
2	53.2	58.1	62.9	2.43	52.2	56.8	61.3	2.27
3	56.1	61.1	66.1	2.50	54.9	59.5	64.2	2.32
4	58.6	63.7	68.7	2.52	57.2	62.0	66.8	2.40
5	60.8	65.9	71.0	2.55	59.2	64.1	69.0	2.45
6	62.8	67.8	72.9	2.53	61.0	65.9	70.9	2.48
7	64.5	69.5	74.5	2.50	62.5	67.6	72.6	2.52
8	66.0	71.0	76.0	2.50	64.0	69.1	74.1	2.52
9	67.4	72.3	77.3	2.48	65.3	70.4	75.6	2.57
10	68.7	73.6	78.6	2.48	66.6	71.8	77.0	2.60
11	69.9	74.9	79.9	2.50	67.8	73.1	78.3	2.63
12	71.0	76.1	81.2	2.55	69.0	74.3	79.6	2.65
13	72.1	77.2	82.4	2.58	70.1	75.5	80.9	2.70
14	73.1	78.3	83.6	2.63	71.2	76.7	82.1	2.73
15	74.1	79.4	84.8	2.68	72.2	77.8	83.3	2.78
16	75.0	80.4	85.9	2.73	73.2	78.9	84.5	2.83
17	75.9	81.4	87.0	2.77	74.2	79.9	85.6	2.85
18	76.7	82.4	88.1	2.85	75.2	80.9	86.7	2.88
19	77.5	83.3	89.2	2.92	76.1	81.9	87.8	2.93
20	78.3	84.2	90.2	2.97	77.0	82.9	88.8	2.95
21	79.1	85.1	91.2	3.02	77.8	83.8	89.8	3.00
22	79.8	86.0	92.2	3.10	78.7	84.7	90.8	3.03
23	80.6	86.8	93.1	3.13	79.5	85.6	91.7	3.05

Annex 7: Causes of Malnutrition in Children

CAUSES OF CHILD MALNUTRITION

(Adapted from UNICEF, 1990)

This conceptual framework on the causes of malnutrition was developed in 1990 as part of the UNICEF Nutrition Strategy. The framework shows that causes of malnutrition are multisectoral, embracing food, health and caring practices. They are also classified as immediate (individual level), underlying (household or family level) and basic.



Political, cultural, religious,economic. And social systems, including women's status, limit the utilisation of potential sources.

Annex 8: Sample of Common Herbs and Spices

Name	Benefit	How to use
Aloe vera	• Relieves constipation • Soothing and healing to wounds	• Use as extract; boil and drink-concentrated water. Stop to use if it causes cramps/diarrhoea. • Apply fresh gel on wounds *May cause diarrhoea. Use for a maximum of 10 days. Should be avoided during pregnancy.*
Cinnamon (Cinnamon zeylanicum)	• Relieves nausea, colds and flu • Stimulates digestive juices • Stimulates appetite • Anti-diarrhoeal • Antiseptic	• Add to meals or teas particularly ginger and cinnamon tea *Should be avoided during pregnancy*
Garlic (Allium sativum)	• Antibacterial, antifungal, antiviral effects in gut, intestines, lungs, vagina • Aids digestion • Thrush and throat infections	• Use in foods as spice • Prepare tea or energy drink *Should not be taken by those on ARVSaquinavir. It reduces efficacy of the ARV*
Cloves (Eugenia caryphyllus)	• Relieves nausea, vomiting • Aids digestion, anti-diarrhoeal • Stimulates appetite • Mild anesthetic	• Use in soups, stews, fruit juice and tea • Put a clove near the tooth and keep it in the mouth
Ginger (Zingiber officinale)	• Stimulate appetite • Relieves diarrhoea • Improves digestion • Treats common cold, flu, nausea	• Use as a spice in meals • Use in tea
Lemon	• Helps digestion • Antibacterial effect	• Add lemon juice to foods or drinks
Mint	• Helps digestion • Anti-inflammatory effect • Relieves mouth sores	• Use as a tea • Gargle for mouth sores • Chew mint leaves to aid digestion
Neem (Muarubaini)	• Brings down fever	• Cut a fresh twig, remove leaves and boil the bark. Drink as tea. Chew the bark,
Coriander	• Increase appetite • Reduce flatulence	• Add to meals

Name	Benefit	How to use
Peppermint (Mentha piperata)	• Reduces nausea • Reduces abdominal pain and cramps • Controls diarrhoea and vomiting • Relives tension and sleeplessness	• Prepare as tea by boiling for 10 minutes • Add to food
Rosemary (Rosemarinus officinalis)	• Stimulate appetite • Aids digestion • Antiseptic and antibiotic • Anti-inflammatory effect • Stimulates the digestive, respiratory, nervous and circulatory systems	• Use leaves to make tea • Add fresh leaves to food or juice • Steam inhalation for asthma
Basil	• Relieves nausea * Aids digestion *Antiseptic for mouth sores	• 1 teaspoon to a cup of boiling water and drink 3 times a day. • Add fresh or dry leaves to food. • Gargle in warm water.
Calendula	• Flower heads have antiseptic, anti-inflammatory and healing function • Helps with infections of the upper digestive tract	• Prepare as tea. • Use as a compress to treat-wounds.
Cardamon	• Pain, diarrhoea, nausea, vomiting, loss of appetite • Helps with digestive problems	• Add to food during cooking. • Prepare as food.
Cayenne (Capsicum)	• Stimulates appetite • Aids digestion • Antiseptic	• Add a pinch to raw or cooked-food. • Add to fruit juice or water. *Avoid in cases of peptic ulcers, gastrichyperacidity. Wash hands after use.*
Chamomile (Chamomilla recutita)	• Aids digestion • Stimulates appetite • Nausea • Anti-inflammatory	• Prepare tea from the leaves andflowers and drink 3 times a day • Inhale as steam
Eucalyptus (Eucalyptus globus)	• Antibacterial effect on lungs • Relieves respiratory congestion • Bronchitis, asthma, fever • Aids digestion • Anti-inflammatory	• Prepare tea from the pounded leaves .

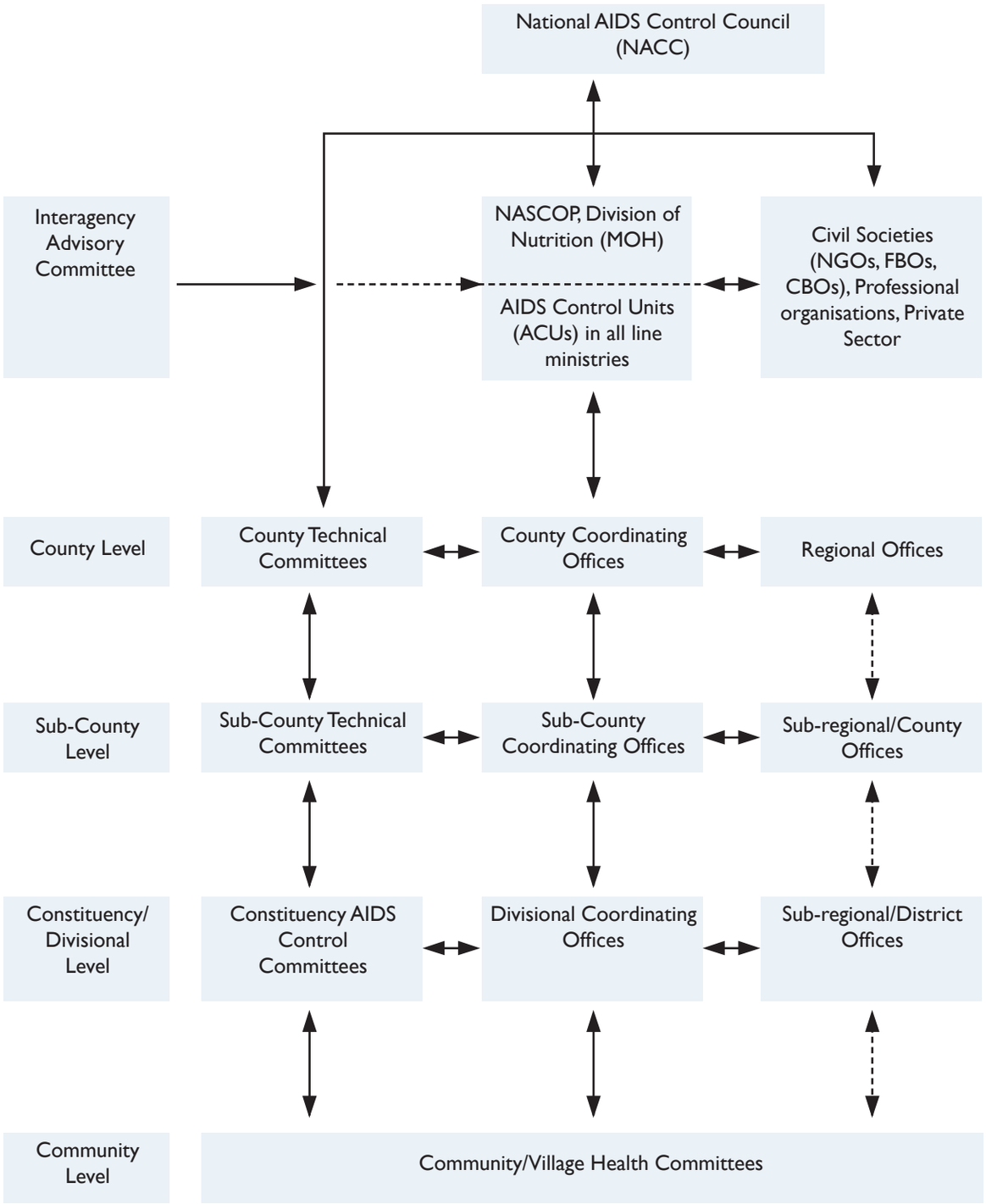
Name	Benefit	How to use
Fennel (Foeniculum vulgare)	• Aids digestion • Stimulates appetite • Combats flatulence • Anti-inflammatory • Antiseptic	• Add as spice to food. • Prepare tea from its seeds.
Lemon grass	• Aids digestion • Soothing and stress alleviation	• Use as a tea.
Parsley (Alchemilla arvenis)	• Reduces intestinal cramps and indigestion • Stimulates appetite • Stimulates stomach secretions	• Add raw or cooked to food.
Sage (Salvia officinalis)	• Stimulates appetite • Aids digestion • Anti-inflammatory effect • Stimulates the digestive respiratory, nervous and circulatory systems	• Use leaves to make tea. • Add fresh leaves to food orwarmed juice. • Gargle tea made using 2 tablespoons to a cup of boiling water. • Steam inhalation for asthma.
Thyme (Thymus vulgaris)	• Antiseptic and antifungal function Stimulates digestion • Stimulates growth of intestinalflora Increases mucous secretion in the gut	• Use leaves to make tea. • Add fresh or dry leaves to food orwarmed juice. • Gargle tea made using 2 tablespoons to a cup of boiling water.
Turmeric/ yellow root	• Aids digestion	• Use powder in cereals. Gives yellow colour to curry and rice.

(WHO and FAO, 2002)

Personal communication. Centre for Traditional Medicine and Drugs Research, Kenya Medical Research Institute, Nairobi 2005.

Herbal remedies derived from the following plants are commonly used locally for therapeutic purposes: Aloe, Ajugaremota (Wanjiru rurii), neem (Mualobaini), Warbugia ugadensis (Muthiga), Prunus Africana (Muiri), Zanthoxylum spp (Muheheti, Mugushua, Mukenia).

Annex 9: Framework for the National Nutrition Intervention in the Fight against HIV/AIDS



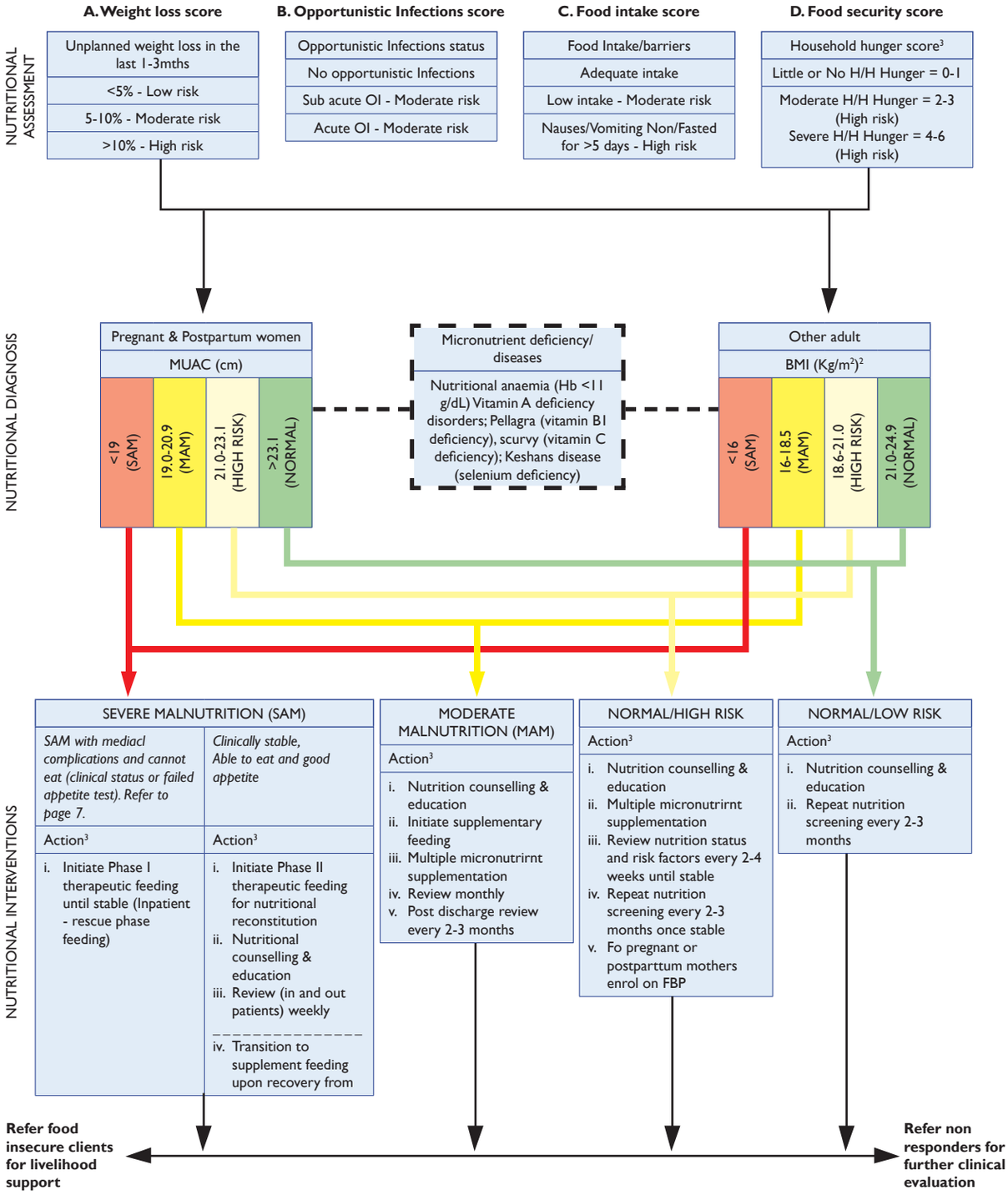
Annex 10: Indicators for Monitoring and Evaluation

Component	Objective	Indicators	Assessment method
Dissemination	To assess the effectiveness of the dissemination strategies	• Number of service providers with copies of the Guidelines • Number of service providers who are aware of the existence of the Guidelines • Number of strategies used to disseminate the Guidelines and recommendations • Availability and accessibility of Guidelines and other nutrition-promoting materials (such as posters and pamphlets) at various institutions and organizations. • Number of translations of the Guidelines into local languages.	Review of records and community based sample survey

Component	Objective	Indicators	Assessment method
Implementation	To incorporate and put in practice the guideline recommendations in the on-going programmes and services	• Number of health programmes implementing nutritional care services for PLHIV in both public and private sectors (Annex 10.1). • Number of training institutions with nutritional care and support services incorporated in their training programmes · • Number of training sessions/workshops organized for service providers at different levels • Number of service providers (counselors, health educators, extension workers, teachers, social workers) trained in the use of the Guidelines. • Number of initiatives such as home based care and workplace education initiatives in both public and private sectors that include nutritional care and support activities. • Number of PLHIV receiving nutritional care services · • Amounts of funds allocated to nutritional care and support of PLHIV.	Review of records and community based sample surveys

Component	Objective	Indicators	Assessment method
Behaviour change among service providers, PLHIV and families	To assess the acceptance of the Guidelines by the service providers and clients.	• Proportion of service providers expressing willingness to adopt or continue implementing the guideline recommendations • Number of PLHIV reporting changes in dietary behaviour based on adequacy of energy, protein and micronutrient intake. • Number of PLHIV reporting modification of lifestyles such as avoidance of alcohol and cigarettes. • Number of PLHIV who report behaviour change in frequency of eating, type of food, dietary diversity and practice of recommended dietary response to symptoms such as nausea. · • Number of families growing nutritious foods.	Sample survey and observation
Health outcome of PLHIV	To monitor the health effects of nutritional care and support Guidelines	• Number of PLHIV with improved or stabilized weight and body mass index. • Number of PLHIV who report ability to perform basic work activities. • Number of PLHIV reporting reduction in frequency and severity of symptoms of opportunistic infections.	Longitudinal sample survey and observation

Annex 11: Diagnosis and management of malnutrition in HIV infected adult



1 Refer to household food security assessment tool
2 For overweight and obese, refer for counselling
3 Implementation local clinical policy and protocol

patients

Annex 12

Management of uncomplicated under nutrition (wasting) using Food by Prescription (FBP)					
Client category	**Diagnosis**	**Eligibility criteria[1]**		**Intervention Package[2]**	**FBP exit criteria[3] & Actions**
		Primary	**Secondary**		
Orphaned and Vulnerable Children: 6-23 months	Severe under nutrition	WHZ< -3.0 Z score Or MUAC < 11.5cm Appetite test	Visible wasting Bilateral pitting oedema -/+	Infant and young child nutrition counselling Therapeutic food: 37g/kg body weight/day of RUTF. i.e 21 - 28 sachets per weekd& One bottle per month of Point of use water treatment water solution e.g. Water Guard®	WHZ = or > -1.0 Z score No oedema on 2 consecutive visits Exit client from FBP & monitor progress
	Moderate under nutrition	WFH < -2.0 Z score Or MUAC between 11.5 - 12 cm	Linked OVC[a]&	Infant and young child nutrition counselling Supplemental food e.g. 100gms FBF for children 6 months - 5 years per day i.e. one 3kg bag per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Graduate when WHZ = or > -1.0 Z score Exit client from FBP & monitor progress

Management of uncomplicated under nutrition (wasting) using Food by Prescription (FBP)					
Client category	**Diagnosis**	**Eligibility criteria[1]**		**Intervention Package[2]**	**FBP exit criteria[3] & Actions**
		Primary	**Secondary**		
Orphaned and Vulnerable Children: 24-59 months	Severe under nutrition	WHZ< -3.0 Z score Or MUAC < 11.5cm Appetite test	Visible wasting Bilateral pitting oedema -/+	Young child nutrition counselling Therapeutic food: 37g/kg body weight/day of RUTF. i.e 21 - 35 sachets per week One bottle per month of Point of use water treatment water solution e.g. Water Guard®	WHZ = or > -1.0 Z score No oedema on 2 consecutive visits Exit client from FBP & monitor progress
	Moderate under nutrition	WHZ < -2.0 Z score Or MUAC between 11.5 - 13.5 cm	Linked OVC	Young child nutrition counselling Supplemental food e.g. 200gms FBF for children 6 months - 5 years per day i.e. 2 bags (6kg) per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Graduate when WHZ = or > -1.0 Z score Exit client from FBP & monitor progress

Management of uncomplicated under nutrition (wasting) using Food by Prescription (FBP)					
Client category	**Diagnosis**	**Eligibility criteria[1]**		**Intervention Package[2]**	**FBP exit criteria[3] & Actions**
		Primary	**Secondary**		
Orphaned and Vulnerable Children:5-9 Years	Severe under nutrition	BMI for Age <3.0 Z score Or MUAC 13.5 cm Appetite test	Visible wasting Bilateral pitting oedema -/+	Nutrition counselling 276gms per day of RUTF i.e. 21 sachets per week Supplemental food e.g. 100 gms FBF for children 5 - 9 years per day i.e. 1.3kg bag per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	BMI for Age = or > -3.0 Z score No oedema on 2 consecutive visits Switch tp FBF prescriptions only
	Moderate under nutrition	BMI for Age < -2.0 Z score Or MUAC between 13.5 - 14.5 cm	Linked OVC	Nutrition counselling Supplemental food e.g. 200 gms FBF for children 5 - 9 years per day i.e. 2 bags (6kg) per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Graduate when BMI for Age = or > -1.0 Z score Exit client from FBP & monitor progress

Management of uncomplicated under nutrition (wasting) using Food by Prescription (FBP)					
Client category	**Diagnosis**	**Eligibility criteria[1]**		**Intervention Package[2]**	**FBP exit criteria[3] & Actions**
		Primary	**Secondary**		
Orphaned and Vulnerable Children: 10-15 Years	Severe under nutrition	BMI for Age <3.0 Z score Or MUAC < 14.5 cm Appetite test	Visible wasting Bilateral pitting oedema -/+	Nutrition counselling Therapeutic food e.g. 276gms per day of RUTF i.e. 21 sachets per week Supplemental food e.g. 300gms per day FBF Adults and Adolescents 10 - 15 years i.e. 4.5kg bag per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	BMI for Age = or > -3.0 Z score No oedema on 2 consecutive visits Switch tp FBF prescriptions only
	Moderate under nutrition	BMI for Age < -2.0 Z score Or MUAC between 14.5 - 18.5 cm	Linked OVC	Nutrition counselling Supplemental food e.g. 300 gms per day FBF for Adults and Adolescents 10 - 15 years i.e. 2 bags (9kg) per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Graduate when BMI for Age = or > -1.0 Z score Exit client from FBP & monitor progress

Management of uncomplicated under nutrition (wasting) using Food by Prescription (FBP)					
Client category	**Diagnosis**	**Eligibility criteria[1]**		**Intervention Package[2]**	**FBP exit criteria[3] & Actions**
		Primary	**Secondary**		
Orphaned and Vulnerable Children: 15+ years Adults: 18 years and above	Severe under nutrition	OVC BMI for Age < - 3.0 Z Score Or OVC MUAC < 14.5 cm HIV +ve BMI < 16kg/m2 Or MUAC < 16-18.5cm with WHO stages 2 or 3 criteria Appetite test	Visible wasting Bilateral pitting oedema -/+	Nutrition counselling Therapeutic food e.g. 276gms per day of RUTF i.e. 21 sachets per week Supplemental food e.g. 300gms per day FBF Adults and Adolescents 10 - 17 years i.e. 4.5kg bag per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	BMI = or > 166 kg/m2 No oedema on 2 consecutive visits Switch tp FBF prescriptions only
	Moderate under nutrition	OVC BMI for Age < - 2.0 Z Score Or OVC MUAC between 14.5 - 18.5 cm HIV +ve BMI < 16 to 18.5kg/m2 Or MUAC between 16-18.5cm		Nutrition counselling Supplemental food e.g. 300 gms per day FBF for Adults and Adolescents 10 - 17 years i.e. 2 bags (9kg) per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Graduate when BMI > 18.5 kg/m2 on 2 consecutive months or MBMI > 20 kg/m2 Exit client from FBP and monitor progress

Management of uncomplicated under nutrition (wasting) using Food by Prescription (FBP)					
Client category	**Diagnosis**	**Eligibility criteria[1]**		**Intervention Package[2]**	**FBP exit criteria[3] & Actions**
		Primary	**Secondary**		
Pregnant Women	Severe under nutrition	HIV+ve MUAC < 19 cm Appetite test	Visible wasting Bilateral pitting oedema -/+ BMI < 20kg/m2	Maternal nutrition and infant feeding counselling Routine ANC counselling, referral& follow up Therapeutic food e.g. 276gms per day of RUTF i.e. 21 sachets per week Supplemental food e.g. 300gms per day FBF Pregnant and Postpartum mothers i.e. 4.5kg bag per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	BMI = or > 20kg/m2 OR MUAC = or > 19cm and weight gain = or > 1.3 kg/ monthe& Switch to FBF prescriptions only
	Moderate/Mild under nutrition; Poor weight gain [b]&	HIV +ve MUAC between 19 -22 cm And /Or Low weight gain of < 1.3 kg/month (Low gestational weight gain)	BMI < 20Kg/m2 Failure to gain weight despite OI control & or ART	Maternal nutrition and infant feeding counselling Supplemental food e.g. 300gms per day FBF Pregnant and Postpartum mothers i.e. 2 bags One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Graduate when: BMI = or > 20kg/m2 OR MUAC = or > 23cm and if weight gain = or > 1.3 kg/ month Exit client from FBP & monitor progress

Management of uncomplicated under nutrition (wasting) using Food by Prescription (FBP)					
Client category	**Diagnosis**	**Eligibility criteria[1]**		**Intervention Package[2]**	**FBP exit criteria[3] & Actions**
		Primary	**Secondary**		
Post-Partum women (1st 6 months)	Severe under nutrition	HIV+ve MUAC < 19 cm Appetite test	Visible wasting Bilateral pitting oedema -/+ BMI < 20kg/m2	Maternal nutrition and infant feeding counselling Routine Post natal counselling, referral& follow up Therapeutic food e.g. 276gms per day of RUTF i.e. 21 sachets per week Supplemental food e.g. 300gms per day FBF Pregnant and Postpartum mothers i.e. 4.5kg bag per month One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Steady weight gain after 6 weeks And MUAC = or > 19 cm Or BMI = or > 20 kg/m2 No oedema on 2 consecutive visits Switch tp FBF prescriptions only
	Moderate/Mild under nutrition; Rapid weight loss c&	HIV +ve MUAC between 19 -23 cm And /Or Non intentional rapid weight loss of > 0.7 kg/month in normal & low BMI clients	BMI < 20Kg/m2 Failure to gain weight despite OI control & or ART	Maternal nutrition and infant feeding counselling Supplemental food e.g. 300gms per day FBF Pregnant and Postpartum mothers i.e. 2 bags One bottle per month of Point of use water treatment water solution e.g. Water Guard®	Graduate when: BMI = or > 20kg/m2 & weight loss is < 0.5 kg/month for 2 consecutive months; OR BMI = or > 20kg/m2 and steady weight gain is observed on 2 consecutive months Exit client from FBP & monitor progress

Chart notes

1. **Client enrollment in FBP support is based on primary eligibility criteria.**
   - Presence of bilateral pitting edema and MUAC values corresponding to moderate under nutrition is managed the same way as severe under nutrition until two weeks after edema has disappeared.

a ♂ OVC refres to siblings in the same household as index child but Not receiving care from CCC or treatment centre

b ♂: Pregnant and post –partum (first 6 months after delivery) women:

♂: Normal and moderately undernourished with low weight gain < 1.3 kg/month in consecutive months during 2nd and 3rd trimesters.

c ♂: Normal and moderately undernourished with rapid weight loss in consecutive months after 6 weeks

2. **Ready to use therapeutic food (RUTF):** Used alone in 6~59 months old or in combination with supplemental foods for other age groups is used in management of severe acute under nutrition.
   - Reviews and RUTF prescription refills are done weekly.
   - Supplemental foods e.g. fortified blended flours (FBF) alone or ready to use supplemental formulations are used in the management of moderate acute under nutrition.
   - Reviews and FBF prescription refills are done monthly.

Note: In children, actual RUTF dose should be determined on the basis of current weight and age.

d ♂ : Intake of 37g /kg body weight/day of RUTF yields 200 kcal/kg body weight/day.
   - The weekly RUTF prescription for an OVC aged 6–23 months on average ranges between 21 and 28 sachets.

3. **Discharge from FBP support is based on attaining appropriate anthropometric cutoff points.**
   - ***Index OVC:*** Discharge when weight–for–height equal to or greater than –1.0 (or corresponding weight gain of 15% to 20% of enrollment weight) in children.
   - ***Linked OVC:*** Discharged at the exit point of the Index OVC.
   - ***Adult PLHIV:*** Discharged after attaining BMI> 18.5 on 2 consecutive months or attaining BMI equal to or greater than 20, whichever comes first.
   - ***Pregnant and postpartum women:***(e♂) Consistent weight gain in pregnant women during 2nd and 3rd trimester for 2 consecutive months
   - ***All clients:*** Discharge and refer for evaluation if clients does not gain weight or continues to loose weight in successful visit despite adequate intake or edema persists for 2~3 weeks or failure of appetite test (ability to consume an estimated dose of RUTF for one day). Treatment with RUTF should be limited to 90 days and FBF supplementation should **Not** exceed 6 months.

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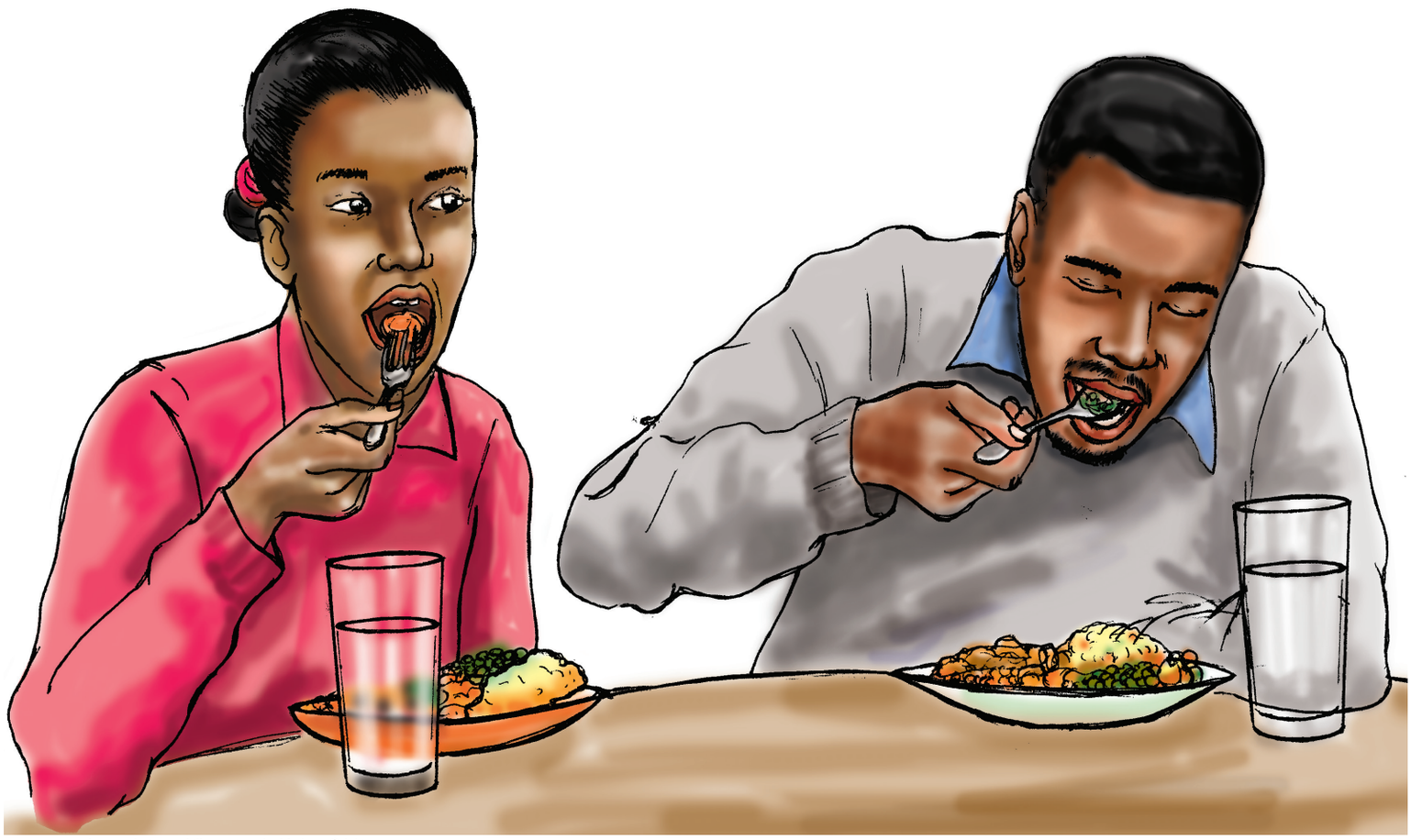

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