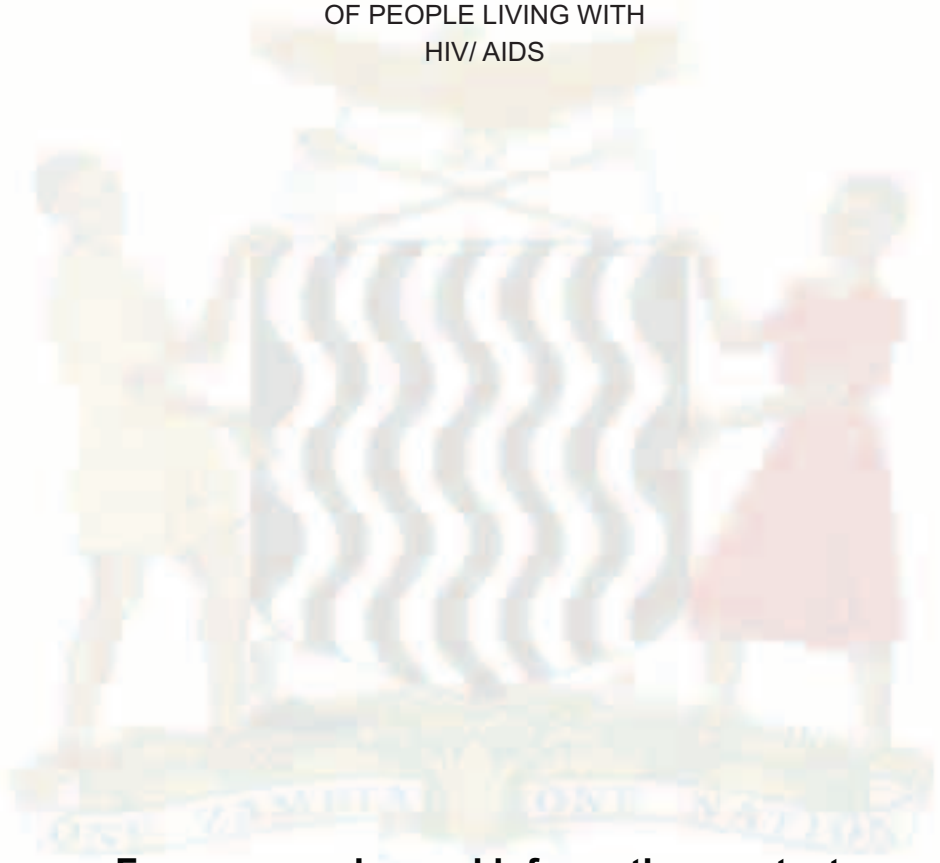
NUTRITION GUIDELINES

FOR CARE AND SUPPORT
OF PEOPLE LIVING WITH
HIV/ AIDS



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FOREWORD

The Zambian population has not been spared from the effects of the HIV and AIDS pandemic. A lot of efforts have been made by the Government with its cooperating partners, local and international organisations and other groups to come up with a number of interventions to reduce the spread of HIV, and indeed to lessen its burden on the household livelihoods and national economy.

It is a known fact that good nutrition plays an important role in keeping the health of individuals. Individuals with poor nutrition often experience fast progression of HIV infection to AIDS. Good nutrition plays a greater role in tissue repair and improving the immune system. Because of this, there is an increasing demand for including nutrition concerns in HIV and AIDS prevention and management to improve survival rates of those affected.

As a result, a number of recommendations on nutrition in the HIV and AIDS control, have been recorded by a number of individuals, researchers, and agencies such as the Food and Nutrition Technical Assistance (FANTA), SARA/AED, and the UN agencies, including WHO, FAO, UNAIDS, just to name a few. Globally, one of the recommendations called for individual countries to develop or adapt guidelines on the nutritional care and support for People Living with HIV and AIDS (PLWHA), to which Zambia committed herself. Knowing how important the nutritional care and support for PLWHA was, the Government initiated the development of these guidelines.

A team, led by the National Food and Nutrition Commission (NFNC), took up the challenge and came up with these guidelines that have been adopted to the Zambian situation. The guidelines will provide first hand information to individuals and organizations that give nutritional care and support to PLWHA. It is my sincere hope that these guidelines will be put into practice by the service providers at all levels, PLWHA and their families, in order for the country to get better health outcomes for all those directly or indirectly affected with HIV and AIDS. Furthermore, once the effects of HIV and AIDS are reduced, the country will be able to devote more resources to economic development.

Honourable Dr. Brian Chituwo, MP.
Minister of Health.
November, 2004.

ACKNOWLEDGEMENT

The Ministry of Health, through the National Food and Nutrition Commission, in collaboration with the Central Board of Health, would like to appreciate the contributions made by various partners in the development of these guidelines. Among the notable ones are the National AIDS Council, USAID/Zambia for providing the financial and technical support in the development and printing of these guidelines. We also thank all the other stakeholders and development partners who participated in one way or the other in the development, reviewing and finalization of this document.

Our sincere gratitude goes to our colleagues from the Network of Zambian PLWHA (NZP+) and KARA Counselling and Training Trust, for their valuable input in ensuring that the material is tailored towards meeting the various needs for PLWHA in the most practical manner.

We appreciate the technical input from the Food and Nutrition Technical Assistance (FANTA), the SARA/AED, Regional Centre for Quality of Health Care (RCQHC) in Uganda, LINKAGES/Zambia, UNICEF and WHO.

Lastly, our gratitude is extended to individuals from the National Food and Nutrition Commission (NFNC) and the Central Board of Health (CBoH) who worked tirelessly to put together pieces of material that led to the production of this document.

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ACRONYMS

AED	**Academy for Educational Development**
AIDS	**Acquired Immune Deficiency Syndrome**
ANC	**Antenatal Clinic**
ART	**Antiretroviral Therapy**
ARV	**Antiretroviral**
AZT	**Azidothymidine**
BCC	**Behaviour Change Communication**
CBO	**Community Based Organisation**
DRI	**Dietary Recommended Intake**
FANTA	**Food and Nutrition Technical Assistance Project**
FBO	**Faith Based organization**
HEPS	**High Energy Protein Supplements**
HIV	**Human Immunodeficiency Virus**
IEC	**Information, Education and Communication**
IU	**International units**
MOH	**Ministry of Health**

ACRONYMS

MTCT	**Mother-To-Child Transmission**
MTP	**Mid Term plan**
NAC	**National AIDS Council**
NAP	**National AIDS Policy**
NFNC	**National Food and Nutrition Commission**
NGO	**Non-Governmental Organization**
ORS	**Oral Rehydration Solution**
PLWHA	**People living with HIV and AIDS**
PMTCT	**Prevention of mother-to-child-transmission**
SARA	**Strengthening Applied Research in Africa**
TB	**Tuberculosis**
UNICEF	**United Nations Children's Funds**
VCT	**Voluntary Counselling and Testing**
WHO	**World Health Organization**
ZDV	**Zidovudine**
ZIHP-Serve	**Zambia Integrated Health Program**

DEFINITIONS

Advocacy: Speaking or writing in support of someone or something

AIDS: A group of illnesses caused by the human immunodeficiency virus that weakens the immune system.

Antioxidant: Something added to a product to prevent or delay its deterioration by oxygen or air.

Anti-retrovirals: Drugs used for HIV prophylaxis or treatment; however they are not a cure for HIV disease.

Balanced Diet: Consumption of a variety of foods which provide all nutrients in the correct proportions.

Beri-beri: A condition caused by vitamin B1 deficiency that affects the nerves, causes heart disease as well as body swelling (oedema).

CD4: CD4 cells are white blood cells which organize the immune systems' response to some micro organisms including bacteria, fungal infection and viruses.The CD4 count is the measurement of the number of CD4 cells, in a cubic millimetre of blood.

Chronic infection: An infection that is long standing.

Diet: The customary amount and kind of food and drink taken by a person from day to day

Digestion: The process of breaking down food and releasing nutrients in the body.

Enzymes: Biological catalysts that enhance or inhibit chemical reactions.

DEFINITIONS

Exclusive breast feeding:	When an infant receives only breast milk and no other liquids or solids, not even water, unless medically indicated.
Immune-compromised:	Weakened body defence system leading to easy attack by viruses and bacteria.
Indigenous food:	Available foods native to the country/ community.
Lean Body Mass:	Weight of the body without the fat.
Legumes:	Plant sources of protein e.g beans, peas, groundnuts, cowpeas.
Malabsorption:	Failure of the digestive tract to absorb nutrients into the body.
Malnutrition:	A condition caused by inadequate or excess intake of nutrients. In these guidelines it refers to undernutrition (inadequate intake).
Marinate:	Steeping or soaking food, e.g. meat, in a mixture of vinegar, oil and spices before cooking.
Meal:	The food served or eaten at a given time during the day e.g. Breakfast, lunch, supper.
Metabolic disturbances:	Disruptions in the process of breaking down nutrients and elimination of end products of food.
Metabolism:	The continuous chemical processes taking place in living cells including the release of energy for the body.

DEFINITIONS

Mixed feeding: Feeding both breastmilk and other foods or liquids.

Morbidity: Sickness in an individual or community.

Mortality: Deaths in the community.

Nutrient: A substance or component of food. Food contains carbohydrates, different nutrients that include water, proteins (amino acids), fats (lipids), vitamins and minerals.

Nutrition: The processes involved in taking in nutrients and assimilating and utilizing them.

Nutritional status: A measurement of the extent to which the individual's physiological needs for nutrients are being met.

Nutritious diet: The kind of food or drink that has a mixture of a variety of foods to provide all essential nutrients for the body.

Opportunistic infections: Denotes an infection by a micro-organism which does not ordinarily cause disease but becomes infectious under certain conditions, such as when the immune system is impaired.

Pellagra: A syndrome due to vitamin B3 (Niacin) deficiency in the diet marked by cracking of the skin, diarrhoea, mental disturbances and eventually death.

Replacement feeding: Feeding infants who are not getting breast milk with a diet that provides the nutrients infants need until the age they can be fully fed on family foods.

DEFINITIONS

Snack: A quantity of food that is readily available and can be eaten without much preparation, and is usually taken between main meals.

Viral load: The amount of HIV in the blood of an HIV-positive person. The higher the viral load the higher the risk of disease progression to AIDS.

Chapter 1

INTRODUCTION

1.1 Background

HIV and AIDS Statistics

Zambia is hard hit by HIV and AIDS. Based on the 2001-2002 population based survey, the national HIV prevalence was estimated at 16%. The prevalence rate is higher in urban areas than in rural areas, 23% and 11% respectively. Women (18%) have a higher prevalence than men (13 %). About 25% of pregnant women are HIV positive and approximately 39% of babies born to HIV positive mothers are infected with the virus. The number of orphans from HIV/AIDS is currently estimated at 630,000 (0-17 years).

The effects of HIV and AIDS have been drastic at national, community, family and individual levels. HIV and AIDS have contributed to poverty and have reduced the numbers of the productive members of the society that is the 15-45 age groups. HIV and AIDS have had a negative impact on some health indicators: the life expectancy at birth has dropped from 52 years in the 1980s, to 47 years in 1990s and 50 years in 2000. (CSO, 2003). HIV and AIDS have also increased the disease burden and increased pressure on the health care systems.

Nutritional Status

Malnutrition levels have continued to be high in recent years in Zambia, giving a challenge to the health care providers and policy makers. Data from the Zambia Demographic Health Survey (ZDHS) of 2001/02, show that 47% of Zambian children aged 0-59 months are stunted, 5 % are wasted and 28% are underweight. Malnutrition rates amongst women of childbearing age are also quite high with low body mass index rate of 13% (BMI lower than 18.5) and low birth weights of 11%.

Although there has been a reduction in vitamin A and iron deficiencies, there are still high numbers affected by these micronutrient deficiencies.

According to the National Vitamin A impact study, vitamin A deficiency, rates among children below under-five years are at 54% (2003) as compared to 65.7% (1999). In the same period, anaemia rates were found to be at 50% as compared to 65% in 1997 in the same age group.

There has been an increase in food production in the recent years. However, there are some geographical spots in the country that are still food insecure. These include those affected by floods and droughts. Eighty percent of the population is below the poverty datum line, and therefore, most of it is at risk of food insecurity.

1.2 Government's Response to the HIV Epidemic

The Zambian Government's commitment in the fight against HIV/AIDS is noted through the following important events:

- 1984: First confirmed case of HIV and AIDS in Zambia (retrospective diagnosis).
- 1986: National Aids Prevention and Control Programme (NAPCP) set up.
- 1987: Emergency short-term plan developed to ensure safe blood and blood product supplies.
- 1988-1992: First MTP which prioritised eight operational areas: TB and leprosy, IEC, counselling, lab support, epidemiology and research, STD and clinical care (including Nutritional care), programme management and home-based care.
- 1994-1998: Second MTP that involved a multi-sectoral approach in design and incorporated a mechanism for inter-co-ordination and collaboration.
- 1999-2003: Creation of a semi autonomous, multi-sectoral National AIDS Council (NAC).
- 2000-2002: PMTCT secretariat set up.
- 2000-2002: Ndola Demonstration Project to integrate infant feeding counselling in the context of HIV/AIDS.

- 2003-2004: Scaling up ARV treatment.

- Ongoing: Capacity building and scaling up of interventions in the area of HIV/AIDS.

1.3 Policy and Institutional Framework

Zambia has a draft national policy on HIV/AIDS. Currently there is a strategic framework that outlines the interventions on prevention, treatment and care. The policy places emphasis on multi-sectoral responses involving Government ministries, the private sector, religious groups and civil society.In line with this strategic framework, a national plan for care and treatment of PLWHA has been developed.

The National HIV/AIDS Council Strategic Framework addresses eight specific objectives, one of which relates to nutrition as part of the care and treatment of PLWHA. It states: "To improve the quality of life of PLWHA by encouraging positive living, *good nutrition,* prevention of opportunistic infections and avoiding high risk behaviour". Lately, the scaling up of ARVs has also become a major part of the strategy.

1.4 Rationale for the guidelines

Nutrition is considered as a very important part in the treatment and care of HIV/AIDS. To fulfil the mandate of NAC, nutrition guidelines are needed to give information on the nutritional care and support for the people living with HIV/AIDS.

1.5 Target for the guidelines

The guidelines give useful and practical information for those that give care and support to PLWHA. Some of these are the health care providers, nutritionists, social welfare development workers, interest groups, FBOs, CBOs, politicians, NGOs, extension workers, teachers and the affected families. They are well intended for the practical applications, policy formulation and implementation, and review of the impact on overall health outcomes, especially those related to the HIV and AIDS progression and case management.

1.6 Layout of the guidelines

The guidelines are given in 11 chapters. Chapters 2 and 3, give information on basic nutrition for an active and healthy life, and technical information that link nutrition and HIV. Chapters 4 to 9 give advice on the diet, treatment, herbal remedies, positive living and other types of care. Nutritional counselling and education,monitoring and evaluation for the implementation of the guidelines are covered in Chapters 10 and 11.

1.7 How to Use the guidelines

The guidelines give a general approach to different types of conditions in Zambia. Each service provider will need to adapt the recommendations according to given situations or to the needs of the individual client to whom the services are being offered. The guidelines can be used to:

- Create messages that promote good nutrition for all, especially people living with HIV/AIDS.
- Develop more detailed and specific operational guidelines and materials to communicate to caregivers and PLWHA.
- provide nutritional and dietary counselling to people living with or affected by HIV/AIDS.
- Design monitoring and evaluation systems for the nutritional parts of HIV/AIDS programmes and interventions.

These guidelines can be used together with the following reference materials:

Food for people living with HIV/AIDS, second edition, Network of Zambian people living with HIV/AIDS, 2002.

Linkages 2003. Infant feeding options in the context of HIV/AIDS, LINKAGES, Lusaka, Zambia.

LIVING WELL WITH HIV/AIDS: *A manual on nutrition care and support for people living with HIV/AIDS, WHO/FAO, 2002.*

Chapter 2

NUTRITION AND HIV/AIDS

2.1 HIV and Its Progression

Acquired Immune Deficiency Syndrome (AIDS) is a disease caused by a retrovirus known as Human Immunodeficiency Virus (HIV). The virus attacks the immune system, and weakens the body's natural defence system to fight against infection. The virus may take years to make the infected person ill. This is called the asymptomatic stage.During this stage, the immune system of a person infected with HIV would be getting weaker and other viruses and bacteria could take "opportunity" of the weakened immune system leading to illnesses. When the HIV infected person starts getting *opportunistic infections* such as Pneumonia and/or Tuberculosis, it shows that the immune system has been weakened, and the person is said to have AIDS, the last stage of the HIV infection.

The time it takes for a person to progress from HIV to AIDS depends on the individual's general health and nutritional status. If HIV infected persons take care of their health, including good nutrition, the progression from HIV to AIDS-related diseases is delayed, thus improving the quality of life. It is, therefore, very important to give nutritional care and support as part of the comprehensive care and treatment of persons infected with HIV/AIDS.

2.2 Basics of Nutrition

Nutrition is the process of taking and using food in the body. Food has the different nutrients that the body needs for:

- The development, growth, maintenance, replacement and repair of cells and tissues;
- Resisting and fighting infections and;
- The production of energy-warmth, movement and work.

When the body does not get enough quality food, it becomes weak and cannot function properly.

The nutrients that the body needs to function include, carbohydrates, proteins, fats, vitamins, minerals and water. Some of these nutrients such as carbohydrates, proteins and fats are needed in large amounts and are called macronutrients.

Other nutrients such as vitamins and minerals are needed in smaller amounts and are called micronutrients. Both the macro and micronutrients are essential and are required in the right amounts and combinations for the body to function properly **(Annex 1).**

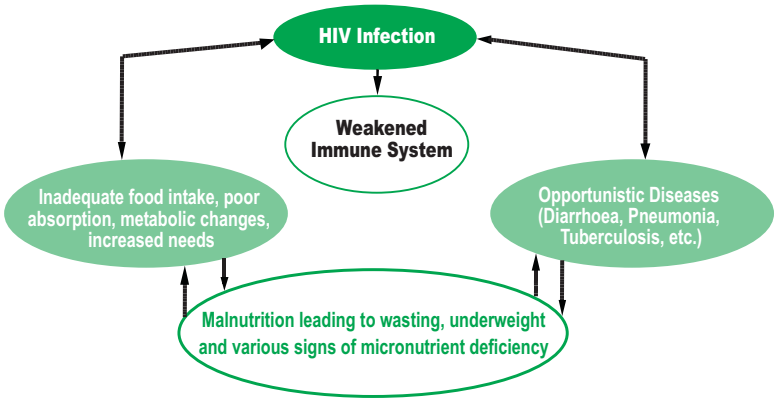
Good nutrition is when you eat a variety of safe and right foods and in the right quantities to meet the body's needs.

A *balanced diet* is one that has a variety of foods and all the nutrients in the right amounts and combinations daily to meet the body's functional needs. No single food, except breast milk for the first 6 months of life, gives all the nutrients that the body needs to function well . Eating a variety of foods is a key factor for good health for everyone, especially for people with special needs, such as infants and young children, adolescents, pregnant and lactating women, elderly and the sick.

2.3 Link between Nutrition and HIV/AIDS

Malnutrition is a prominent feature of HIV/AIDS. The relation between malnutrition and HIV creates a vicious cycle that weakens the immune system (as shown in the figure below).

FIGURE 1: Relation between HIV and Nutrition



Malnutrition leads to immune impairment that worsens the effect of HIV/AIDS. Malnutrition, therefore, can contribute to and at the same time come from the progression of HIV/AIDS. Persons with HIV are at increased risk of developing malnutrition through various mechanisms, some of which are not related to food intake. Poor nutrition increases the chances of getting opportunistic infections. This may speed up the progression of HIV to AIDS.

HIV infection is more complicated than other infections because the virus attacks and destroys the cells of the immune system, which later affects other body organs, as they are easily attacked by other various infections. These infections affect the nutritional status by reducing dietary intake and nutrient absorption. At the same time they increase the utilization and excretion of other nutrients. This leads to malnutrition, including certain micronutrient deficiencies as the body tries to fight the HIV attack on its immune system. This usually contributes to the weight loss and the wasting syndrome, mostly noted in adult AIDS patients. Decreased food intake is the most prominent factor leading to the development of malnutrition and subsequent wasting. Other major causes include malabsorption and alterations in metabolism.

The effect of HIV on the body's nutritional status begins early in the course of the HIV infection, even before symptoms are seen. It is important to address and quickly treat malnutrition early as it negatively affects the immune function and is associated with HIV disease progression.

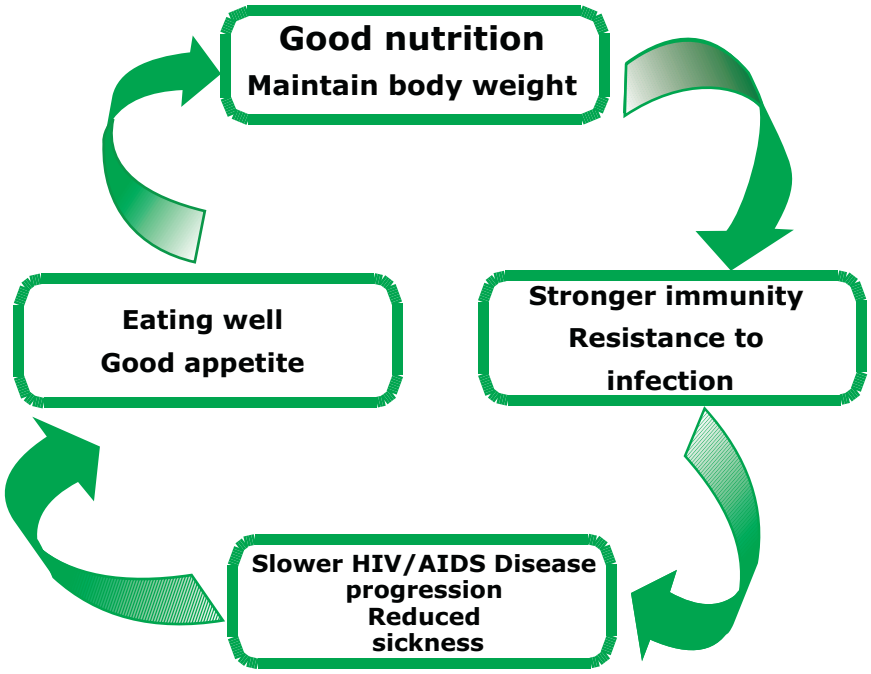
Good nutrition can play an important role in the care and management of HIV/AIDS.

Impact of good nutrition for PLWHA

- *Helps prevent malnutrition and wasting*
- *Enhances the body's ability to fight opportunistic infections*
- *Helps to achieve and maintain optimal body weight*
- *Improves the effectiveness of medications*
- *Helps to prolong good health*
- *Improves the quality of life*

The figure below illustrates the relationship between good nutrition and HIV/AIDS.

FIGURE 2: The relationship between good nutrition and HIV/AIDS



Source. WHO/FAO manual on nutritional support and care for PLWHA, 2002

Malnutrition in PLWHA may include the following clinical signs and symptoms such as: (see also Annex 1)

- Weight loss,
- Loss of muscle tissue and subcutaneous fat,
- Sores at the corners of the mouth.
- Increased susceptibility to infection,
- Diarrhoea and poor absorption,
- Poor response to medication
- Hair changes and hair loss

Poor nutrition status may result from a number of causes such as:

- **Increased need of nutrients.**
- **Diarrhoea which causes poor absorption resulting in poor utilization of ingested foods and nutrients.**
- **Reduced food intake due to:**
  - **Reduced appetite due to infection,**
  - **Mouth infection (including candida) which makes it painful to eat or suckle,**
  - **Depression,**
  - **Side effects of drugs,**
  - **Poverty,**
  - **Poor quality of food,**
  - **Poor variety of foods,**
  - **Nausea,**
  - **Weakness**

2.4 Nutritional Needs for Adults Living with HIV/AIDS

Most people living with HIV/AIDS will experience weight loss at some point in time. There is a relationship between loss of weight or lean body mass and mortality in HIV patients. In order to prevent weight loss or maintain weight, fight infection, build and maintain muscle mass, it is important to have enough nutrient intake at all times. This is crucial as the energy needs of the PLWHA are increased due to the HIV infection itself, opportunistic infections and changes in the body's metabolism. PLWHA therefore, need a diet that provides all the essential nutrients (carbohydrates, protein, fat, minerals and vitamins) to meet the increased nutritional needs.

Energy Needs

The increased energy needs will depend on whether the PLWHA do or do not have symptoms. The HIV infected person who has no symptoms, i.e. is asymptomatic, requires **10%** more energy above the level recommended for a healthy non-HIV infected person of the same age, sex and physical activity level. If the HIV infected person has symptoms, i.e. symptomatic, he or she requires **20%-30%** more energy above the level recommended for a healthy non-HIV infected adult of the same age, sex and physical activity level.

Protein Needs

WHO does not recommend increased protein intake by HIV-infected persons. The protein needs for the HIV infected adult are the same as those recommended for a healthy non-HIV infected adult. The recommended protein intake for a healthy non-HIV infected adult is 12-15% of the total energy needs or 0.8g/kg for females and 0.85g/kg for males.

There are, however, other factors that increase protein needs. Some of these are illness, surgery, infection, trauma, and pressure ulcers. It is, therefore, important to consider pre-existing or concurrent protein deficiencies.

If energy intake is insufficient, protein will be used to provide the body with energy. This means that there will be less protein available for maintaining muscle tissue and strengthening the immune system and in children less protein for growth and development. It is, therefore, important to have **adequate energy intake at all times,** especially during infections. In this way, protein may be used for building or maintaining lean muscle and strengthening the immune system.

Fat Needs

WHO does not recommend increased fat intake over what is recommended for a healthy non-HIV infected individual. Dietary fat is a good source of essential fatty acids, vitamins and concentrated energy. Fat can be used to help meeting increased energy needs if the patient does not have fat malabsorption or diarrhoea. However, the WHO Technical Advisory Group on nutrition and HIV/AIDS, recognized that individualized advice regarding fat intake might be required in individuals on anti-retroviral therapy and among those with persistent diarrhoea. The recommended intake for fat for a healthy adult is 30-35% of the total energy needs.

Micronutrient Needs

Many vitamins and minerals are important for the HIV-infected individual due to their role in immune system function.

Micronutrient deficiencies of Vitamins A, C, E, B_6, B_{12}, folate and minerals such as zinc, iron and selenium are common among HIV infected individuals due to excessive losses in the urine. Correcting these deficiencies when they exist may help to slow down the disease progression.

WHO does not recommend additional intake of micronutrients above and over the recommended dietary allowance (RDA).*The recommendation is not to exceed two times the RDA*.

Caution should be exercised as excessive amounts of some micronutrients (Vitamin A, Vitamin E, zinc and iron) have been shown to impair or speed up disease progression rather than improve the immune system.

Table 1. Recommended Dietary Allowance for a healthy non-HIV infected adult (19-50 years of age) and the upper levels (UL):

	Vit A Ug/d	Vit C mg/d	Vit E mg/d	Vit B_6 mg/d	Vit B_{12} Ug/d	Folate Ug/d	Zinc mg/d	Iron mg/d	Selenium ug/d
RDA									
Men	900	90	15	1.3	2.4	400	11	8	55
Women	700	75	15	1.3	2.4	400	11	18	55
UL									
Men	3000	2000	1000	100	-	1000	40	45	400
Women	3000	2000	1000	100	-	1000	40	45	4

Source: Institute of Medicine, Washington, DC. Food and Nutrition Board. Dietary Reference Intakes, 2000, 2001

RDA = Recommended Dietary Allowance

UL = maximum level of daily nutrient intake that is likely to pose no risk of adverse effects. It represents total intake from food, water and supplements. There is no established UL for vitamin B_{12}, extra caution is warranted in consuming levels above the recommended intake.

2.5 Use of Local and/or Indigenous Foods to Meet Energy and Nutrient Needs for PLWHA

In order for the PLWHA to meet their increased energy needs, they need to be encouraged to:

- Increase the amount and variety of food they eat, that is eat more than their usual amounts;
- Eat more frequently throughout the day, by having small, frequent meals. This helps to maximize energy intake especially if appetite is a problem;
- Eat more nutrient dense foods with each meal as much as possible and;
- Consume foods fortified with essential nutrients such as iron, B-vitamins.

Locally available and/or indigenous foods can provide a healthy diet for the PLWHA. These foods are often easy to prepare and provide a number of essential nutrients. Locally available and indigenous foods are generally wholesome, affordable, accessible, unrefined or less processed and often have a lot of nutrients. Such foods should be part of the balanced diet.

A list of locally available foods and their use in the body is provided in **Annex 2**

Energy-Giving Foods:

Carbohydrates:

Staples are the main source of carbohydrates in the diet and usually make up the biggest part of a meal. They provide the body with energy and some protein. In addition, some staples also contain some vitamins and minerals that help the body to make use of the food. Staples are usually produced locally and are therefore, usually more affordable, readily available, and accessible. They may vary from province to province in the country.

However, eating only staple foods is not enough to provide all the essential nutrients the body needs. Other foods should be eaten in combination with the staples to make up a nutritious diet.

Staples include foods such as rice, maize, millet, sorghum, potatoes, sweet potatoes, bread, pasta, cassava and green bananas.

Fats and oils:

Fats and oils are a great source of energy in the diet, especially when one needs extra energy to help weight gain. Fats and oils provide more than twice the energy of an equivalent amount of carbohydrates. They add flavour and taste to food that helps stimulate appetite and are a good source of essential fat-soluble vitamins A, D, E and K. Excess consumption of fat, however, can lead to obesity or heart disease. PLWHA, who have fat malabsorption or diarrhoea, should limit intake of fats and oils depending on individual tolerance.

Good diets should contain fats/oils but in moderation

Fibre:

Fibre, also known as roughage, is important for the movement of the bowels. Dietary fibres are carbohydrates that the body cannot break down and use to produce energy. Fibre, however, helps the food to move through the digestive tract and, therefore, help to prevent constipation.

It also causes a sense of fullness that may lead to eating less and reduce the likelihood of obesity. If a person has diarrhoea it is best to avoid whole grains and cereals. In this case suitable foods include banana, rice water, rice porridge and well-cooked carrots. However, fibre reduces the absorption of some nutrients like iron, zinc and other minerals. It is recommended that people at risk of anaemia take foods rich in fibre with caution. The best source of fibre in the Zambian diet is from whole grains, fruits and vegetables.

Good diets should contain whole grains, cereals, fruits and vegetables

Body building foods:

Protein:

Proteins are also known as body building foods because the body uses them to grow, build and repair body tissues and muscles. Proteins are essential for cell growth. There are two main types of protein in the diet: animal protein and plant protein.

Every meal should contain at least one body building food.

Animal proteins include meat, poultry, fish, offals, cheese, eggs, fresh milk and sour milk. Animal protein provides a higher quality of protein including many vitamins and minerals that are essential for the proper functioning of the body.

Plant proteins include legumes (beans, peas, soya beans, peanuts, and other nuts). If plant proteins are properly combined, they can provide good quality protein (Refer to NZP^{+} recipe book and Zambian Traditional Food, FAO/Ministry of Agriculture Food and Fisheries, 2000.

Whenever possible, a diet should contain some meat, fish or other foods from animals as often as you can afford them. These provide high quality protein, vitamins and minerals that help to build muscle and strengthen the immune system.

Protective food:

Vitamins and Minerals:

Fruits and vegetables make up what are referred to as the protective foods. They contain essential vitamins and minerals that keep the body functioning and strengthen the immune system. Eating a variety of fruits and vegetables every day is one way of ensuring a healthy and nutritious diet.

Fruits and vegetables are also good sources of fibre (roughage) in the diet. They help to prevent constipation. Food based sources of vitamins and minerals are the best choice.

Food based sources of vitamins and minerals are the best choice. The use of multivitamins is recommended over the use of taking an individual micronutrient, because excesses of some single micronutrients can be harmful. Multivitamins are **not** a *"magic bullet",* in that they should not replace healthful food choices. Fortified/enriched foods, cereals and grains, where available and affordable, are also a good source of some essential vitamins and minerals and can be incorporated as part of a nutritious diet.

A variety of vegetables and fruits should be eaten every day

Water:

Though *water*[1] is vital in nutrient utilization in the body it is not in itself a nutrient but a carrier is an important component of the body and its functions. Water is lost from the body through sweat, urine, breath, and faeces and should, therefore, be replaced. Water is also lost when a person has fever or diarrhoea. It is recommended for an adult to drink at least two litres or about 8 cups (250 mls a cup) of water daily. The water should be safe, clean, boiled or chlorinated. Water is also found in teas, soups, milk, juices and fruits. PLWHA need to drink plenty of water or fluids, especially when they have diarrhoea, vomiting and/or fever. Excessive amounts of tea and coffee, however, are dehydrating because of the caffeine and should be drunk in moderation. They also contain substances that bind essential nutrients, for example, iron, making them unavailable for the body to use.

Safe clean water is necessary for PLWHA

No single food provides all the nutrients that the body needs in the right amounts and combinations. A balanced diet is one that includes a variety of foods in adequate quantities and combinations to meet the daily needs of the body.

Every meal should be a balanced meal

[1] *Though water is vital in nutrient utilization in the body it is not in itself a nutrient but a carrier*

Chapter 3

GENERAL NUTRITIONAL ACTIONS, CARE AND SUPPORT OF PEOPLE LIVING WITH HIV/AIDS

Nutritional care and support of the person living with HIV/AIDS promotes a sense of well-being, self-esteem and a positive attitude to living with a chronic disease like HIV/AIDS. Nutrition care and support should be part of a comprehensive package for the care and support for HIV positive persons. Overall, improving nutrition helps strengthen the immune system and delays disease progression making it possible for the person living with HIV/AIDS to remain productive.

Goals of nutrition care and support:

The goals of providing nutrition care and support should include:

- Improved nutritional status by maintaining weight, preventing weight loss and loss of muscle mass;
- Ensure adequate nutrient intake by improving eating habits, and building stores of essential nutrients that are necessary for the functioning of the immune system;
- Prevent food borne and water borne illnesses;
  enhance the quality of life by encouraging quick treatment of infections and managing the symptoms that affect food intake, in order to reduce the nutritional effects of secondary infections when they occur and;
- Provide palliative care during the advanced stages of the disease.

In order to achieve the goals of nutritional care and support; the following parts of nutritional care and support should be included in any programme serving PLWHA.

3.1 Periodic Nutrition Screening and Assessment of People Living with HIV/AIDS

Nutritional screening and assessment helps to:

- Gather information on the current nutritional status, adequacy of the diet, and food habits and identify any risky behaviour or factors that could contribute to the development of future nutritional difficulties;
- Identify possible ways of how the diet can be improved and;
- Serve as a foundation for providing the correct and appropriate counselling and intervention.

Nutritional screening and assessment should include:

- **Anthropometrics;** i.e. measurement of body size like weight, height, mid-upper arm circumference and calculation of the body mass index [2]. These should be done regularly to assess and monitor body weight. PLWHA with loss in body weight of more than 10 % should be encouraged to seek nutritional or medical care. Symptomatic PLWHA should be encouraged to check their weight at least every 2 months. Asymptomatic PLWHA should check their weight every 4–6 months.
- **Laboratory tests** where available, Check blood status (haemoglobin, hematocrit), protein (serum albumin), micronutrient (vitamin B12, iron, zinc, folate) and lipid (cholesterol, triglycerides and blood glucose). The laboratory tests help to identify nutrient deficiencies and metabolic disorders so that appropriate interventions can be carried out. PLWHA on Zidovudine (ZDV) should have their haemoglobin checked every 3 to 6 months (see chapter 7).

[2] *Body Mass index = weight in kilogram/(Height in metres)^2*

- **Review of living environment and functional status,** as a clean environment is essential to the well being of PLWHA. At every contact,the service provider should assess the cleanliness and sanitation of the environment of PLWHA; the availability and use of safe and clean water and food hygiene; and the support they have from family, friends and support groups. Fatigue is a common problem with PLWHA and can affect food preparation and, hence, the intake.

- **Life style practices** such as smoking, alcohol and drug abuse, may affect food and nutrient intake, and can also decrease the efficiency of some medications.

Annex 3 provides a summary guide to nutritional assessment of adults with HIV infection.

3.2 Ensuring Adequate Nutrient and Energy Intake

As noted in Chapter 2, asymptomatic PLWHA requires 10% additional energy above the level recommended for healthy non-HIV-infected persons. Symptomatic PLWHA need 20-30% additional energy. Service providers should ensure that PLWHA have enough energy and nutrients for their stage of illness.This can be done by:

- Eating a variety of foods at every meal to ensure the body gets the necessary nutrients such as carbohydrates, protein, fats and micronutrients. For example, a meal can contain a staple food such as nshima, potatoes, rice, cassava, sweet potatoes, and relish like meat, fish, beans, *kapenta*, groundnuts and vegetables such as *bondwe* [3], sweet potato leaves and cassava leaves. Fruits, particularly those that are in season[4],such as mangoes, guavas, paw-paws, *masuku* , apples and oranges, should be an essential part of the diet. Trying out new recipes and experimenting various ways of cooking should be encouraged;

- Eating high-energy foods such as avocados, groundnuts, sugars, jam, honey, margarine, and adding fats and oils to foods is good practice. However, all these foods should be taken in the right amounts;

- Eating regularly and not missing main meals;

- Snacking on foods such as fruits, cooked or roasted groundnuts, porridge, throughout the day to increase energy and nutrient intake;

[3] *Amarathus*

[4] *Masuku is a wild fruit*

- Taking fermented foods such as *maheu*[5]*/chibwantu/munkoyo*, sour milk, yoghurt and germinated foods and;

- Taking fortified foods such as Vitamin A fortified household sugar, iodated salt so as to increase consumption of micronutrients.

3.3 Nutrition Education and Counselling:

This should be an integral component of all care and support programmes of PLWHA. Nutrition education and counselling should emphasize:

- The need for PLWHA to increase their energy intake (10-30%) and attain protein and micronutrient recommended intakes. Counselling should be on how to increase intake of energy, protein and micronutrients, and eating nutritious snacks between meals, using locally available foods.

- Management of digestive tract problems in HIV condition as they affect a person's food intake and, hence, can speed up disease progression. (see Annex 4).

- Hygiene as an important part t in ensuring quality of life for PLWHA and those affected by HIV. They should learn about food and water safety and personal hygiene, e.g. washing hands before food handling and preparation. This can help prevent infections that cause diarrhoea, a common cause of HIV disease progression and morbidity. Proper hygiene is especially important as the immune system of the HIV infected person

- Issues of lifestyles, such as smoking, alcohol and drug abuse how they affect food intake, absorption and use .

[5] *Maheu/chibwantu/munkoyo are non-alcohol beverages (sweet beer)*

3.4 Encourage and Promote Physical Activity among PLWHA: Maintaining physical activity improves body composition and quality of life. In particular, weight bearing exercises help to enhance and maintain muscle mass. Exercise also helps to stimulate appetite. Examples of exercises/physical activity include walking, jogging and light physical exercises in the home. Massage therapy, especially for bed bound clients, can help to relieve aching muscles and prevent loss of muscle.

3.5 Promote Safer Sex Practices among PLWHA: Adults living with HIV/AIDS should be counselled and educated on the prevention methods such as the use of condoms. This is important to avoid re-infection that increases the viral load and, hence, increases damage to the immune system leading to faster progression of HIV to AIDS.

3.6 Provide Psychosocial Support to all PLWHA: Psychosocial support is an important part of nutritional care and support because depression, stress and stigma have a great impact on self-esteem, which can affect appetite and ultimately nutrition intake. Providing emotional, spiritual and social support in an environment that is supportive is important. PLWHA can be referred to support groups and networks in their area for support. Encouraging a positive attitude towards the illness and exploring feelings of guilt, fear and denial, can help make a difference in the health of the HIV infected persons and improve their quality of life.

3.7 Prompt Treatment of Illnesses and Symptoms that Might Affect Food Intake:

PLWHA are easily attacked by many illnesses that can affect their food intake and their nutritional status. Any illness should be taken seriously and quickly treated.

The common HIV symptoms that affect food intake include: thrush, mouth and throat sores, fever, fatigue/lethargy, diarrhoea, nausea/vomiting, taste alterations, loss of appetite (anorexia), and fat malabsorption. It is important to treat the immediate source of the problem. A detailed table of the more common symptoms and dietary suggestions on how to alleviate them is provided in **Annex 4**.

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3.8 Provide Nutrition Supplementation for PLWHA where Appropriate:

An oral nutritional supplement may be needed to help meet the nutrient needs of PLWHA who do not feel hungry or who are not tolerating their usual diet. This can help prevent malnutrition including micronutrient deficiencies.

There are two types of supplementation:

Food supplementation: PLWHA who do not have sufficient food intake and are food insecure should be supplemented with High Energy and Protein Supplement (H.E.P.S) which can also be made at home using other different types of legumes (see recipes from Zambian Protocol on the Treatment of Severe Malnutrition: unpublished, CBoH/NFNC).

Micronutrient supplementation: Where possible, vitamin and mineral needs of PLWHA should be obtained from eating a variety of foods, fruits and vegetables. Where the individual may not be able to get enough micronutrients from the diets and/or where deficiencies (e.g. anaemia, Vitamin A deficiency) are present, daily multiple-micronutrient supplement is recommended. The following should be considered for micronutrient supplementation:

- PLWHA should be encouraged to take the recommended micronutrient supplements according to government protocol, for example, the biannual Vitamin A supplementation for children (See Chapter 5) Vitamin A for women within 8 weeks of delivery (See Chapter 4) and iron/folic acid supplementation during pregnancy.

- Use of multiple-micronutrients is better than use of individual micronutrients taken separately because they work better together than individually.

- Excessive doses of some micronutrients (like Vitamin A and D) can be quite toxic. Some people who take high doses of Vitamin C get intestinal upset or kidney stones. The general recommendation is to follow the prescription.
- If one has to buy supplements, one should get advice from a health expert so as to get the best out of ones money.
- Oral or intravenous supplementation may be recommended by a doctor if the person with HIV/AIDS is severely deficient and has had problems such as diarrhoea, specific intolerances or severe malnutrition. In such cases the patient needs to be monitored on tolerance.

3.9 Enteral and Parenteral Nutrition Support in the Care and Support of PLWHA:

Rapid and unintentional weight loss, malabsorption, recurring infections and nutritional deficiencies are all common problems for PLWHA. In order to help prevent malnutrition associated with these problems, in situations where the patient is unable to take food orally, options for specialized nutrition support should be considered.

Enteral and parenteral nutrition should always be carried out in a hospital setting, as they require close monitoring and evaluation by trained staff.

Enteral Feeding:

Enteral feeding is a means of feeding an individual when oral intake is inadequate. It can be used for a patient with problems related to chewing and swallowing due to painful sores in the mouth. A qualified health worker should ensure that the gut is working before using enteral feeding and should calculate the enteral formula on the basis of the individual's dietary needs.

Parenteral Nutrition:

Parenteral nutrition is the provision of nutrients administered directly into the blood intravenously. Parenteral nutrition should only be administered if the patient has a non-functional or extremely compromised gastrointestinal tract. Parenteral nutrition maybe given if the PLWHA has the following conditions: AIDS,

AIDS, major intestinal disorders, intractable vomiting, acute pancreatitis with pain, infection with *cytomegalovirus* (CMV) of the bowel, or *Myobacterium avium-intracellular* (MAI) of the gastrointestinal tract and large amounts of persistent diarrhoea, severe malnutrition, and/or intolerance to enteral nutrition. As with enteral nutrition, nutrient needs should be calculated on an individual basis.

Important Notes:

- A good and thorough nutrition assessment should be done prior to beginning enteral or parenteral feeding. Fluid, energy, protein and micronutrient needs should be assessed as the HIV infected patient may be dehydrated and/or have malnutrition.

- For enteral and parentaral forms of nutrition support, management and monitoring of the therapy should be ongoing to reduce complications and undesirable side effects.

- Where hospital guidelines for enteral or parenteral nutrition support exist, they should be followed.

Chapter 4

NUTRITIONAL CARE FOR HIV POSITIVE PREGNANT AND LACTATING WOMEN

Good maternal nutrition before and during pregnancy and lactation is vital for the survival and well being of the developing infant. 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. The HIV positive pregnant and lactating woman is at higher risk of malnutrition and mortality.

During pregnancy and lactation, the needs for energy, protein and various micronutrients are increased to meet the demands for enough gestational weight gain, growth and development of the foetus, and milk production. HIV causes excess nutrient loss and malabsorption, further increasing the nutritional needs of HIV infected pregnant or lactating women. In addition, HIV infection puts an extra demand on the body. In order to maintain good health, the HIV infected pregnant or lactating woman needs additional food to meet the extra energy demands.

Table 2. Recommended energy and protein requirements for healthy women during pregnancy and lactation:

	Energy requirements		Protein requirements
Healthy Pregnant Woman	1st trimester	+ 150 Kcal/day	+ 0.7 g/day
	2nd trimester	+ 300 Kcal/day	+ 3.3 g/day
	3rd trimester	+ 300 Kcal/day	+ 5.8 g/day

	Energy requirements	Protein requirements
Healthy Lactating Woman	+ 500 kcal /day (first 6 months of lactation, then decrease gradually) For women who are underweight or whose weight gain during pregnancy is low during the first 6 months of lactation: + 650 Kcal/day	+ 16g/day for the first 6 months of lactation +12g/day for the second 6 months, and 11g/day thereafter + 21g/day

4.1 Nutritional Needs for HIV positive Pregnant or Lactating Women:

Energy:

The current recommended increase in energy intake for HIV infected pregnant and lactating women is the same as for the non-pregnant, non-lactating HIV infected women. That is 10% more energy during the asymptomatic PLWHA, and 20-30% more energy during the symptomatic PLWHA. The additional 10% is added to the basic energy needs for a non-pregnant, non-lactating woman of the same age and physical activity level.

For example: A 25 year-old moderately active 55kg woman requires 2,700 kcal/day.

Table 3. The approximate amount energy that an asymptomatic HIV infected pregnant woman of the same age, weight and activity level will require:

Total energy	**2,140 kcal**
10% more energy due to HIV	**200 kcal**
Extra energy due to pregnancy (2nd, 3rd trimesters)	**300 kcal**
Total daily energy intake recommended	**2,700 kcal**

A symptomatic woman require 20 to 30% extra energy due to HIV (440 kcal-660 kcal) the total daily intake recommended is therefore **2940 to 3160 Kcal per day.**

Protein:

There is no current recommendation for HIV infected pregnant or lactating women to increase protein intake as a result of HIV infection. The recommended protein needs for a HIV negative healthy pregnant or lactating woman should be followed (see table on previous page).

Micronutrients:

Pregnant women are vulnerable to iron deficiency. Anaemia during pregnancy is a risk factor for infant and maternal morbidity and mortality. Because anaemia is so prevalent in Zambia, iron and folic acid supplementation are recommended for all women during pregnancy and lactation irrespective of their HIV status. In HIV infection, anaemia is common but not always associated with low intake of iron. Excessive amounts of iron may contribute to HIV disease progression. However, all pregnant women including HIV positive pregnant women should receive iron supplementation to prevent anaemia as per the national protocols for anaemia prevention and control.

It is beneficial to provide a daily multivitamin supplement to HIV infected women as part of their care.

Any other nutrients, apart from iron, should be provided based on individual assessment.

4.2 Nutritional Actions for Care and Support for HIV positive Pregnant or Lactating Women:

Nutritional care for HIV positive women should be started as early as possible before and during pregnancy to minimize the impact of HIV on the woman's nutritional status. Improved nutrition for HIV infected women during pregnancy, prevention and treatment of parasitic infections such as malaria and worm infestation is also important to enhance adequate gestational weight gain.

HIV positive pregnant or lactating women should be:

1. monitored from time to time for their weight gain during pregnancy. If the weight gain is below the recommended range (9- 12 kg at end of pregnancy), nutrition assessment should be carried out as this may indicate a possible problem, e.g. an opportunistic infection, inappropriate energy intake and/or food insecurity. Nutritionassessments should be individualized and interventions based on the assessment;

2. encouraged to eat a balanced diet and consume foods rich in energy, and get additional rest, particularly in the third trimester of pregnancy;

3. counselled on cultural foods, traditional therapies and practices that are **beneficial** during pregnancy and lactation;

4. advised on the dietary management and appropriate interventions of diarrhoea, 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;

5. counselled on foods to avoid foods with little nutritional value;

6. counselled on cultural foods, traditional therapies and practices that are **harmful** during pregnancy and lactation;

7. advised and supported to practice food safety and hygiene in order to avoid food borne illnesses;

8. provided with iron, folic acid for pregnant women and vitamin A for lactating women according to national guidelines. The use of iodated salt to prevent iodine deficiency disorders should be discussed as well and;

9. advised to promptly get treatment for malaria, including presumptive treatment and prevention by using insecticide treated mosquito nets, where available and;

10. advised on hookworm infestations and de-worming. Mothers who are breastfeeding have extra energy and nutrient needs (see table3). Families and communities should be sensitised on the importance of good feeding practices for lactating women.

Chapter 5

NUTRITIONAL CARE FOR INFANTS BORN TO HIV POSITIVE MOTHERS

5.1 Feeding Infants Born to HIV-positive Mothers:

If there is no intervention to prevent mother-to-child transmission of HIV, 24%-45% of HIV infected women will pass on the virus to their child. About 10-20% of these will be through breastfeeding. It is, therefore, important to ensure that the mother knows her HIV status. If she is HIV positive she should be provided with the correct information for her to make an informed choice on the most appropriate feeding option for her child in order to reduce the risk of mother-to-child transmission of HIV.

For the HIV positive mother, the two recommended feeding alternatives are **exclusive breast feeding** or **exclusive replacement feeding**. Exclusive breastfeeding is when the baby is fed breast milk **ONLY** without giving water or any other liquids, foods and medicines unless medically indicated for a period of 6 months. Exclusive replacement feeding means that the baby is given alternative feeds only such as formula and no breast milk. The stopping of breastfeeding can be immediately after birth or at 6 months of the baby's age.

The World Health Organization recommends that:

"*When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV-infected mothers is recommended. Otherwise, exclusive breastfeeding is recommended during the first six months of life. To minimize HIV transmission risk, breastfeeding should be discontinued as soon as feasible, taking into account local circumstances, the individual woman's situation and their risks of replacement feeding (including infections other than HIV and malnutrition)*"

Mixed feeding, or giving breast-milk and other feeds, is not recommended as it increases the risk of HIV transmission through breastfeeding. Exclusively breastfed babies have a lower risk of becoming infected compared to those who are given other liquids, foods or milks in addition to breast-milk during the first months of life.

Given that majority of pregnant women do not know their HIV status, and that using infant formula may lead to diarrhoea and malnutrition if incorrectly used, policies that support exclusive breastfeeding in the country, for example, the Baby Friendly Hospital Initiative and International Code of Marketing of Breast-milk Substitutes should be implemented or enforced.

All HIV positive pregnant women should be counselled on the feeding options available with the risks and benefits clearly explained so that the women can make informed choices. Whatever choice they make, appropriate support must be provided to assist in their maintaining that choice.

For pregnant and lactating women who do not know their status, VCT should be discussed and encouraged, stressing the importance and benefits of knowing their status.

5.1.1 Feeding Options for Children of HIV positive Mothers:

I. For Mothers who Choose to Exclusively Breastfeed:

If the mother chooses to exclusively breast feed, she should be supported and helped to apply exclusive breastfeeding (EBF):

- The mother should be counselled on the importance of continuing EBF without fluids or foods for about 6 months and how to solve common difficulties including “insufficient milk”, sore/cracked nipples, engorgement, manual expression and storage.

- Mothers with cracked nipples and infants with mouth lesions or thrush should be treated immediately or referred for treatment.

- The mother should be supported to make breastfeeding safer. This can be done through ensuring proper positioning and attachment of the baby to the breast. Good breastfeeding techniques help to reduce the risk of transmission of HIV to the baby as they reduce the risk of cracked nipples and mastitis that are associated with transmission of the virus to the baby during breastfeeding.

Good positioning and attachment:

- Baby's body should be turned completely towards mother.
- Baby's chin should be touching the mother's breast.
- Baby's mouth should be wide open.
- Both lips should be turned outward.
- More areola visible above than below the baby's mouth.
- Baby should be taking slow, deep sucks, sometimes pausing.
- Swallows should be audible.

Mothers should be encouraged to have regular weighing and to seek medical attention immediately for any breastfeeding problems or illnesses. They should be told where they could get help with breastfeeding and its problems in their communities.

- All mothers should be shown how to express and discard milk from cracked nipples and from breast(s) affected by sores, nipple trauma, engorgement and mastitis. Service providers should stress the necessity of seeking medical attention immediately.

- During each contact, the service provider should ascertain whether a mother intends to continue breastfeeding exclusively. A mother's wish to start giving other feeds besides breast milk should be explored. For mothers who want to start feeding something else besides breast milk, they should be counselled on the importance of exclusively breastfeeding or exclusive replacement feeding for the first 6 months and avoid mixing the two.

II. For Mothers who Choose Exclusive Replacement Feeding: The criteria for starting exclusive replacement feeding by HIV positive mothers/caregiver include:

Acceptability: The mother does not see any barrier to choosing replacement feeding for cultural or social reasons, or for fear of stigma or discrimination.

Feasibility: The mother or caregiver has adequate time, knowledge, skills, resources and support to correctly prepare breast-milk substitutes and feed the infant 8-12 times in 24 hours.

Affordability: The mother or caregiver, with available community and /or health system support, can pay for the costs associated with the procurement, preparation, storage, and use of replacement feeds without compromising the health and nutrition for the family. Costs include those for acquiring ingredients/commodities, fuel, clean water, and medical expenses that may result from unsafe preparation and feeding practices.

Sustainability: Availability of a continuous, uninterrupted supply and a dependable system of distribution of all ingredients and products needed to safely practice replacement feeding for at least one year.

Safety: Replacement foods are correctly and hygienically stored, prepared and fed with clean hands, clean cups and other utensils but not bottles or teats.

Adapted from WHO guidelines on Infant Feeding in the context of HIV/AIDS (2003)

For children **0-6 months** the following replacement feeding options are recommended:

Commercial infant formula – that requires water, fuel, utensils and skills and time to prepare it accurately and hygienically. An infant will require a total of approximately 20 kg of formula (44 tins containing 450g each) to feed for 6 months.

Home-prepared formulas – made from animal milk (cow, goat, or sheep), powdered milk or evaporated milk.

Skimmed milk, cereal feeds, juices and teas are not suitable for replacement feeds before the infant is 6 months of age.

All mothers or caregivers, who opt for exclusive replacement feeding, should be shown how to prepare the feed of their choice. In addition the following should be done:

- Assess and address any difficulties that the mother/caregiver may have with exclusive replacement feeding in the best way possible to support them with their choice.
- Provide the mother/caregiver with information on the risks of mixed feeding (breastfeeding and replacement feeding).
- Counsel the mother/caregiver on appropriate feeding after the child is about 6 months of age (i.e. adding complementary
- Support the mother/caregiver with the necessary skills and knowledge to properly feed the infant with appropriate replacement foods. The mother/caregiver should be able to demonstrate how to prepare the infant's replacement feeds.
- Support and encourage the mother/caregiver on the need for regular weighing and attendance to all well baby visits for monitoring of the infant's growth and development.
- Advise the mother/caregiver to seek immediate medical attention for any breastfeeding problem or illnesses or any feeding problem the child may have.
- Provide all mothers/caregivers using replacement feeding with multivitamins for the baby.

HIV positive mothers, who are exclusively breastfeeding are recommended to shift to exclusively replacement feeding and should be supported on safe transition at 6 months. Cessation of breastfeeding should be done over a period of a few days to a maximum of three weeks. When a mother decides to shift from exclusive breastfeeding to exclusive replacement feeding, she should be assessed on an individual basis.Mixed feeding should be avoided once transition period is completed.

The mother who develops symptoms of full-blown AIDS should consider stopping breastfeeding immediately.

5.2 Nutritional Interventions for HIV Infected Children: HIV infection in children also affects their nutritional status just as it does in adults. Stunted growth and failure to thrive are common among HIV infected children.

HIV infection in children also affects their nutritional status just as it does in adults. Stunted growth and failure to thrive are common among HIV infected children. HIV infected children also have an increased frequency of common childhood infections such as diarrhoea, ear infections, pneumonia, chronic gastroenteritis and TB, all of which can affect nutrient intake leading to malnutrition and which puts them at greater risk for mortality.

Poor appetite, inability to suck, swallowing difficulties, nausea, frequent infections with fever all increase the risk of malnutrition in the HIV infected child. It is important to ensure that the child consumes adequate amounts of macro and micronutrients to meet the increased metabolic demands and the demands for growth and development. With appropriate management, HIV positive children can improve their nutritional status. Nutrition care of the HIV positive child should however be part of a comprehensive programme. The following interventions are suggested:

1. All children born to HIV infected mothers or suffering from AIDS should be periodically assessed for nutritional problems. This is important to help improve nutritional status and prevent further complications. Severe growth failure among HIV positive children is associated with reduced survival. Early monitoring and nutrition intervention is critical as growth maybe impaired prior to the presence of symptomatic diseases. As soon as growth becomes sub-optimal nutritional, interventions should start. In addition, every child should be screened for feeding problems and signs of malnutrition as part of an overall integrated assessment for illness and nutrition.

2. All HIV positive children should be supported to ensure adequate energy and nutrient intake.

Energy needs in children vary depending on the type and duration of the HIV related infections such as weight loss with acute infection. An increase of 10% energy in asymptomatic HIV infected children to help maintain growth is recommended, similar to adult recommendation. Energy intake needs to be increased by 50-100 % over normal needs in children experiencing weight loss. (WHO Technical Advisory Group on Nutrition and HIV/AIDS, 2003).

WHO recommends a **protein intake** equal to normal needs for a non-HIV child of same sex and age.However, there is some consensus that some increase is warranted especially when the child is symptomatic i.e. has fever or diarrhoea. The increase should be individualized based on the symptoms and ability to meet needs.

Micronutrient intakes are also recommended at the same level as of a child not infected with HIV. Children should have the biannual supplementation with vitamin A.

Feeding infants 0-6 months:

- Mothers/caregivers should be counselled and educated on the infant feeding choices they make and supported to either exclusively

Feeding children who are 6-36 months:

The child's diet should be reviewed at every well and/or every sick-baby clinic visit to ensure appropriate feeding and adequate nutrient intake. This helps to recognize any early growth faltering and other nutritional problems and initiate interventions. Though breastfeeding is stopped at 6 months, babies will need milk from other sources. Conditions that are affecting appetite and food intake should be discussed and treated as appropriate. Mothers/caregivers should be advised on how to improve the diet, taking into consideration the child's age, local resources and the family circumstances.

Some questions to ask include:

- Who is looking after the child?
- What does the child eat?
- What is the family economic situation?
- Is there food shortage?
- Is clean drinking water readily available?
- What is the parents (mother's) state of health?
- Are the parents physically able to care for the child?

- Mothers/caregivers should be encouraged to feed the child foods rich in energy and other nutrients, i.e.
- Mothers should be encouraged to stop breastfeeding at 6 months. Babies from 6-24 months will need milk from other sources other than breast milk.

- Porridge enriched with milk, sugar, pounded groundnuts, bean powder or soya-bean and oil

- For asymptomatic children (with no diarrhoea, nausea or fat malabsorption) a small amount of margarine/oil can be added to their food to increase energy intake.

- Babies will be given mashed fruits and vegetables such as ripe bananas, avocados, pumpkin as frequently as possible to increase energy and nutrient intake.

- Encourage parents to feed the child small frequent meals with nutritious snacks between main meals such as banana, avocado, mashed pumpkins, boiled sweet potato.

- Mothers/caregivers should be counselled on how to practice active and responsive feeding.

- All mothers/caregivers should be educated and counselled on good hygiene, and on food and water safety. De-worming of children should be done every 4-6 months.

- All secondary infections should be treated quickly. The nutritional effect of these infections should be reduced through maintaining food and fluid intake.

- Severely malnourished children should be managed or referred to a hospital for nutrition rehabilitation. National draft guidelines or the new WHO guidelines for the management of severe malnutrition should be followed.

- All HIV infected children should be provided a daily multivitamin supplement, if available to prevent micronutrient deficiencies.

- HIV infected children should continue with all other child health survival interventions like immunizations
(if symptomatic they should be referred to a health facility).

Serve and feed the child separately in its own plate.

Chapter 6

NUTRITIONAL SUPPORT DURING HOME BASED CARE OF PLWHA

6.1 Nutrition Components of Home-Based Care:

Many families provide care and support for their beloved ones suffering from HIV and AIDS. Care for the PLWHA in the home may be provided by a family member (mother, father, brother, sister, young adult), a relative, a neighbour, or friend(s). The care for a PLWHA is not an easy task. Whoever is providing the care needs support as well. The task involves meeting the needs of the sick person and balancing these with the needs of other members of the family. The care provided should not be overbearing. The dignity and self-respect of the PLWHA should be maintained and as much independence as possible should be respected in order to boost self-esteem. Nutrition care and support of the PLWHA at home is important and involves:

- Supporting the family or caregiver to ensure the patient has adequate intake of balanced diet;
- Providing nutrient dense meals and snacks that are appetizing to prevent weight loss or replenish lost nutrients;
- Managing the HIV symptoms related to diet so as to minimize their impact on the patient's nutritional status and
- Practicing food safety and hygiene to avoid food-borne illnesses.

6.2 Nutrition During Palliative Care in the Home:

Palliative care may also be provided in the home to maintain the dignity and self-respect of the PLWHA. Usually with palliative care, nutrition interventions become less paramount and the focus is on addressing the physical, psychological and spiritual needs of the patient. The main goal is to help relieve pain and other symptoms and allow the patient to live in comfort and with dignity during the final stages of life.

The following hints will assist the caregiver in providing good home-based care:

- Spending time with the person living with HIV/AIDS.
- Discussing the foods they need to maintain or gain weight and manage their illness. Get to know what kind of foods they like and do not like.
- Involving patients in planning their own meals.
- Weighing the patients regularly and keeping a record. Looking out for any undesirable weight loss and taking action.
- Checking the medicines they are taking. Read the instructions to find out when they need to be taken, what foods need to be avoided and what side effects to watch out for **(see Chapter 7)**.
- Being encouraging and loving, and renforcing positive living. **(See Annex 5).**
- Being flexible and patient. If the patient wants to have food of their choice at any time of the day, this should be discussed with them. They may suddenly stop liking a food, refuse what has been prepared, and want something different. This should be understood as not being difficult.
- Stressing the importance of eating and encouraging them to eat small frequent meals. Too much food at one time may lead to losing their appetite and refusing to eat.
- Stressing the importance of drinking and encouraging them to take small and frequent amounts of safe fluids in order to avoid dehydration.
- Providing the patient with something to drink and a snack within easy reach.
- Encouraging good personal hygiene and food safety practices for handling, preparing, cooking and serving food in the household.
- Encouraging light exercises like walking in the neighbourhood and carrying out simple chores.

- Encouraging sick persons living alone to invite family or friends for a meal. Encouraging others in their neighbourhood and support groups in the community to visit them and/or invite them out.

- Providing massage where possible to the patient that is bed ridden to help prevent muscle atrophy and loss of muscle mass.

- Ensuring that bed-ridden patients should be turned from time to time to avoid the pressure sores. Frequently bathing them and changing of their bed linen.

Caregivers will have their own concerns and worries, fears for the future, for their families and for their own health. It is important that they take care of themselves, get enough rest and have the appropriate information and support to carry out their difficult task.

Chapter 7

NUTRITION AND HIV/AIDS THERAPY

7.1 Nutrition and Antiretroviral Therapy:

PLWHA may take various types of medications to reduce the effects of HIV on the body, to treat opportunistic infections, and other common ailments such as colds, malaria, and/or intestinal parasites. Some also use herbal remedies and take micronutrient supplements.

Though there is no cure yet for HIV/AIDS, antiretroviral (ARV's) drugs are being used to manage HIV by lowering the viral load and thus reducing morbidity and mortality. These types of drugs include:

- non-nucleoside reverse transcriptase inhibitors;
- nucleoside reverse transcriptase inhibitors;
- protease inhibitors and;
- fusion inhibitors.

Drugs can be given in combination (combination therapy) in order to produce a synergistic effect. This is currently the most effective way to treat HIV positive patients rather than using only one drug (mono-therapy). Interactions of medicines and food can affect the medication's efficiency, nutritional status, and adherence to drug regimens. It is important to know the food and drug interactions in order to minimize detrimental side effects, reduce drug resistance and ensure the efficiency of the medication. Side effects that affect food consumption or interactions that limit food intake or reduce nutrient absorption can lead to poor medication adherence. Dietary management of the side effects can help to minimize the effects and improve the client's adherence to the treatment protocol, and tolerance to the drugs. The main food and drug interactions are presented below.

7.2 Nutrition Actions to Support People on ART:

1. All people living with HIV/AIDS should be provided with updated information on food-drug interactions to mitigate the side effects of medication.

This information can be obtained from the health facilities providing service on ARVS, community based communication channels such as peer-groups, nutrition councillors, health education community based organisations, newsprints or journals on ARVS and nutrition, and even various websites such as WHO, UNAIDS, FANTA and National Aids Council.

2. All PLWHA on ARTs should be educated, advised and counselled on the sequencing of the food and drug intake to increase drug efficiency.

The intake of food with medication can enhance or inhibit the absorption, metabolism, distribution and excretion of the medication. Dietary management to improve the efficiency of the medication will include either taking the medication with food, on an empty stomach, or with or without certain types of foods.

Food can reduce the absorption of certain drugs, for example, the absorption of the TB medication Isoniazid is reduced if taken with food. Hence, it should be taken 1 hour before or 2 hours after a meal. Some ARVs efficiency is affected by food. For example, a high-fat meal increases the bioavailability of the ARV Tennofovir, whereas a high fat or high protein meal decreases absorption of Indinavir and reduces the absorption of the Zidovudine. It is thus recommended not to take Zidovudine with a meal high in fat.

If possible meals should be planned and timed. Timing of medications should be adhered to reduce side effects from food-drug interactions.

The drug and meal timetable should involve the following:

- 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 nutrients 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 PLWHA are taking and the individual needs and reactions.

Adopted from Food and Nutrition Technical Assistance (FANTA) Technical Note August

3. PLWHA on ARVs should be counselled and advised on any diet modifications that maybe needed to enhance nutrient absorption and metabolism.

   Some medications can interact with certain nutrients in food affecting their absorption, metabolism, distribution and excretion and, hence, reducing their efficiency. For example, Isoniazid used in the treatment of TB inhibits the metabolism of vitamin B6. Supplementation of this vitamin is recommended to avoid developing vitamin B6 deficiency. The antibiotic tetracycline inhibits the absorption of calcium, magnesium zinc and iron. Appropriate supplementation with these may be required to avoid deficiencies when one is on these drugs.

   Some ARVs produce metabolic disorders including elevated levels of triglycerides, cholesterol, fat maldistribution and insulin resistance (which may lead to diabetes). These changes require dietary modifications such as avoiding foods high in cholesterol, exercising daily, avoiding alcohol and smoking and/or taking medications to lower the lipids. Elevated lipids as well as diabetes are a risk factor for heart disease.

4. All PLWHA on ARVs should be counselled or advised on the possible side effects associated with ARVs that might affect their nutritional status and how to mitigate harmful effects.Many medications can cause side effects that can affect food intake and nutrient absorption. These side effects include nausea, vomiting, loss or change in taste, loss of appetite (anorexia), bloating and heartburn, constipation, and diarrhoea. These side effects can result in poor nutrient intake and absorption, weight loss and ultimately malnutrition. In turn some ARVs can cause metabolic side effects that increase the risk of other nutrition related conditions such as heart disease (as indicated above).

5. All PLWHA on ARVs should be counselled or advised on which foods they should avoid or take to improve drug efficacy. There are some foods that are contraindicated when taking some medications because their interaction causes side effects. These foods should not be taken at the same time as the medications.

For example, grapefruit juice should be avoided when taking the ARV Indinavir as it may lower the efficiency of the medicine Consuming alcohol may cause inflammation of the pancreas while taking the ARV Didanosine. Alcohol should also be avoided when taking the ARVs Rifampin, Zidovudine, and Lamivudine as well as the anti-TB medication Isoniazid. Alcohol should also be avoided as it may increase the risk of inflammation of the liver, which could be fatal. Alcohol consumption is generally contraindicated when taking other medications and not just ARVs (**Annex 6**).

6. All PLWHA on ARV who do not have access to nutritious food, should be linked to programmes that support provision of such foods. PLWHA on ARVs may be constrained by lack of access to or limited availability of nutritious food due to poor incomes, inadequate food production or lack of alternative foods. This could be a problem in managing the drug acceptability and meal timetable which, if not checked, may result in stopping ARVs therapy. In case PLWHA on ARVs are faced with constraints of limited access to food, below are some options to consider:

- Be actively involved in making appropriate drug and meal timetables, using locally available and affordable food products as needed by specific food-drug interactions.
- Seek help on food supplementation from existing referral systems in case of those PLWHA from poor resource households.
- Make household members aware of the food-drug interactions so that they support intra food distribution for PLWHA to receive special attention.
- Get information on other food sources and combinations from nutrition counsellors and health practitioners that will minimise effects of food-drug interactions.
- Find help from programmes or projects providing some form of food for work, food for assets or food aid.

7.3 Herbal Treatments and Remedies:

Apart from ARVs, herbal remedies can also be used for treatment of HIV and AIDS symptoms. Whatever treatment is used, maintaining good nutrition is still important as it helps to build a strong immune system. Therefore, if on medication, more attention needs to be paid to provide adequate proteins and energy to carry the medicines throughout the body or to sites where they are used.

Please note that the advice presented here, is based on knowledge and experience gained from PLWHA on useful herbal treatments and remedies. It does not claim that all herbs and remedies have the same effect on all people. PLWHA often become frustrated with management of the disease and may be tempted to try anything in the hope of staying healthy and living longer.

7.4 Nutrition Actions to Support People Interested in Herbal Treatment

1. Service providers who come in contact with people who are interested in traditional remedies should understand and be sensitive to traditional beliefs and the kinds of traditional care available. Traditional remedies represent alternatives to formal general medicine. For many people, this could be the only option they may have. However, some traditional beliefs and food practices may be harmful. It is important to find out more about the local practices and note those that may be harmful and discuss with both PLWHA and the traditional healers why such practices should not be followed. Those traditional practices and therapies that provide readily accessible, effective and low-cost remedies should be identified, encouraged and promoted.

2. Service providers should be familiar with the various herbs and traditional therapies that PLWHA may be taking or using and advise them of any harmful effects these may have on their health.

3. PLWHA should be advised to always discuss treatments with a health worker, doctor or nutritionist and avoid any treatment or practice, such as fasting, which cause weight loss. At present there is no evidence of traditional medicines or therapies that can cure or treat HIV and AIDS. However, certain traditional medicines may help to treat many of the symptoms of opportunistic infections that are part of AIDS. While some of these medicines may be undoubtedly helpful, others may be dangerous because they may do more harm than good. They may be expensive and, therefore, reduce money available for buying food. They may make one not to eat some foods.

4. PLWHA can use herbs as long as they are not harmful and do not interact with medication the patient may be taking to treat opportunistic infections.

Herbs and spices can help improve digestion, give appetite and preserve foods. A list of herbs and spices, and their beneficial effects as claimed by PLWHA are given in **Annex 7.**

Spices can be used to enhance the flavour of foods, to stimulate appetite and to manage taste changes that can occur in HIV disease or as a side effect of medication.

However, caution should be given to PLWHA about various herbs that may be sold claiming to cure HIV. All herbs and spices should be used in moderation.

Chapter 8

FOOD SAFETY AND HYGIENE

PLWHA are immuno-compromised and, therefore, food-borne infections pose an increased risk and must be prevented. The symptoms of such infections include diarrhoea, nausea, vomiting, fatigue and abdominal pain. These can be severe and the source of infection can be difficult to identify. It is important to follow good hygiene and food safety recommendations.

8.1 Water and Sanitation:

8.1.1 Environmental Hygiene and Sanitation

Dirty surroundings attract insect vectors such as flies, cockroaches and rodents. All these spread diarrhoeal diseases, which lead to loss of water and nutrients in the body. In addition, indiscriminate disposal of human excreta leads to the spread of diarrhoeal diseases that would lessen absorption of nutrients in the HIV and AIDS patient and worsen his/her condition.

- The general surroundings should be kept clean all the time. All the leftovers and dirt should be safely thrown in the refuse pit.
- Where there are no flush toilets it's advisable to use good well-constructed, clean, ventilated latrines that should also have a cover or lid for the hole. For flush toilets, ensure that these are regularly cleaned and disinfected if possible.
- Hand washing facilities should be provided within the latrine with soap and a towel, wherever possible.

8.1.2 Clean and Safe Water:

- Water for human consumption should be obtained from a protected source. This could be either from a borehole or a protected well, where piped water is not available. Where boreholes or protected wells are not available, water drawn from rivers or streams should be treated.

8.1.3 Storage of Kitchen Utensils:

- Kitchen utensils should not be stored on the ground where they can be contaminated with disease causing organisms. Instead they should be placed on a raised platform, where there is sunlight and enough air circulation.

8.2 Food Handling:

Food handling is important to avoid contamination of food. Some recommendations for safe food handling are given below:

- Hands should be washed with soap or ashes after using the toilet, before preparing and eating food.
- Nails should always be kept short and clean.
- All food preparation surfaces and utensils should be kept clean at all times.
- All raw animal products should be cooked until well done.
- Foods should never be thawed and then re-frozen. Meat should be packed into daily portions before freezing and thawed at refrigerator temperature and not at room temperature.
- Where there is no refrigerator, meat should be dried and stored in a cool place until ready for use.
- Wooden boards should not be used for cutting animal products. Plastic boards are better, and cutting boards and knives should be washed thoroughly with soap before using them for other foods.
- Fruits and vegetables should be washed thoroughly in clean water from safe sources.
- PLWHA should always drink boiled or treated water.

- Feeding bottles should not be used to feed babies, instead clean cups and spoons should be used.

- Personal hygiene should always be observed when breastfeeding.

Proper storage of food is important to prevent spoilage and loss of nutrients. Households are advised to:

- Ensure that environmental conditions like temperature, humidity and ventilation are well controlled in order to retain quality of stored food;

- non perishable foods, such as dry beans, dry kapenta and dry vegetables that do not require refrigeration, should be stored properly;

8.3 Food Storage:

- storage areas should be dry, cool and properly ventilated. Wall vents are important in circulation of air. Circulation of air around bags and cartons of food aids the removal of moisture, reduces temperature and eliminates odours;

- food should be stored using the FIFO (first in – first out) and FEFO (first expiry-first out) method. This means that new supplies should be placed at the back to ensure use of oldest or nearly expiring stock first;

- expiry dates should be checked before consuming. Once a tin has been opened, the food should be removed from the original tins and be kept in a clean and non-metallic storage container;

- food from dented or bulging containers / tins should not be consumed; and

- fresh and frozen foods should be refrigerated immediately, and kept at low temperatures until they are used.For safe storage of frozen foods, the following are essential: Fruits and vegetables should be checked regularly for ripeness and decaying pieces removed to prevent further spoilage.

- Foods that absorb odours, such as eggs, butter and milk, should be stored away from those that gives off odours, like fish, onions and leeks.

- Cooked food should be stored above raw meat in the refrigerator to ensure that foods are protected from raw meat drippings.

- Cleanliness is vital to food safety. Refrigerators should be cleaned thoroughly and regularly.

- Left over foods should be kept in covered containers in the refrigerator and used as soon as possible within two days. Where there is no refrigerator, leftovers should be used the same day after thorough heating at high temperature.

- Do not store food for long periods in the refrigerator

8.4 Control of Infectious Diseases:

8.4.1 Control of Malaria:

Malaria parasites attack red blood cells in the body that transport nutrients to different parts of the body. They reduce the number of red cells, which lead to anaemia and worsen the immune system of the HIV and AIDS patient. Malaria, especially during pregnancy, increases the risk of mother-to-child transmission of HIV. In order to control malaria, ensure that:

- all breeding places for mosquitoes are found and destroyed;
- grass around the homes is cut and kept short;
- use of insecticide treated mosquito nets is encouraged; and quick treatment for any fever/malaria is promoted.
- all breeding places for mosquitoes are found and destroyed;
- grass around the homes is cut and kept short;
- use of insecticide treated mosquito nets is encouraged and;
- quick treatment for any fever/malaria is promoted.

8.4.2 Prevention of Worm Infestation:

- Animals should be kept away from food or water sources as they may contaminate it.
- Periodic de-worming of PLWHA, especially for pregnant and lactating women, and young children, is recommended to prevent anaemia.
- Foods should be well cooked.
- Shoes should be worn, especially when visiting latrines.

8.4.3 Control of Other Vectors

The control of vectors in the provision of holistic care and support to PLWHA is very important. The most common vectors are:

- **Flies -** These sit on unprotected food, feed on it and leave their excreta on it . They carry germs on their bodies and legs, thus contaminating food, which may cause diarrhoeal diseases.

- **Cockroaches** – These also feed on food that is not covered, mostly during the night. They can also contaminate food with harmful organisms.

- **Rats** – These may discharge germs and they can also contaminate the places they visit. Most of these vectors live in filthy places, garbage dumps, excrement, decomposed matter, sewers and drainage pipes. To ensure good health, it is important to get rid these vectors in the home:

- Garbage should be properly thrown in a pit far away from the home. It should not be thrown near food preparation areas or sources of water.

- Where possible, homes should be fumigated to control the vectors.

Chapter 9

HOUSEHOLD FOOD SECURITY AND HIV/AIDS

Food security refers to all people at all times having social, physical and economic access to safe nutritious and adequate food. HIV/AIDS affects families by reducing their ability to obtain food through its impact on productive labour, income and food stores. Most often individuals may cut back food intake by reducing portion size or skipping meals, divert any earnings and savings to meet healthcare and funeral costs. This leads to poverty, increased vulnerability to risky behaviour such as sex for food and money, child labour, crime and drug abuse.

HIV/AIDS affects all three components of food security: availability, accessibility and utilization. PLWHA may be unable to follow the nutrition recommendations that are provided due to their inability to access the food required.

PLWHA and families affected by HIV should, therefore, be supported in order for them to provide adequate nutrition care. Support can be provided in the following ways:

1. Assisting communities and those offering support to identify the extent of vulnerability in households in order to provide targeted support. The main objective should be to ensure that support given provides long-term solutions to the affected households, such as diversified means of acquiring food or money through small-scale enterprise developments, coupled with improved access to financing schemes for the rural and urban settings.

2. Assisting vulnerable PLWHA households with alternative labour saving technologies such as safe and efficient cooking facilities, efficient and hygienic food preservation and utilization methods, conservation or organic farming, lighter working tools, like ploughs, axes and hoes, less or minimal tillage.

3. Linking vulnerable PLWHA with marketing agents to assist with selling of their produce in order to obtain cash for buying foods they do not produce.

4. Equipping vulnerable PLWHA who are directly dependant on agriculture for livelihood with food production inputs, including indigenous seeds and credit facilities. More village support systems with labour for land clearing, ploughing, weeding, and harvesting and storage.

5. Providing, where necessary, food packs to PLWHA, child-headed households and home-based care programmes, depending on the degree of severity. The provision of vitamin and mineral supplements to PLWHA may also be necessary with advice from health workers. However, this should be complemented with long-term solutions.

6. In line with the above, service providers and extension workers should work with affected households to plan for those periods of "hunger seasons" when supplies of some foods are low or non-existent.

7. Service providers and extension workers should work with communities to investigate all options for obtaining a variety of foods and to promote food habits that improve the intake of roots, local vegetables and fruits, nuts, insects and oil seeds. These provide nutrients, but have not been recognized as important to the diet.

8. Service providers and extension workers should promote the inclusion of nutrition for PLWHA in community based food and nutrition projects such as gardens and rearing poultry and small livestock.

Chapter 10

NUTRITION EDUCATION AND COUNSELLING FOR PLWHA

Nutrition education and counselling are integral to providing nutritional care and support to PLWHA. They are important in letting the individual understand the need to maintain an adequate diet and how to manage common health problems related to HIV that may negatively affect the nutritional status.

Counselling is seen as sharing information and giving advice. However, when counselling PLWHA, it may involve more than giving advice on diet to remain, healthy. It also requires helping the PLWHA address their feelings and reactions with regard to their HIV status. Good nutrition counselling should result in positive changes in eating habits and help improve the quality of life of the client.

A counsellor, who understands and empathizes with how clients react to the HIV infection, can provide nutrition counselling to examine their options and help them make the best choices. In so doing, the clients are more likely to agree with the advice given.

Definitions

Counselling is the process in which the counsellor expresses care and concern towards a person with a problem in order to create an environment of trust where the client can learn more about their feelings, thoughts and emotions in order for them to take positive actions to resolve their problems.

Nutrition education is that set of communication activities aimed at achieving voluntary change in nutrition related behaviour to improve the nutritional status of the population. Nutrition education involves teaching of basic nutritional concepts in a simple and practical manner.

10.1 Practical Considerations for Nutrition Counselling:

Be aware and sensitive to the feelings of PLWHA. The HIV positive person may be shocked, depressed or frightened of how to cope with this chronic condition. Make the client feel comfortable by determining their needs and wants during the counselling session and then work together to come up with a plan that works. The following should be observed during counselling:

1. Building a trusting relationship by listening carefully, empathizing, and responding to the client's needs and concerns.

2. Assessments/interviews should be conducted in a non-judgmental manner to elicit more accurate responses from the client, and help build a stronger rapport between the client and the counsellor. Treat the client with respect and acceptance, irrespective of the client's attitudes, beliefs and life choices.

3. Be aware of the body language (both yours and the client's).

4. Ask open-ended questions that start with "what", "why", "how", "when" and "where", when counselling clients.

5. Confidentiality and professional conduct should be maintained throughout the counselling period, and after the counselling session.

6. Praise and reaffirm those things that the client is doing right, to help build self-confidence, self-esteem and motivation.

7. Change and living with HIV is stressful. Suggest one change at a time and ensure that your recommendations are realistic to the client's circumstances. Remember, *"One glove does not fit all".*

8. Provide practical suggestions and recommendations.

9. When counselling and educating, be aware of the harmful traditional practices and those that do no harm. Encourage the good traditional practices.

10. Be aware of issues that require referral to another appropriate service provider.

The above make a big difference between effective and ineffective nutrition care and support.

10.2 Ways of Promoting Nutrition Counselling:

Following long-term medical or dietary regimens is not easy and many clients soon give up if the information is not presented in a motivating way.

HIV is a chronic condition and nutrition intervention is one part of the comprehensive care package. This means that the PLWHA are getting a lot of information, advice and counselling on a number of issues to help them live a positive life and improve their quality of life. The following, in conjunction with the suggestions above, can be used in promoting and improving the acceptance of the nutrition counselling:

- The first step of nutrition counselling is to conduct a dietary intake and habits assessment. Information and advice should only be given afterwards.

- Food habits are difficult to change, and HIV requires vigilance in observing dietary intakes. It is important to review previous advice and suggest new realistic changes as the situation demands.

- Focus the nutrition education and counselling on the most important and relevant information, based on the client's lifestyle.

- Focus on the positive - stress all the foods your client can eat and offer ideas on how they can prepare food and share recipes if appropriate.

- Give action oriented-tips. Tell the client how to do it and not just what to do. For example, instead of just telling a client to eat a variety of fruits and vegetables, tell them to eat at least one fruit or one type vegetable that is readily available, accessible and affordable to them.

- Provide practical suggestions. Use a list of local, affordable and accessible foods to show the client what they need to eat or how much extra food they need to eat, or how to manage symptoms such as anorexia, diarrhoea, nausea, vomiting and weight loss.

- Negotiate with the client for positive nutritional actions. Avoid tarting with words like “Don’t”, “Avoid” and “Stop”.

- Communicate nutrition information, taking into account the client’s own cultural values and beliefs. For example, know what the food taboos are and help them to identify appropriate alternatives.

- Set short and long-term goals and gradually work on adding more goals with each success. Formulate nutritional strategies such as dietary plans and set targets with the client, e.g. weight-gain and improved laboratory results.

- Arrange for follow-up visits. One visit is not enough. Changing life long eating habits takes more than 30 minutes of counselling.

Chapter 11

MONITORING AND EVALUATION FOR IMPLEMENTATION OF NUTRITION GUIDELINES

It is important to maintain a systematic assessment, analysis and documentation of the implementation of activities associated with nutritional care and support. In this regard, it is important to monitor the implementation of the guidelines and review them in relation to local experiences. This will help to provide information on how well the guidelines are contributing to the health of the PLWHA and their families.

Monitoring and evaluation should address three main questions:

1. Are the guidelines helping in the delivery of nutritional care and support to PLWHA? Which elements are working well? Which ones are not? What are the gaps?

2. Are the guidelines contributing to the improvements of the nutritional status and quality of life of the PLWHA?

3. Are there dietary changes among the PLWHA?

Therefore, the monitoring and evaluation will involve:

- Following up with the key stakeholders involved in the development of the local guidelines in order to assess the practicality of the use of the guidelines within their agencies;

- Following up on the field workers who have been trained on the use of the guidelines in order to assess their usefulness, problems experienced and lessons learned;

- Interviewing the PLWHA who received nutritional care and support to assess the extent to which they have been able to follow the guidelines and suggest modifications;

- Assessing the types of nutritional support activities (counselling, food supplementation, food security) given to the PLWHA and their families; and

- having meetings with the stakeholders to get comments on the guidelines, to identify gaps and to facilitate the review.

- In order to achieve the above, accurate records of all clients, including weights, food intake and medical records, must be kept. The data should be aggregated and reported periodically;

- there must be agreement amongst the key stakeholders and related programmes/interventions on the purpose of the monitoring and evaluation and the key indicators to use (**see Annex 8**) and;

- monitor the availability, accessibility and use of the national nutrition guidelines to the stakeholders in the various sectors.

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ANNEX 1: MACRONUTRIENTS AND MICRONUTRIENTS NEEDED BY THE BODY

Macronutrients (Nutrients required in large amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTONS
Protein	Beef, game meat, pork, fish, poultry, beans, dried peas, groundnuts, edible insects, e.g., ifinkubala (caterpillars), inswa. Milk and milk products, eggs, Soya beans, dried mushrooms.	● Provide necessary materials for building, repair and maintenance of the body's tissues. ● Develop the immune system and resistance to infections.	● Protein Energy Malnutrition ● Marasmus (wasting), Kwashiorkor ● Anaemia, failure to thrive (failure to grow)
Carbohydrates	Maize meal, millet meal, sorghum meal and cassava meal, rice, potatoes, sweet potatoes, cassava, bread, sugar, yams	● Provide energy to the body ● Fibre in carbohydrates prevents constipation, coronary heart disease and diabetes. ● Soluble fibres are also used in diarrhoea treatment.	● Protein Energy Malnutrition ● Marasmus (wasting), Kwashiorkor ● Anaemia ● Failure to thrive (failure to grow)
Fats	Edible insects e.g. Inswa, Tunkubyu, matingatila, cooking oil, margarine, cream, peanut butter, groundnuts, avocado pear.	● Source of energy and heat ● production, therefore important for weight gain. ● Aids absorption and transportation of fat.	● Marasums (wasting) ● Skin problem ● Anaemia ● Hypothermia (excessively feeling cold in the body, hands and feet).

ANNEX 1:

Macro-nutrients (Nutrients required in large amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTONS
Vitamin A	Carrots, eggs, liver, mangoes, papaya, pumpkins, green leafy vegetables, yellow sweet potatoes, red palm oil, full-cream milk (when fortified), cheese, butter, amaranthus (Ibondwe), cassava leaves (katapa), cowpea leaves, sweet potatoes leaves (kalembula), turnip, wild fruits Zambian household sugar, fortified maize meal .e.g. National Milling	● White blood cells formation. ● Good eyesight ● Healthy skin. ● Bone development. ● Antioxidant. Needed for the immune function and resistance to infection	● Dry eye, skin and hair. ● Prone to problems. ● Blindness ● Skin and infections.
Vitamin B1 (Thiamine)	Whole-grain cereals, meat, beef kidney, poultry, fish, liver, milk, eggs, oil, seeds and legumes, bambara groundnuts, soya, cashew nuts, cowpeas, pork.	● Used in energy production. ● Promotes appetite. ● Supports the central nervous system.	● Beri-beri (enlargement of the nerves, loss of weight, oedema, disturbances in the functions of the heart). ● Loss of appetite, Nausea; Tiredness, Numbness of the hands and feet.

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTONS
Vitamin B2 (Riboflavin)	Milk, eggs, liver, meat, fish, yoghurt, green leaves, whole-grained and legumes, amaranthus, okra leaves.	● Energy production. ● Supports vision. ● Healthy skin.	● Cracking of the mouth corners, ● Cracked lips, ● Rough skin.
Vitamin B3 (Niacin)	Milk, eggs, meat, poultry, fish, peanuts, whole-grained cereals, unpolished rice, cassava, potatoes, sweet potatoes, yam, beans, soya, cowpeas, bambara groundnuts, groundnuts, cashew nuts, pumpkin seeds, carrots, cauliflower, cowpea leaves, eggplant, mushrooms, okra, pepper, caterpillar, pork, sweet potato leaves, avocado, guava, mango, pawpaw.	● Energy production ● Healthy Skin	● Pellagra (darkening of the skin which is mostly exposed to sun, scaly skin, Diarrhoea, confusion and vomiting. In some cases, the tongue is red and sore.) ● Dementia (loss of memory)
Vitamin B6	Legumes (white beans), potatoes, meats. Fish, poultry, shellfish, watermelon, oil seeds, maize, avocado, broccoli, green leafy vegetables, pepper, banana, groundnuts, Soya, liver	● Breakdown of proteins and fats. ● Production of antibodies, red blood cells protein and nerve transmitters.	● Anaemia; Tiredness ● Irritability; Depression ● Dizziness, Muscle twitching ● Nerve problems

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTONS
Vitamin B12	Meat, fish, poultry, cheese, eggs, milk, liver.	● Formation of red blood cells and white blood cells. ● Maintains the nerves and the digestive tissues.	● Anaemia, tiredness. ● Confusion, Numbness, Nerve problems, Memory problems ● Ringing in ears.
Vitamin C	Guava, oranges and lemons; cabbage, green leaves, tomatoes, peppers, potatoes, yams, cooked plantains, wild fruits.	● Helps the body to use calcium and other nutrients to build bones and the walls of blood vessel. ● Increases non-heame iron absorption ● Increases resistance to infections ● Acts as an antioxidant. ● Important for protein metabolism.	● Scurvy (bleeding of the gums) ● Gingivitis (bleeding, sore and inflamed gums) ● Stomatitis (sores on corners of the mouth) ● Anaemia

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTONS
Folic Acid	Liver, green leafy vegetables such as kalebwe/kalembula, chibwabwa, Katapa, ibondwe, fish, pork, kidneys, legumes, groundnuts, oil seeds.	● For healthy teeth, gums, and bones. ● fights infections ● Helps iron absorption, ● Works as an antioxidant	● Bleeding gums, Slow hearing ● Prone to infections; Anaemia, ● Muscle and joint pains ● Frequent colds; Depression
Vitamin E	Green and leafy vegetables, vegetable oils and wheat germ. Whole-grain products butter, liver, egg yolk, peanuts, milk fat, nuts, seeds.	● Increases disease resistance ● Enhances reproduction ● Slows ageing process ● Treats scar tissue ● Antioxidant	● Tiredness, Dry hair ● Leg cramps, Muscle weakness ● Nerve problems, Hearing problems ● Infertility, Impotence
Calcium	Milk, yogurt, cheese, green leafy vegetables, broccoli, dried fish with bones that are eaten, legumes, peas.	● Building strong bones and teeth ● Normal functioning of the heart muscle ● Helps in blood clotting ● Helps to maintain normal blood pressure	● Delayed blood clotting. ● Weak breakable bones ● Problem teeth ● Low resistance to infection ● Rickets (weak bones and are easily bent and deformed. This is very common in children) ● Stunting

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTONS
Iodine	Seafood, iodated salt.	● Development and proper functioning of the brain and the nervous system ● Important for normal growth and development ● Important for reproduction.	● Goitre (swelling on the neck) ● Cretinism (imbecile) ● Impaired brain function ● Dwarfism (gross stunting) ● Abortions
Zinc	Meats, fish, poultry, shellfish, whole grain cereals, legumes, peanuts, milk cheese, yogurt, vegetables.	● Protects immune system needed for digestive and immune systems ● Formation of Enzymes ● Wound healing ● Vitamin A metabolism ● Normal development of male organs ● Antioxidant	● Slow growth ● loss of smell and taste ● Loss of appetite ● Diarrhoea, Poor wound healing ● Skin problems, Ringing in ears ● Prostate cancer
Selenium	Brown rice, nuts, whole grain, onions, garlic egg Yolk, milk, meat, sea food.	● Prevents oxidation and breakdown of fat and other body cells. ● Antioxidant	● Weakness ● Pancreatitis (blockage of the pancreatic ducts), Impaired growth ● Impaired hearing, Faster HIV disease progress and reduced survival ● Impaired immune system

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTONS
Magnesium	Legumes, nuts, seeds, whole grains, avocado, green leafy vegetables, e.g. okra, broccoli, cucumber skin, sea food	● For muscle and nerve function ● Release of energy from fats, proteins and carbohydrates. ● Strong bone and teeth	● Spasms (twitching of muscles) ● Cramps, Tremors ● Constipation
Iron	Main sources are red meat, liver, fish, poultry, and shellfish. Other sources include eggs, legumes, nuts including peanuts .	● Needed for oxygen exchange in blood ● Needed by enzymes. ● Vitamin C is important for absorption of iron ● Energy production	● Anaemia, Headache ● Tiredness, Irritability ● Paleness, Dizziness ● Decreased mental Alertness

Adapted from NZP+, 2002

ANNEX 2: EXAMPLES OF LOCALLY AVAILABLE FOODS AND THEIR POTENTIAL ROLES IN THE BODY

Food Items	Role in the Body
Grains, Cereals and Tubers *mugaiwa/umgayiwa* (Straight run mealie-meal from maize), Green maize, *Musozya* (maize samp), *Maila, amasaka* (sorghum), *Nzembwe, Amale* (millet), *Umupunga* (Indigenous rice), *Tute* cassava (tubers), *Ifyumbu, chimbwali* (sweet potatoes)	Good source of energy for the body Also provide some minerals and vitamins, in particular the B-group vitamins (riboflavin, thiamine, niacin vitamin B-6 and B-12, folate) if the skin and kernel of the grains /cereals are eaten whole. Some refined cereals may be fortified with some vitamins and minerals.
Indigenous vegetables and legumes *Kalembula (*Sweet potato leaves) *Katapa (cassava leaves); Dried or fresh pumpkin leaves, cowpeas and bean leaves; Dried mushrooms; Dried okra; Baobab twigs; Ibondwe (amaranthus).* *Nshaba, nyemu, imbalala (*groundnuts) Cilemba, nchunga (beans)	These provide proteins, vitamins (especially vitamin A) and minerals ***–the rich sources of vitamin A tend to be the dark leafy green, yellow, orange and red vegetables and fruits*** They also provide other non-nutrient substances known as phytochemical that may help to strengthen the immune system. Good source of Fiber in the diet

ANNEX 2:

Food Items	Role in the Body
Indigenous fruits **Wild fruits:** *mabuyu infungo, masuku, masawu, inji, mabungo, impudu*	Good sources of vitamin C and some minerals. Provide other non-nutrative (phytochemicals) substances things that help to strengthen immune system
Edible insects *Dried finkubala (*caterpillars), *Inswa* (termites), *Inshonkonono, makanta (grasshoppers),*	Source of protein and some vitamins and minerals.
Small animals: *Imbeba (*rats) *Infuko* (mole) *Sikaale (*squirrels), *Impanya (guinea pig)*	Good source of protein, some vitamins, and minerals like iron, zinc
Local beverages Fruit juices made from mabuyu, oranges, pawpaw, lemon, Mantamba, Maheu, chibwantu munkoyo (Non alcoholic drinks made from grains)	Good source of vitamin C What grains specifically are these drinks made from (it would be nice to indicate this)
Other indigenous foods *Ifipushi (* pumpkins), *Imyungu*	Provide energy, some vitamins and minerals

ANNEX 3: SUMMARY OF NUTRITIONAL ASSESSMENT FOR PLWHA

Nutrition History	● Dietary intake and adequacy, eating habits ● Food intolerances and aversions related to symptoms ● Dietary problems: poor appetite, difficulty chewing and swallowing, gastrointestinal problems, pain in mouth and gums) ● Sanitation and hygiene practices in food preparation and handling ● Psychosocial factors contributing to inadequacy of intake e.g. social isolation, depression, stigma, inability to prepare food) ● Fatigue and physical activity ● Use of vitamin and mineral supplements or alternative practices ● Knowledge about food and nutrition issues
Physical Assessment	● Anthropometric measurements: height, weight, ● Body mass index: weight/height². A body mass index of <18.5 indicates nutrition risk ● Evidence of loss of muscle mass (wasting); mid-upper arm circumference (<23cm indicates nutrition risk) ● Oral or Pharyngeal inflammation ● Pallor (inner eyelids and palms) ● General malaise (weakness)
Medical History	● Gastrointestinal problems (diarrhoea, abdominal pain, nausea, vomiting) ● Pattern of bowel movements (constipation, diarrhoea) ● Presence of opportunistic infections ● Concurrent medical problems (e.g. diabetes, hypertension, Tuberculosis, malaria)
Medication Profile	● Drug use (antiretrovirals, alternative therapies and other medications ● Medication side effects with nutrition implications ● Nutrition-medication interactions and traditional herbs or medicine interactions

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ANNEX 3:

Laboratory data (where available)	● Serum albumin ● Serum retinol ● CD4 and viral load counts ● Evaluation of anaemia (haemoglobin, iron, folate, vitamin B-12 status) ● Parasites e.g. worms
Psychosocial profile	● Living environment and functional status (income, housing, amenities to cook, access to food, attitude regarding nutrition and food preparation) ● Lifestyle practices (smoking, alcohol and drug abuse) ● Age ● Family support system ● Educational level

ANNEX 4: COMMON SIGNS AND SYMPTOMS AND DIETARY MANAGEMENT

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Diarrhoea	Loose watery stools, more frequent than usual. Check stool for infections and get treatment when accordingly Dehydration Weight loss	● Bacteria or viral and fungal infections ● Effects of the HIV itself on the gut ● Food poisoning ● Drugs or medications (esp. antibiotics) ● Poor absorption of and intolerance to nutrient e.g. lactose and sugar.	● Drink sufficient fluids such as water, diluted and unsweetened fresh fruit juices. ● Drink an ORT solution if the diarrhoea is severe. ● Eat salty foods e.g. soup, or add extra salt to meals Once diarrhoea stops, follow normal intakes. ● Eat small frequent meals. ● Eat fermented foods like maheu, sour porridge ● Decrease fatty and fried foods in the diet, instead steam or boil foods ● If milk and dairy products cause cramps try using fermented products like yoghurt ● Include soluble fibre (pectin) by eating foods like bananas, peeled apples and pears, oats, carrots, pumpkin, paw-paw, potatoes. ● Avoid insoluble fibre like in whole grain foods and beans ● Avoid caffeine (tea/ coffee) and alcohol

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Fat Intolerance	Steatorrhoea (fat in the stool) Foul smelling, frothy and floating stools	● Malabsorption of fat ● Incomplete digestion of fat ● Malnutrition	● Include more fruits and vegetables in the diet ● Bake, boil, steam or roast food ● Trim all visible fat from meat and remove skin from chicken before cooking ● Eliminate use of oils, butter, margarine in food preparation and avoid foods that contain or are prepared with them ● Avoid fatty foods such as potato chips, butter/margarine, mayonnaise and cream ● Avoid deep fried and greasy foods ● Eat smaller, more frequent meals spaced out evenly throughout the day. ● Take a daily multivitamin, if available
Taste Changes	Food does not taste normal or pleasant Metallic taste Food tasting too sweet or too salty	● Stress ● Side effects of medications ● Common cold ● Flu ● Malaria	● Add a variety of seasonings to food to give more flavour . ● Try different textures and varieties of food ● Try rinsing out the mouth after meals.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			● Use lemon, raw tomatoes or tonic water to stimulate taste buds. ● Chew food well and move around mouth to stimulate taste buds
Nausea and Vomiting	Loss of appetite, Dehydration Weight loss	● Side effect of medications ● Infections ● Food with strong aromas ● Food intolerances	● Take small frequent meals. ● Avoid having an empty stomach which makes the nausea worse ● Cool or cold meals are better tolerated than hot. ● Take diluted and unsweetened fruit juice, especially lemon. ● Try dry, salty, and bland foods such as dry bread or toast or other plain dry foods and boiled foods ● Do not lie down immediately after eating; wait 1-2 hours ● Avoid greasy, or fried foods ● Avoid taking fluids with meals rather taken them between meals. ● Avoid coffee and alcohol

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			● Suck on a lemon the sour taste can help to reduce nausea or squeeze lemon into the water you are drinking. ● Avoid foods with strong or unpleasant smell. ● If vomiting, drink plenty of fluids to replace lost fluids and prevent dehydration
Fatigue (lethargy)	Poor performance loss of concentration, general malaise.	● Illness ● Stress ● Depression	● Have someone else to prepare food for the patient. This will help the patient conserve energy ● Eat smaller more frequent meals and snacks throughout the day ● Eat foods that are easy to prepare and easy to chew. ● Drink high protein, high energy liquids e.g. High Energy Milk (egg flip), *maheu, chibwantu,* etc. ● Try to eat at the same time each day ● Exercise as able to increase energy

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Muscle Wasting	Loss of subcutanous fat Weight loss	● Infections ● Poor quality and /or inadequate diet	● Eat balanced meals regularly and include a source of protein with each meal. ● Eat high protein snacks between meals e.g. roasted peanuts, boiled eggs, ● Exercise regularly to increase lean body mass and appetite. ● Increase nutrient density of foods without visibly increasing the volume of the meal by adding peanut butter, skimmed milk powder, or eggs in soups or porridge. ● Use and/or add fat and oil to food and in cooking if tolerated.
Fever	High temperatures, fast breathing, dry mouth, looking ill, feeling lethargic.	● Infection	● Eat high energy, high protein meals ● Drink pleanty of fluids e.g. milk, soups, sour milk, *maheu, chibwantu, munkoyo*. ● Add snacks between meals ● Eat small frequent meals as tolerated

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Heartburn /Bloatedness or fullness	Feeling of fullness, discomfort or pain, after eating.	● Indigestion ● Antibiotics ● Some anti-inflammatory drugs ● Some gas forming or cold foods. ● Constipation ● Very spicy foods ● Very fatty foods	● Eat small frequent meals. ● Eat slowly and try not to talk while chewing. ● Drink fluids an hour before or after a meal. ● Avoid lying down immediately after eating wait 1-2 hours ● Eat long before you plan to go to sleep. ● Exercise ● Avoid gas-forming foods that are associated with cramping and bloating such as beans, cabbage, eggplant, onions, green peppers ● Avoid carbonated drinks ● Avoid greasy, deep-fried, and/or spicy foods.
Candida/ thrush/ mouth sores	Candida manifests as white patches in the mouth and/or throat. Difficulty chewing and swallowing. Pain chewing and swallowing **NB: Candida can also affect the vagina.**	● Infection ● Weakened immune system ● Antibiotic therapy	● Eat soft, pureed, or moist foods such as scrambled eggs, custard, mashed potatoes, mashed carrots, pureed pumpkin, paw-paws, or porridge. ● Eat fermented food like maheu, Munkoyo, lacto (mabisi), yoghurt that help to relieve oral thrush. ● Suck a lump of ice or have an ice cold drink before a meal.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			● Practice good oral hygiene. Rinse mouth daily to prevent thrush with 1-teaspoon baking soda mixed in a glass (250ml) of warm water. Do not swallow the mixture. ● Drink liquids with a straw to ease swallowing. ● Avoid sticky or dry foods such as peanut butter. ● Avoid sweet or sugary food and drinks ● Avoid hot foods; eat foods at room temperature cold food can be soothing. ● Avoid acidic food e.g. citrus fruit, vinegar and spicy, and very salty foods. ● Avoid alcohol
Cold, flu and Coughs.	sneezing, coughing, runny or blocked nose, sore throat	● Infection ● Allergies ● Tuberculosis	● Take high protein, high-energy fluids e.g. *maheu, chibwantu*, milk and egg flip. ● Eat smaller more frequent meals ● Eat fruit and/or drink fruit juices. ● Cut an onion into small pieces and keep it by the bedside. The onions stimulate secretions and will keep the airway moist thus soothing them.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			● Sprinkle sugar onto an onion that has been cut into pieces and let it soak in to make syrup. Drink it slowly. This helps to soothe the throat. ● Drink ginger and cinnamon tea or make hot ginger compresses for the chest. ● Avoid very cold foods and drinks
Anorexia (loss of appetite)	No desire to eat food Weight loss malnutrition	● Chronic infection ● Side effects of medications ● Malnutrition ● Monotonous meals ● Stress, anxiety and depression ● Noxious smell and odours	● Eat small frequent meals, throughout the day ● Eat nutritious snacks between meals. ● Take walks before meals the fresh air helps to stimulate appetite ● Avoid smoking. It reduces appetite. ● Avoid preparing meals or staying in the kitchen while food is being prepared. The smell can bring on a sense of satiety. Have family or friends assist with food preparation

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Anaemia	● Feeling tired and weak ● Paleness in the eyes, tongue, palms and nail beds.	● Lack of iron in diet ● Infections such as malaria and hookworms ● Blood loss due to an injury or monthly periods /menses	● Eat more iron-rich foods, such as animal products (eggs, fish, meat and liver), green leafy vegetables (rape, chibwabwa, katapa, Ibondwe, kalebwe bean leaves and spinach and fortified cereals e.g. National milling maize meal etc. ● Take Iron supplements, if recommended by the doctor. Best if taken with a source of vitamin C such as tomatoes, oranges or orange juice or any other fruits to help absorb iron. ● Avoid drinking tea or coffee with meals.
Tuberculosis	● Cough lasting more than three weeks ● Feeling feverish and sweating at night. ● Spitting blood.	Caused by the bacteria *mycobacterium avium* that infects the lungs	● Eat small frequent meals ● Consume foods high in protein, energy, iron and Vitamins. ● Consult medical personnel about taking food with medications. ● If taking Isoniazid for treatment, take Vitamin B6 supplement to avoid deficiency of this micronutrient.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Constipation	Irregular passage of stool. Passing of very hard and small stool.	● Eating highly processed/ refined foods. ● Inadequate intake of foods high in fibre. ● Side effect of some medications.	● Eat more foods that are high in fibre content such as fresh maize, roller meal, whole meal bread, vegetables and fruits. ● Avoid processed or refined foods. ● Avoid using cleansing practices such as enemas and laxatives. ● Drink plenty of fluids including boiled water. ● Exercise as much as possible

ANNEX 5: HINTS FOR POSITIVE LIVING FOR PLWHA

Positive living involves knowing and accepting you are HIV positive status. General recommendations for taking care of yourself are given below:

- The body needs extra rest. Try to sleep for eight hours every night. Rest whenever you are tired.
- Try not to worry too much. Stress can harm the immune system. Try to relax. Relax with people you love, your family, your children and your friends. Do things you enjoy, e.g. listen to music or read a newspaper or a book.
- Be kind to yourself. Try to keep a positive attitude. Feeling good is part of being healthy.
- Take regular exercise. Choose a form of exercise that you enjoy.
- Find support and good advice. Ask for advice from health workers. Many medical problems can be treated.
- Seek spiritual support. It helps one maintain hope for a better future and appreciate that life is worth living.
- Ask for help and accept help when it is offered.
- Avoid smoking. It damages the lungs and many other parts of the body and makes it easier for infections to attack your body.
- Excessive alcohol is harmful to the body, especially the liver. Under the influence of alcohol you may forget to practice safer sex. It also decreases the efficiency of medications.
- Avoid taking medicines unnecessarily. They often have side effects and can interfere with food. If you do take medicines, read the instructions carefully.

ANNEX 6: FOOD AND NUTRITION IMPLICATIONS OF ARVS

ARV	Food Recommen-dations/ What to Avoid	Possible Side effects	Possible Actions to Manage Effects of ARVs – Food and Nutriton Interactions
ARV Class: Reverse Transcriptase Inhibitors **ARV Type: Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI)**			***Anorexia*** Eat small and frequent meals. Eat favorite foods. Select foods that are energy and nutrient dense. ***Change or loss of taste*** Use flavour enhancers such as salt, spices or lemon. Chew food well and move around in mouth to stimulate receptors. ***Constipation*** Eat foods high in fibre content. Drink plenty of liquids. Avoid processed or refined foods.Exercise regularly according to capacity. ***Diarrhoea*** Drink plenty of fluids. Continue eating during and following illness. Prepare and drink rehydration solution if the diarrhoea is severe. Avoid fried foods.
Efavirenz (EFZ)	Can be taken without regard too meals, except do not take with a high fat meal. (a high fat meal reduces drug absorption) **Avoid:** alcohol	Elevated blood cholesterol levels. Elevated triglyceride levels, rash, dizziness, anorexia, nausea, vomiting, diarrhoea, dyspepsia, abdominal pain, flatulence	
Nevirapine (NVP)	Can be taken without regard to food	Nausea, vomiting, rash, fever, headache, fatigue, stomatitis, abdominal pain, drowsiness, paresthesia. High hepatotoxicity	
ARV Class: Reverse Transcriptase Inhibitors **ARV Type: Non-Nucleoside Reverse Transcriptase Inhibitors (NRTI)**			
Abacavir (ABC)	Can be taken without regard to food.	Nausea, vomiting, fever, allergic, reaction, anorexia, abdominal pain,	

ANNEX 6:

		diarrhoea, anaemia rash, hypotension, pancreatitis, dyspnoea, weakness, insomnia, cough, headache	***Fever*** Drink plenty of fluids. Eat energy and nutrient dense foods ***Flatulence*** Avoid gas-forming foods, such as bean cabbage, broccoli and cauliflower. ***High blood cholesterol*** Eat a low fat diet and limit intake of foods rich in cholesterol and saturated fat, Use low fat cooking methods such as baking, steaming or boiling. Eat fruits and vegetables daily. Exercise regularly according to capacity. ***High Triglycerides*** Limit sweets and excessive carbohydrate and saturated fat intake. Eat fruits vegetables, and whole grains daily. Avoid alcohol and smoking. Exercise regularly according to capacity.
Didanosine (ddl)	Take 30 minutes before or two hours after eating. Take with water only. (taking with food reduces absorption) **Avoid:** Do not take with juice. Taking with antacids containing Aluminium or Magnesium	Anorexia, diarrhoea, nausea, vomiting, pain, headache, weakness, insomnia, rash, dry mouth, loss of taste, constipation, stomatitis, anaemia, fever, dizziness, Pancreatitis	
lamivudine (BTC)	Can be taken without regard to food **Avoid:** Alcohol	nausea, vomiting, headache, dizziness diarrhoea, abdominal pain, nasal symptoms, cough, fatigue, pancreatitis, anaemia insomnia, muscle pain, rash	
Stavudine (d4T)	Can be taken without regard to food Limit the consumption of alcohol	Nausea, vomiting, diarrhoea, peripheral neuropathy, chills and fever,	

ANNEX 6:

		anorexia, Stomatitis, anaemia, headaches, rash, bone marrow suppression, Pancreatitis. May increase the risk of lip dystrophy.	***Nausea or vomiting*** Eat small quantities of food at frequent intervals. Drink after meals and limit intake of fluids with meals. Avoid having an empty stomach. Avoid lying down immediately after eating. Eat lightly salty and dry foods to calm the stomach.
Tenofovir **(TDFd4T)**	Take with meal	Abdominal pain, headache, fatigue, dizziness.	
Zidovudine **(ZDV/AZT)**	Better to take without food, but it causes nausea or stomach problems, take with a low-fat meal. Do not take with a high fat meal. **Avoid:** Alcohol	Anorexia, anaemia, nausea, vomiting, bone marrow suppression, headaches, fatigue, constipation, dyspepsia, fever, dizziness, dyspnoea, insomnia, muscle pain, rash.	
ARV Class:	**Protease Inhibitors**		
Indinavir **(IDV)**	Take on an empty stomach one hour before or two hours after meal. Or take with a light non-fat meal. Take with water. Drink at least 1500 ml of fluids daily to prevent kidney stones.	Nausea, abdominal pain, headache, kidney stones, taste changes, vomiting, regurgitation, diarrhoea, insomnia, ascites, weakness dizziness. May increase the risk of lip dystrophy.	

ANNEX 6:

	Avoid: eating grapefruit and grapefruit juice and taking St John's wort		
Iopinavir (LPV)	Can be taken without regard to food Avoid: St John's wort	Abdominal pain diarrhoea, headache, weakness, nausea. May increase the risk of diabetes.	
Relfinavir (NFV)	Take with a meal or light snack. Taking with acidic food or drink will cause a bitter taste. **Avoid:** St John's Wort	Diarrhoea, flatulence, nausea, abdominal pain, rash. May increase the risk of lip dystrophy.	
Ritonavir (RTV)	Take with a meal if possible **Avoid:** St John's Wort	Nausea, vomiting, diarrhoea, hepatitis, jaundice, weakness, anorexia, abdominal pain, fever, diabetes, headache, dizziness. May increase the risk of lipodystrophy.	
Saquinavir (SQV)	Take with a meal or light snack. Take within two hours of high fat and high calcium meal.	Mouth ulceration, taste changes nausea, vomiting, abdominal pain, diarrhoea, constipation, flatulence, weakness, rash, headache, and insomnia. May increase the risk of lip dystrophy.	

Source adapted from Food and Nutrition Technical Assistance (FANTA) Technical Note No. 7 August 2003.

ANNEX 7: COMMONLY USED HERBS AND SPICES

Name	Benefits	How to use	Caution	Source/s
Aloe vera	Relieves constipation Soothing and healing to wounds	Use as extract from chopped leaf; boil and drink the concentrated water. Apply fresh gel to wounds	Use limited amounts for a maximum of 10 days. May cause diarrhoea Avoid in pregnancy	UNZA Horticultural Garden Other Commercial Botanical gardens PLWHA-Pharmaceutical extracts in Chemists
Basil	Relieves nausea Aids digestion Antiseptic for mouth sores	Make tea – one teaspoon of leaves to a cup of boiling water and drink 3 times a day Add fresh or dry leaves to food For mouth sores – gargle the tea -2 tablespoons to a tea cup of boiling water.		Shoprite – spice section City Market Spice Stands Spice shops
Calendula	Flower heads have antiseptic, anti-inflammatory and healing function.	Use as a compress to treat infected wounds. Prepare as tea to help digestion.		

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
	Helps with infections of the digestive tract.			
Cardamom	Helps with digestive problems, pain, diarrhoea, nausea, vomiting and loss of appetite.	Add to food during cooking or prepare as tea.		
Cayenne pepper **Capsicum spp**	Stimulates appetite Aids digestion Good general tonic for digestive and circulatory systems antiseptic	Add a pinch to cooked or raw food, drinks or water	Should not be used in cases of gastric hyperacidity, peptic ulceration or on mucous membrane. Wash hands after use to avoid accidental eye or mucous membrane irritation.	Shoprite – spice section City Market Spice Stands Spice shops

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
Chamomile **Chamomilla recutita (L)**	Relieves nausea Aids digestion Stimulates appetite Soothing harmless sedative Anti-inflammatory antiseptic	Make tea – one teaspoon dry flowers or leaves to a cup of boiling water and drink 3 times a day Steam inhalation for inflamed mucous membranes of the head and throat		Shoprite – tea section Spice shops Commercial Botanical gardens
Cinnamon **Cinnamon zeylanicum**	Relieves nausea Aids digestion Stimulates appetite Antidiarrhoeal Antiseptic Good for colds and flu	Add to meals or tea ¼ teaspoon (level) each of powdered cinnamon, sage, ginger, garlic, rosemary and cloves mixed to make a tea is good for colds and digestion – take once or twice a day.	Avoid cinnamon in pregnancy	Shoprite – spice section City Market Spice Stands Spice shops
Cloves **Eugenia caryophyllus**	Relieves nausea Aids digestion Stimulates appetite	Use in soups, stews, warmed fruit juice and tea. 3 whole cloves to a cup of tea		Shoprite-spice section City Market Spice Stands Spice shops

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
	Antidiarrhoeal Antiseptic Mild anaesthetic	¼ teaspoon (level) each of powdered cinnamon, sage, ginger, garlic, rosemary and cloves mixed to make a tea is good for colds, digestion and other common ailments – take once or twice a day. Toothache - put a clove near the tooth and keep it in the mouth		PLWHA-Pharmaceutical preparations in chemists
Coriander	Helps to increase appetite and reduce flatulence. Controls bacteria and fungi	Add herb to meals		
Eucalyptus **Eucalyptus globus**	Antibacterial function particularly for lungs Relieves upper respiratory congestion	One teaspoon of pounded leaves to a cup of boiling water – take twice daily ½ teaspoon eucalyptus and ½ teaspoon Rosemary to a cup of boiling water – take twice daily.		Collect young eycaluptus (blue gum) leaves. PLWHA-Pharmaceutical preparations in chemists

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
	Good for bronchitis, asthma and fever. Aids digestion Anti-inflammatory.	½ teaspoon eucalyptus and ½ teaspoon Rosemary to a cup of boiling water – take twice daily.		
Fennel **Foeniculum vulgare**	Aids digestion Stimulates appetite Combats flatulence Anti-in flammatory Antiseptic	Add as spice to foods ½ teaspoon of pounded or 1 teaspoon crushed seeds to a cup of boiling water – take twice daily. Gargle tea for PLWHAryngitis		City Market Spice Stands Spice shops
Garlic **Allium sativum**	Have antibacterial, antiviral and antifungal functions, particularly in the gut, lungs and vagina. Aids digestion and feeling of weakness.	Use in food as a spice. ¼ teaspoon (level) each of powdered cinnamon, sage, ginger, garlic and cloves mixed to make a tea is good for colds, digestion and other common ailments – take once or twice a day.	Should not be taken if taking the ARV Saquinavir-garlic reduces the efficacy of the drug.	Shoprite– vegetable and spice sections City Market Spice Stands Other markets Spice shops, supermarkets Pharmaceutical preparations in chemists

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
	Good for thrush, throat infections, herpes and Diarrhoea			
Ginger **Zingiber officinale**	Stimulates appetite Improves digestion Relieves diarrhoea Energizes Treats common colds, flu and nausea.	Use as a spice in meals Use as a tea		Shoprite– vegetable and spice sections City Market Spice Stands Other markets Spice shops, supermarkets Pharmaceutical preparations in chemists
Lemon	Antibacterial Helps digestion	Add lemon juice to foods or drinks		
Lemon grass	Has a calming effect Soothing and stress alleviating Aids digestion	Use as a tea		horticultural gardens

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
Mint	Helps digestion Has anti-inflammatory effect	Use as a tea or gargle for mouth sores Chew mint leaves to aid digestion		
Neem	Brings down fever	Cut a fresh twig, remove the leaves and boil the bark in water; drink as tea. The bark can also be chewed.		
Parsley **Alchemilla arvenis**	Reduces intestinal colic Stimulates stomach secretions Activates and produces a feeling of hunger. The seed is used to remove excess water from the body.	Add raw or cooked to food		Shoprite– vegetable and spice sections City Market Spice Stands Other markets Spice shops, supermarkets

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
Peppermint **Mentha piperata**	Helps nausea Reduces colic (abdominal pain and cramps). Helps to control diarrhoea and vomiting. Relieves tension and sleeplessness.	Boil leaves for ten minutes to make a tea Add to food		can easily be grown in the garden
Rosemary **Rosmarinus officinalis**	Stimulates appetite Aids digestion Good general tonic for digestive, respiratory, nervous and circulatory systems Antiseptic and antibiotic Anti-inflammatory	Make tea – one teaspoon of leaves to a cup of boiling water and drink 3 times a day Add fresh or dry leaves to food or warmed fruit juice For mouth sores and throat infections – gargle the tea -2 tablespoons to a tea cup of boiling water. Steam inhalation for asthma ¼ teaspoon (level) each of powdered cinnamon, sage, Rosemary,		Shoprite– spice section City Market Spice Stands Spice shops PLWHA-Pharmaceutical preparations in chemists

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
		ginger, garlic and cloves mixed to make a tea is good for colds, digestion, menstrual and other common ailments – take once or twice a day.		
Sage Salvia officinalis	Stimulates appetite Aids digestion Good general tonic for digestive, respiratory, nervous and circulatory systems Antiseptic and antibiotic Anti-inflammatory	Make tea – one teaspoon of leaves to a cup of boiling water and drink 3 times a day Add fresh or dry leaves to food or warmed fruit juice For mouth sores and throat infections – gargle tea made using 2 tablespoons to a tea cup of boiling water. Steam inhalation for asthma ¼ teaspoon (level) each of powdered cinnamon, sage, Rosemary,	Avoid use of essential oil during pregnancy – use leaves, not exceeding one teaspoon to a cup of boiling water twice a day	Shoprite– spice section City Market Spice Stands Spice shops PLWHA-Pharmaceutical preparations in chemists

ANNEX 7:

Name	Benefits	How to use	Caution	Source/s
		ginger, garlic and cloves mixed to make a tea is good for colds, digestion, menstrual and other common ailments – take once or twice a day.		
Thyme **Thymus vulgaris**	Has antiseptic and antifungal function Relaxes nervous coughing Increases mucosal secretions (particularly in the gut) Stimulates digestion and growth of good intestinal flora.	Make tea – one teaspoon of leaves to a cup of boiling water and drink 3 times a day Add fresh or dry leaves to food or warmed fruit juice For mouth sores and throat infections – gargle tea made using 2 tablespoons to a cup of boiling water. Tea used as vaginal douche		Shoprite– spice section City Market Spice Stands Spice shops
Turmeric/ yellow root	Digestive aid Antiseptic Antioxidant			use powdered in rice, cereals, etc.

ANNEX 8: POSSIBLE INDICATORS FOR MONITORING AND EVALUATION OF NUTRITIONAL CARE GUIDELINES

Component	Objective	Indictors	Proposed data collection method
Dissemination	To assess the effectiveness of the dissemination strategies.	● Percentage / proportion of the target groups / organizations with access to the copies of the guidelines. ● Percentage / proportion of target group(s) who are aware of the existence of the guidelines. ● Number of strategies used to disseminate the guideline and recommendation. ● Number of additional guideline support materials developed and distributed.	Review of records and community based sample survey.
Implementation	To incorporate and put in practice the guideline recommendation in the on-going programs and services.	● Number of health programs and service points implementing nutrition care services for PLWHA. ● Number of staff charged for nutritional care services.	Review of records and community based sample survey.

ANNEX 8:

Component	Objective	Indictors	Proposed data collection method
		● Number of training institutions with nutritional care sessions incorporated in their training program. ● Number of training sessions organized for service providers at different levels. ● Number of service providers trained on nutritional care services for PLWHA. ● Range of implementation strategy done to facilitate uptake of the guidelines. ● Number of PLWHA receiving nutritional care services	
Behaviour change among Provider and patients/ clients/ families	To assess the acceptance of the guidelines by the providers and clients.	● Proportion of providers expressing willing to adopt or continue implementing guideline recommendations.	Sample survey and observation.

ANNEX 8:

Component	Objective	Indictors	Proposed data collection method
		● Proportion of providers and patient awareness of nutrition guidelines ● Level of attitude by provider and clients towards nutritional care guidelines. ● Proportion of PLWHA practicing nutritional care guidelines	
Health out-come of PLWHA	To monitor the health effects of nutritional care and support guidelines	● Proportion of PLWHA receiving nutritional care services who have maintained weight and or gained weight ● Rate of opportunistic infections among PLWHA on Nutritional Care services.	Longitudinal Sample survey and observation.

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