

FOOD AND  
NUTRITION  
TECHNICAL  
ASSISTANCE

---

# HIV/AIDS: A Guide For Nutrition, Care and Support

---

July 2001



This guide was made possible through support provided to the Food and Nutrition Technical Assistance (FANTA) Project by the Office of Health and Nutrition of the Bureau for Global Programs Field Support and Research at the US Agency for International Development, under terms of Cooperative Agreement No. HRN-A-00-98-00046-00 awarded to the Academy for Educational Development (AED). The opinions expressed herein are those of the author and do not necessarily reflect the views of the US Agency for International Development.

Recommended citation:  
HIV/AIDS: A Guide For Nutrition, Care and Support. Food and Nutrition Technical Assistance Project, Academy for Educational Development, Washington DC, 2001.

Published September 2001

Copies of the Guide can be obtained from:

Food and Nutrition Technical Assistance (FANTA) Project  
Academy for Educational Development  
1825 Connecticut Ave. NW,  
Washington DC, 20009-5721  
Tel: 202-884-8000  
Fax: 202-884-8432  
Email: [fanta@aed.org](mailto:fanta@aed.org)  
Website: [www.fantaproject.org](http://www.fantaproject.org)

# Contents

Page number	7	<b>INTRODUCTION</b>
	7	Purpose
	8	Audience
	8	How To Use This Guide
		<b>1.</b>
		<b>MODULE 1.</b>
10		<b>Nutrition and HIV/AIDS: Basic Facts</b>
10		What is HIV? What is AIDS?
11		How HIV Is Transmitted
11		How HIV Is NOT Transmitted
12		HIV Cases in Africa
12		Nutrition and HIV/AIDS
13		Anorexia
13		Diarrhea
13		Fever
14		Nausea/Frequent Vomiting
14		Thrush
14		Anemia
14		Other Nutritional Impacts of HIV
15		How to Maintain Good Nutrition
15		Macronutrients
15		Micronutrients
16		References

## Contents - *continued*

---

### MODULE 2.

18	Coping with HIV: Nutrition and Other Strategies for Living Positively
18	Good Nutritional Practices
18	Eat Small but Frequent Meals
18	Eat a Variety of Foods
21	Growth Promotion and Preventive Health Care for Children
21	Safe Hygienic Practices: Proper Storage and Handling of Food and Water
21	Water
21	Animal Products
21	Fruits and Vegetables
21	General Foods Storage and Handling
22	Safer Sexual and Reproductive Health Practices
22	Physical Activity
22	Immediate Attention for Illnesses
22	Eating During and After Illness
23	Psychosocial Support
23	Involvement in Community Activities
23	References

2.

---

### MODULE 3.

24	FOOD MANAGEMENT FOR ADULTS LIVING WITH AIDS-RELATED SYMPTOMS AND ILLNESSES
27	Planning Meals for PLWHAs
28	Nutritional Counseling and Support
29	References

3.

#### MODULE 4.

##### Nutritional Issues Associated with Modern and Traditional Therapies

##### Modern Medications

##### Traditional Therapies

##### Diarrhea

##### Fever

##### Cough

##### Headaches

##### Sore Throats

##### Sores in the Mouth and Thrush

##### Shingles

##### Other Skin Rashes

##### References

4.

#### MODULE 5.

##### Nutrition and Care Recommendations for Infants/Children

##### Messages for Health Workers and Promoters Working with Mothers Whose Status is Unknown or HIV-Negative

##### Recommendations for Health Workers and Promoters Working with HIV-Infected Mothers

##### References

5.

#### MODULE 6.

##### A Food-Based Approach to Support HIV/AIDS Affected Households and Communities

##### Introduction

##### Community-Based Care and Support

##### Facilitating a Community-Led Situation Assessment

##### Designing and Implementing a Food Program

##### Selecting Ration Size and Composition

##### Linking Communities with Other Services

##### Institution-Based Feeding Programs

##### Institutional Care for Severely Malnourished Individuals

##### References

6.

## Acknowledgements

Serena Rajabiun was the principal author.

Many people and organizations contributed to this guide. An early draft of the guide was reviewed by organizations in Malawi, Uganda and Zimbabwe. These organizations included: Malawi- Catholic Relief Services, Lighthouse Clinic, NAPHAM, Network for People Living with HIV/AIDS, US Peace Corps/Agricultural Research Center and Save the Children; Uganda- The AIDS Support Organization, Catholic Relief Services and The Regional Quality of Care Center; Zimbabwe- Catholic Relief Services, The Mutare Catholic Health Services.

Additional technical input was provided by: Bruce Cogill, Tony Castleman, Paige Harrigan, Marya Khan, Sandra Remancus, Anne Swindale and Caroline Tanner (Food and Nutrition Technical Assistance Project); Rene Berger, Paurvi Bhatt, Eunyong Chung, Paul Delay, Miriam Labbok, Joan LaRosa, Linda Sussman and John Williamson (USAID); Dorcas Lwanga, Micheline Ntiru and Ellen Piwoz (SARA/SANA Project, AED); Mary Kroeger and Jay Ross (Linkages Project, AED); Leslie Elder (World Bank).

## Introduction

**A**pproximately 36 million persons are living with HIV/AIDS worldwide, 25 million of them in Africa. This guide provides information for affected households and communities on how to live a healthy life from the time of infection with HIV through the progression of the disease. Because a majority of people may not know their HIV status, the food/diet messages included are appropriate to help all adults and children lead healthier, more productive lives. The guide does not cover drug treatment and preventive practices, but complements other references on this topic.

### Purpose

This guide is intended to help development program managers make recommendations on food management and nutritional issues for households with members who are HIV-infected or living with AIDS. The information focuses on dietary and care practices for adults during different stages of HIV and also provides suggestions for all household and community members coping with the infection and trying to maintain their health and nutritional status.

The guide refers to the nutritional care and support needs of individuals **infected** with HIV; that is, they have the virus with or without signs of AIDS. The guide is also designed for individuals, families and communities **affected** by HIV; that is, they may or may not be HIV-infected but are experiencing the social, economic and often health consequences of the virus. The guide is designed with the view that sound nutrition practices will benefit both infected and affected populations.

Since little research is available on nutritional interventions for HIV-infected children, the guide provides general recommendations for improving their

nutritional status. Feeding recommendations for both adults and children include using locally available food products, balancing food and nutrition with medications and selecting appropriate foods through external donation programs (such as US Title II<sup>1</sup> and the World Food Program).

#### Audience

- Program managers and technical staff working with food aid and food security programs in HIV-affected areas who seek to design programs to meet the dietary needs of households coping with infection;
- Community-based organizations working with care and support issues for HIV-affected households who need information on appropriate food and nutrition practices;
- Institutions caring for persons living with HIV/AIDS or for children who have lost one or more parents/guardians to HIV/AIDS; and
- District health leaders and community and health workers in areas affected by HIV who are assessing the needs of their communities and targeting resources to those needs.

#### How To Use This Guide

The guide highlights thematic issues related to HIV/AIDS and nutrition. The six modules are organized to allow program managers to select the issues most relevant to their programs and incorporate the information as needed. In addition, the modules can be translated and adapted and shared with communities and households as a reminder of the simple practices necessary to maintain a healthy lifestyle. The six modules are:

#### **Module 1: Nutrition and HIV/AIDS: Basic Facts**

This module provides basic information on HIV/AIDS, the relationship between HIV/AIDS and nutrition and basic elements of good nutrition.

#### **Module 2: Coping With HIV: Nutrition and Other Strategies For Living Positively**

This module provides guidelines for helping HIV-infected adults who are not showing signs of illness maintain good nutrition and health status.

---

<sup>1</sup>The United States Title II Program is managed by the US Agency for International Development (USAID) Bureau for Humanitarian Response, Office of Food for Peace. Private voluntary organizations and nongovernmental organizations can solicit requests for donated US food commodities to use in their development programs. For information, contact USAID's Bureau for Humanitarian Response at [www.usaid.gov/bhr](http://www.usaid.gov/bhr).



**Module 3: Food Management For Adults Living With AIDS-Related Symptoms and Illnesses**

This module provides dietary recommendations for adults who are coping with AIDS-related symptoms and illnesses.

**Module 4: Nutritional Issues Associated With Modern and Traditional Therapies**

This module describes the nutritional issues associated with therapies to treat HIV-related illnesses and symptoms. Many people may take modern medications, such as antibiotics, or use traditional therapies such as food and herbs to manage AIDS-related symptoms.

**Module 5: Nutrition and Care Recommendations For Infants and Children**

This module provides feeding and care recommendations for infants and children regardless of HIV status.

**Module 6: A Food-Based Approach To Support HIV/AIDS Affected Households and Communities**

This module provides information on the selection, composition and size of food commodities, to program managers who address HIV-affected populations at the community and institutional level.

## Nutrition and HIV/AIDS: Basic Facts

This module provides basic facts on HIV/AIDS, the relationship between HIV/AIDS and nutrition and basic elements to maintain good nutrition in adults. This module is designed to provide

program managers with basic information to share directly with households and communities. The information is focused on sub-Saharan Africa.

### What is HIV? What is AIDS?

- H** = Human (who is affected)
- I** = Immunodeficiency (the result)
- V** = Virus (the causal agent)
- A** = Acquired (from bodily fluids through a behavior or action, including from the mother during pregnancy, during delivery or through breastmilk)
- I** = Immune (where the virus attacks)
- D** = Deficiency (resulting effect of virus)
- S** = Syndrome (series of illnesses; not just one)

Acquired Immune Deficiency Syndrome, or AIDS, is a disease caused by a retrovirus known as the Human Immunodeficiency Virus (HIV), which attacks and impairs the body's natural defense system against disease and infection. HIV is a slow-acting virus that may take years to produce illness in a person. During this period, an HIV-infected person's defense system is impaired, and other viruses, bacteria and parasites take advantage of this "opportunity" to further weaken the body and cause various illnesses, such as pneumonia, tuberculosis and oral thrush.

This is why the infections and cancers seen in HIV-infected individuals are called "opportunistic".

When a person starts having opportunistic infections, he/she has AIDS. The amount of time it takes from HIV infection to become full-blown AIDS depends on the general health and nutritional status before and during the time of HIV infection. The average time for an adult is approximately ten years.

There is no cure for HIV/AIDS. Some therapies can prevent, treat or even cure many of the opportunistic infections and relieve the symptoms associated with them, which include fever, coughing, itching, difficulty in breathing or swallowing and chronic diarrhea. Other drugs, developed more recently, directly attack HIV. These antiretroviral (ARV) drugs attack the virus and may slow its replication in the body, but they are not cures. The cost of the ARV drugs is declining but, unfortunately, the treatments are not affordable or accessible

for most people living with HIV/AIDS (PLWHA). One of the cost-effective drugs (nevirapine), used to prevent mother to

child transmission of the virus during delivery, currently costs approximately US\$138 per case.

### How HIV Is Transmitted

HIV is transmitted through three primary routes:

- Having unprotected *sex* with a person already carrying the HIV virus;
- *Transfusions of contaminated blood* and its by-products; or use of *non-sterilized instruments* such as sharing non-sterilized needles, razors and other instruments for surgical procedures;
- From infected mother to her child (*mother-to-child transmission, MTCT*) during pregnancy, childbirth or breastfeeding.

In most of the developing world, HIV is mostly transmitted through sexual contact with an infected person. Women are more likely to be infected with HIV than men. Children are also at risk. A pregnant woman who is HIV-infected has about a 15-40 percent risk of infecting her baby with HIV in the absence of antiretrovirals.

Of children who become infected, 25-40 percent will contract HIV during pregnancy or during labor, and 15 percent through breastfeeding.

#### HIV Infected Babies

*How many babies will become HIV-infected if about 20% of the mothers are HIV-infected?*

In a high HIV prevalence community, 20% of mothers are HIV-infected, the number of babies infected by breastmilk will be less than 4 percent.

In other words, of 100 women, 20 will be HIV-infected. Of the 20 who are infected, 12 will not pass the virus to their infant. Of the 8 infants that are HIV-infected, about 3 got infected by breastmilk. The remainder were infected during pregnancy and delivery.

*Conclusion: The vast majority of babies and mothers are not HIV-infected. Breastfeeding is a safe option for this majority.*

### How HIV Is Not Transmitted

HIV is not transmitted through:

- Handshakes,
- Hugging,
- Eating from the plate of an HIV-infected person,
- Mosquitoes or other insects,
- Kissing,
- Latrines.

Many people do not know that they are infected with the virus. They may appear healthy, but still be capable of transmitting the virus through unprotected sexual intercourse or by reusing contaminated

needles, razors or other devices, or in the case of a pregnant or lactating mother, during labor and delivery or through breastfeeding her child.

#### REMINDER!

HIV is only contracted through the exchange of bodily fluids. Anyone who suspects that he or she has been exposed to HIV should consult the nearest health center for voluntary counseling and testing services.

## HIV Cases in Africa

Of the 36 million cases of AIDS worldwide in 2000, two thirds of the cases are in sub-Saharan Africa. Biologic, economic, cultural and social factors contribute to a woman's greater risk for HIV infection.

Children are also greatly affected—directly and indirectly—by AIDS. They may contract HIV from the mother during

delivery or via breastmilk, develop pediatric AIDS and die. Or they may lose one or both parents to the disease. Children orphaned by AIDS are more likely to suffer serious nutritional and health problems, as well as emotional stress.

## Nutrition and HIV/AIDS

Nutrition and HIV are strongly related to each other:

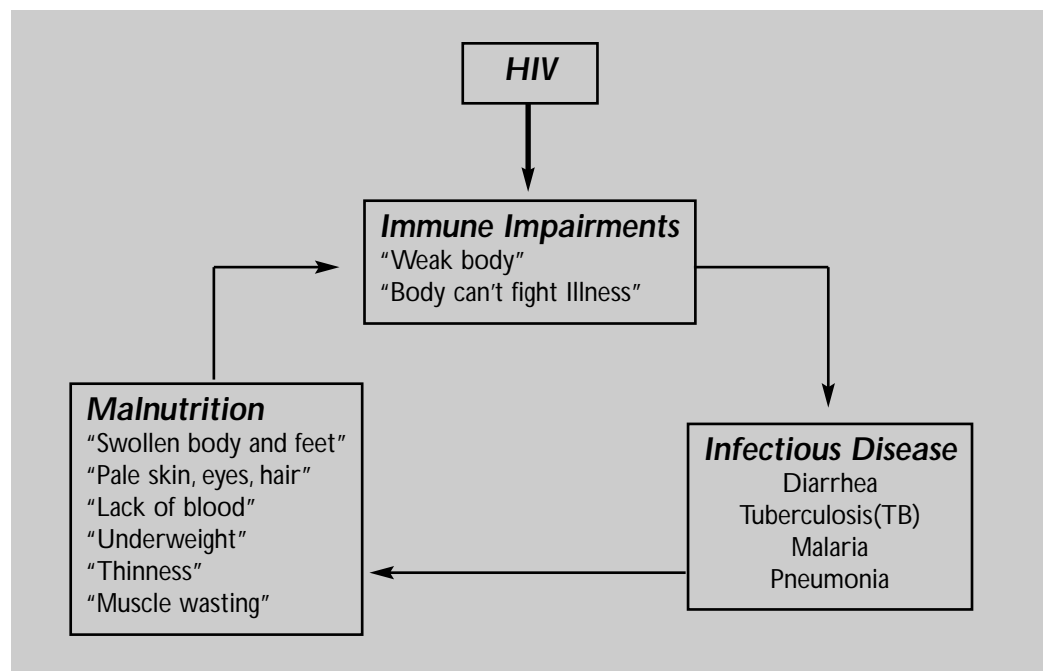
- any immune impairment as a result of HIV/AIDS leads to malnutrition, and
- malnutrition leads to immune impairment, worsens the effect of HIV and contributes to more rapid progression to AIDS.

Thus malnutrition can both contribute to and result from the progression of HIV. A person who is malnourished and then acquires HIV is more likely to progress faster to AIDS, because his/her body is

already weak and cannot fight infection. A well-nourished person has a stronger body for coping with HIV and fighting illness. Figure 1 illustrates the relationship between HIV and malnutrition.

While people with HIV and AIDS have special nutritional needs, it is important to note that *all* people will benefit from adequate nutrition. Good nutrition increases resistance to infection and disease, improves energy, and thus makes a person generally stronger and more productive.

Figure 1. Relationship Between HIV/AIDS and Nutrition



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

**1. Reduced food intake.** Adults with HIV/AIDS suffer from appetite loss (anorexia) and have difficulty eating; thus they eat less and fail to meet their dietary requirements. There are several reasons for a person to reduce their intake in food. The person may be suffering from an infection, such as mouth sores or fever. Side effects from medications used to treat an illness may cause a reduction in appetite. Depression from dealing with a fatal disease and possible social stigma can also cause people to lose their appetite and reduce their food intake.

**2. Poor absorption.** HIV/AIDS affects how the body uses the foods that are consumed, resulting in poor absorption of nutrients (protein, carbohydrates, fats, vitamins, minerals and water). Poor absorption of nutrients accompanies diarrhea, which is common with HIV infection. Parasites like giardia and other infections caused by bacteria and viruses cause diarrhea and reduce absorption. HIV may also damage intestinal cells that affect the absorption of fats and carbohydrates. Poor fat absorption also affects absorption of micronutrients like Vitamins A and E, which are important for the proper functioning of the immune system.

**3. Changes in metabolism.** With poor nutrient absorption, individuals may not be able to digest foods efficiently and therefore the body may not be able to use the nutrients properly, particularly fats, carbohydrates and proteins.

**4. Chronic infections and illnesses.** Fevers and infections that accompany an HIV infection lead to greater nutrient requirements and poor use of the nutrients by the body. Furthermore, people who are chronically ill may also have a reduced appetite, which leads to reduced food intake and weight loss.

The results of these factors include weight loss, loss in lean muscle tissue and increased damage to the immune system. These factors are most common for adults but they are also prevalent in children infected with HIV.

A number of other symptoms and illnesses commonly caused by HIV infection have nutritional consequences that can lead to malnutrition.

### **Anorexia**

Anorexia, or loss of appetite, occurs during many different infections and when fever is present. It leads to general weight loss, and is common when individuals are depressed or are living in socially and emotionally unfavorable environments.

### **Diarrhea**

Diarrhea occurs when a person has several watery or loose bowel movements in a day. There are several causes for diarrhea: unclean drinking water, infections, parasites or even some medical treatments. It results in losses of water, nutrients and minerals and leaves a person at greater risk of dehydration. Diarrhea also reduces appetite and leads to poor nutrient absorption. If diarrhea continues for a prolonged period of time, severe malnutrition results.

### **Fever**

Fever means that the body feels warmer than normal. People with fever may have the chills, sweat more, have muscle and joint aches or be fatigued. Fever is common in people living with HIV/AIDS, and does not necessarily indicate a serious illness. There are many reasons for fever, and it is often hard to determine whether fever is due to HIV or to other illnesses such as malaria. From a nutritional point of view, fever may result in increased nutrient requirements, since the body utilizes nutrients poorly when fever is present.

**Nausea/Frequent Vomiting**

Nausea and frequent vomiting can result from the drugs used to treat HIV/AIDS or from the opportunistic infections. Nausea also leads to reduced appetite and poor utilization of the food consumed.

**Thrush**

Thrush is a fungal (*candida yeast*) infection common in HIV-infected people who have damaged immune systems. Thrush refers to whitish spots on the inside of the mouth, tongue, vagina or anus. Although these sores are uncomfortable, they are not life threatening. The danger is that these sores can result in difficulty eating foods, loss of appetite and reduced food intake and thus lead to weight loss.

**Anemia**

Anemia results from an inadequate number or quality of red blood cells in the body. This is most often due to a lack of iron in the diet and to infections such as malaria and hookworm, which destroy red blood cells and may lead to bleeding and/or loss of blood. Women and children are especially prone to anemia. Persons who are anemic often experience tiredness and weakness and may have pallor

(paleness) in the eyes, tongue, palms and nail-beds. The relationship between HIV and anemia is not clearly understood, although it is known that HIV-infected persons who are anemic generally progress faster to AIDS than those who are not.

Summary of Nutritional Imacts of HIV

- Poor food intake
- Poor nutrient absorption
- Disruption of metabolism
- Chronic infection
- Muscle wasting or loss in lean body tissue

Illnesses Associated with Nutritional Impacts

- Anorexia
- Fever
- Thrush
- Diarrhea
- Nausea
- Anemia

Excerpted from Network of African People Living with AIDS (November 1997).

**Other Nutritional Impacts of HIV**

In households with HIV-infected members, others may also experience nutritional impacts, particularly young children and orphans. Sometimes when adults become infected with the virus, they are too sick to work and cannot continue to provide for themselves and their families. This can result in reduced income for the

household—and hence fewer resources (labor and money) to obtain food. In addition, other family members suddenly find themselves working more, either to produce income or to provide care for the HIV-infected individual, which can also lead to a deterioration in nutritional status for themselves and their children.

## How to Maintain Good Nutrition

Good nutrition for all individuals, but especially PLWHAs, requires the consumption of an adequate amount of:

- macronutrients (proteins, carbohydrates and fats), and
- micronutrients (vitamins and minerals).

### Macronutrients

A deficiency in macronutrients, also known as “protein-energy malnutrition,” manifests itself in the weight loss and wasting that is typical of AIDS patients. These symptoms occur as a result of reduced food intake; poor absorption of nutrients; and changes in metabolism that affect cell growth, enzymatic processes and immune system reactions.

Because of these effects, an HIV-infected person has additional nutrient requirements: 10-15 percent additional energy intake and 50 to 100 percent increase in protein intake as compared to a non HIV-infected person. (Module 6 gives some examples of calculating additional nutrient needs for HIV-affected households.)

### Energy Needs

An active non-HIV-infected adult requires approximately 2070 kcal/day.

An HIV-infected adult requires **10 to 15 percent more energy per day** (or approximately 400 additional kcal for men and 300 kcal for women).

#### *Protein needs:*

A non-HIV-infected man requires about 57 grams/day of protein and a woman requires 48 grams/day.

An HIV-infected adult needs approximately **50 to 100 percent more protein** for a total of 85 grams/day for men and 72 grams/day for women.

Sources: Woods (1999); James and Shofield (1990); WHO (1985).

### Micronutrients

Consuming micronutrients (especially Vitamins A, B6 and B12, iron and zinc) is important for building a strong immune system and fighting infections. For example, Vitamin A deficiency is associated with higher maternal-child transmission rates, faster progression from HIV to AIDS, higher infant mortality and child growth failure. The B-group vitamins play important roles in immune regulations, and deficiencies play a role in disease progression.

Micronutrient consumption can be increased through eating specific foods or through special supplements. In many settings, establishing home and community gardens to grow local foods and vegetables is important to improve intake of vitamin and mineral rich foods. Also, raising small animals (e.g., chickens) should be considered to help improve the consumption of protein, fat, as well as micronutrients such as iron and Vitamin A.

The impact of taking micronutrient supplements on HIV infection is not well known. The most promising results are for Vitamin A and the B-group vitamins. Vitamin B6 (niacin) and B12 supplementation have been shown to improve survival and reduce disease progression, although only in healthy populations where micronutrient deficiencies are not common and when intakes were high. Vitamin B6 (10 mg daily) supplementation is also recommended for TB patients being treated with isoniazid. Vitamin A supplementation for children of HIV-infected mothers has been shown to reduce illness, particularly diarrhea. Vitamin A supplements are also recommended for mothers immediately after delivery and for infants 6 months and older.

## Multiple Positive Impacts For PLWHA

*Adequate nutrition has multiple positive effects for a PLWHA:*

- Prevents malnutrition and wasting,
- Achieves and maintains optimal body weight and strength,
- Enhances the body's ability to fight opportunistic infections,
- May help delay the progression of HIV,
- Improves the effectiveness of drug treatments,
- Improves the quality of life.

Yet in many African settings, taking micronutrient supplements may be difficult due to lack of availability and high cost. Establishing links to health services and private-sector sources for a regular supply of micronutrient supplements is beneficial to communities.

Optimal nutrition helps all people feel better, stay healthier and live longer, whether they are HIV-infected or not.

## References

**Bijlsma, Marlou.** July 2000 (draft). "Nutritional Care and Support for People with HIV: Review of the Literature, Initiatives and Educational Materials in Sub-Saharan Africa and Recommendations for Developing National Programmes." Report to FAO.

**James, W.P.T., and E. C. Schofield** 1990. *Human Energy Requirements: A Manual for Planners and Nutritionists*. Oxford: Oxford University Press. Food and Agriculture Organization.

**Joint United Nations Program on HIV/AIDS (UNAIDS) and World Health Organization (WHO).** December 2000. *AIDS Epidemic Update*. Document No.: UNAIDS/00.44E or WHO/CDS/CSR/EDC/2000.9. Geneva.

**Marseille, E., J. Kahn, F. Mmiro, et al.** "Cost Effectiveness of Single Dose Nevirapine Regimen for Mothers and Babies to Decrease Vertical HIV-1 Transmission in Sub-Saharan Africa." *Lancet*. 354, No. 9181, September 4, 1999, p. 803-809.

**Ministry of Agriculture, Animal Industry and Fisheries, Republic of Uganda, and United Nations Development Programme (UNDP).** 1998. "Nutrition and HIV/AIDS: A Handbook for Field Extension Agents."

**National AIDS Control Program, Ministry of Health and Population, Malawi.** 2000 (draft). "Home-Based Care Providers Handbook." Lilongwe.

**Network of African People Living with HIV/AIDS.** November, 1997. "A Healthy Diet for Better Nutrition for People Living with HIV/AIDS." Nairobi, Kenya.

**Piwoz, E.G., and E.A. Preble.** November 2000. *HIV/AIDS and Nutrition: A Review of the Literature and Recommendations for Nutritional Care and Support in Africa*. Washington, DC: Academy for Educational Development.



**Semba, R.,** 1999. Micronutrients and Micronutrient-Replacement Therapy. In T. Miller, and S. Gorbach. *Nutritional Aspects of HIV Infection*. New York: Oxford University Press.

**United States Peace Corps, Center for Field Assistance and Applied Research.** July 2000. "Life Skills Manual." Publication M0061. Washington DC: Information Collection and Exchange.

**Woods M.N.** 1999. Dietary Recommendations for the HIV/AIDS Patient. In T. Miller and S. Gorbach, *Nutritional Aspects of HIV Infection*. New York: Oxford University Press.

### **Websites**

#### **UNAIDS:**

[www.unaids.org](http://www.unaids.org)

#### **USAID, Office of Population, Health, and Nutrition (PHN):**

[www.usaid.gov/pop\\_health/aids/index.html](http://www.usaid.gov/pop_health/aids/index.html)

#### **WHO Department of HIV/AIDS:**

[www.who.int/HIV\\_AIDS/index.html](http://www.who.int/HIV_AIDS/index.html)

## Coping with HIV: Nutrition and Other Strategies for Living Positively

For an HIV-infected person, the goal of living “positively” is to be free of illness, to be productive and to stay emotionally and physically healthy. This module offers

dietary and related recommendations program managers can promote to help PLWHAs live a healthy life.

### Good Nutritional Practices

Dietary practice plays an important role in maintaining a healthy lifestyle. An HIV-infected person already has a weakened immune system. A nutritious diet can help to maintain the proper functioning of the immune system and provides needed energy, protein and micronutrients. Program managers can promote a number of nutritional practices that HIV-infected individuals and their families can take to maintain health. The following suggestions are provided as general principles in responding to the nutritional needs of HIV-affected populations.

#### ***Eat Small but Frequent Meals***

Maintaining good nutritional status helps to build and maintain the immune system, allowing the body to fight infection. To lead a healthier life all people, whether HIV-infected or not, need to meet their daily energy, protein and micronutrient requirements. Persons with HIV may experience difficulties with food intake due to illnesses such as thrush (mouth sores) or to poor nutrient absorption. To ensure

that PLWHAs receive sufficient nutrients, it is important that they eat smaller portions (so that the stomach can absorb foods) and more frequently throughout the day. Encourage snacking throughout the day to increase intake of food. It is helpful to prepare special softer foods for those who are ill. Softer foods are more moist and may be tolerated better during periods of illness.

#### ***Eat a Variety of foods***

Maintaining adequate nutritional status means consuming a variety of foods to be sure the body is getting the necessary energy, protein and micronutrients it needs. PLWHAs should eat a “balanced” diet consisting of beans, nuts, animal foods, starchy staples (rice, potato, maize), fruits and vegetables. A balanced diet will ensure that the individual consumes sufficient nutrients to maintain energy and ensure the body’s proper functioning. The main food groups people need to live a healthy life include *body-building foods* (proteins and minerals); *protective foods*

Proteins and minerals are found in body-building foods. These foods:

- Contain proteins for cell repair and growth; nutrients such as iron for blood; and calcium and phosphorus for strong bones;
- Help to build bones and cells important for growth and development;
- Help to fight infection and repair the body during times of illness;
- Are obtained from legumes (e.g. beans, lentils, cowpeas, pigeon peas, groundnuts and nuts), milk products (yogurt, cheese and for infants, breastmilk), animal foods (fish, eggs, chicken, pork and beef) and cereals (wheat, maize and rice). Animal products are important sources of nutrients, but because they are usually more expensive than vegetable protein sources, it may not be feasible to consume them every day. Daily consumption of legumes and cereals is recommended.

Foods rich in micronutrients (such as Vitamins A, B, C and D) and minerals (such as iodine, zinc and iron) are called *protective foods*. Micronutrient-rich foods:

- Help the body absorb and utilize protein and carbohydrates;
- Help to fight infections and to digest and absorb other nutrients;
- Can be found in dark green, leafy vegetables (such as collard greens, cassava and potato leaves, spinach, pumpkin leaves and cabbage); and yellow and orange fruits and vegetables (such as mango, papaya (or paw paw), sweet potato, pumpkin, carrots, tomato, avocado, oranges, lemons and bananas).

Table 1 describes the role of various micronutrients, their importance for maintaining a healthy body and provides examples of foods that are rich sources of micronutrients. Some of the foods listed are available only during specific seasons.

Carbohydrates (sugars and starches) and fats provide the body with *energy*. These foods:

- Provide the energy to make our bodies work and keep active;
- Can be found in various starchy staple foods such as maize (prepared as nsima, sadza, posha, ugali, uge), rice, matooke or green banana, sorghum, millet and roots and tubers such as cassava, taro, potato and sweet potato);
- Are usually cheaper than high-protein foods and more readily available.

HIV-infected people have increased nutrient requirements because of the infection. Consuming a variety of foods from each of the main groups on a daily basis is important to maintaining good nutritional status to help fight illness. In addition, good nutritional status may ensure that a person is able to survive an opportunistic infection such as tuberculosis or pneumonia without further compromising their health and nutritional status.

Activities that encourage the production and consumption of a variety of crops for each of the food groups or that increase access to food sources in a community are helpful to households with HIV-infected family members. In food-insecure areas, investigating opportunities involving agricultural production techniques or food donations can be beneficial to HIV-affected households. These programs are best designed and implemented in conjunction with communities to ensure their sustainability and to encourage community support. Also very useful are programs that include an income-generation component to assist households in maintaining their ability to purchase foods and other necessities. Module 6 provides greater detail on designing programs in which food donations and other interventions, such as home gardens, are used to enhance the quantity and quality of individual diets.

Table 1. The Role and Source of Selected Micronutrients

<i><b>Micronutrient</b></i>	<i><b>Role</b></i>	<i><b>Source</b></i>
Vitamin A	Growth and function of T and B cells for immunity; maintenance of mucosal epithelial cells, including the lining of the respiratory, gastrointestinal and gastrourinary tracts. Vitamin A deficiency is associated with accelerated HIV progression, increased adult mortality, increased mother to child transmission, higher infant mortality and child growth failure.	Liver and dairy products, dark green leafy vegetables, kidney, eggs, some fishes, sweet potato, pumpkin, palm oil and carrots. Fruits such as papaya.
Thiamine Vitamin B1	Important for energy metabolism; support appetite and nervous system functions.	Cereals, beans, meat, fish, chicken, eggs.
Riboflavin Vitamin B2	Important for energy metabolism; support normal vision, health and integrity of skin.	Milk, yogurt, meat, green leaves, whole-grained cereals; fish, beans.
Niacin Vitamin B3	Essential for energy metabolism; support health and integrity of skin, nervous and digestive systems.	Milk, eggs, meat, poultry, peanuts, groundnuts, whole-grained cereals, fish.
Pyridoxine Vitamin B6	Facilitates metabolism and absorption of fats and proteins; helps to make red blood cells.	Sweet potato, white beans, maize, avocados, cabbage, meat, fish.
Cobalamin Vitamin B12	Important for new cell development and maintenance of the nerve cells.	Red meat, fish, chicken, shellfish, cheese, eggs, and milk; fermented products.
Ascorbic Acid Vitamin C	Important for immune function and iron absorption.	Oranges, tomatoes.
Vitamin E	Protects cell structures and facilitates resistance against diseases.	Leafy vegetables, vegetable oils, peanuts, egg yolk, vegetables, liver.
Iron	Transports oxygen to the blood, eliminates old red blood cells and builds new cells.	Red meat, poultry, shellfish, eggs, peanuts, groundnuts, lentils, beans, some cereals and dried fruits.
Calcium	Builds strong bones and teeth. Important for functioning of heart and muscle functions, blood clotting and pressure and immune defenses.	Milk, green leaves, shrimp, dried fish, beans, lentils, peas, whole grain millet, oil seeds, okra.
Zinc	Reinforces the immune system. Facilitates digestion. Transports Vitamin A.	Meat, chicken, fish, cereals and vegetables.
Selenium	Prevents impairment of the heart muscle.	Seafood, liver, meat, carrots, onions, milk, eggs.
Iodine	Ensures the development and proper functioning of the brain and of the nervous system.	Fish and other seafood, salt with iodine.
Magnesium	Strengthens the muscles, important for nervous system function. Involved in bone development, maintenance of teeth.	Cereal, dark green vegetables, seafood, nuts, legumes, groundnuts.

## Growth Promotion and Preventive Health Care for Children

Children of HIV-infected mothers are at great risk for malnutrition, growth failure and mortality, either as a result of their own HIV infection or because of the deteriorating health of one or more of their care providers. All children of known HIV-infected mothers must receive well-baby care and have their growth—particularly weight and height—monitored regularly. Growth monitoring and promotion is important, as it can capture any failure to gain weight, which could be due to poor

feeding and care practices, inadequate food or HIV infection. In communities where health services are limited, volunteers can be trained to assist mothers to accurately measure and record a child's weight each month and to provide simple messages for actions that can benefit the health of the child. For specific recommendations on promoting good health and nutrition, see Module 5 on Nutrition and Care Recommendations for Infants and Children.

## Safe Hygienic Practices: Proper Storage and Handling of Food and Water

PLWHAs are more vulnerable to infection because their immune systems have already been weakened. Properly handling food and water is especially important. Listed below are guidelines for handling water, animal products, fruits and vegetables and general food storage.

### **Water**

- Be sure water is clean! Boil water for at least 5 - 10 minutes to kill germs.
- Keep water stored in a container with a lid.
- Always wash your hands with soap before and after touching foods.

### **Animal Products**

- Cook all animal products (meat, chicken, pork, fish and eggs) at high temperatures until thoroughly cooked.
- Do not eat soft-boiled eggs or meat that still has red juice.
- Thoroughly wash utensils and surfaces where you placed uncooked foods, particularly meats, before you handle other foods.
- Cover meat, poultry or fish with a clear cover or cloth and keep separate from other foods to avoid contamination.

### **Fruits and Vegetables**

- Use clean water to thoroughly wash all fruits and vegetables that are to be eaten raw to avoid contamination.
- If it is not possible to wash fruits and vegetables properly, remove the skin to avoid contamination.
- Remove the bruised parts of fruits and vegetables to remove any molds and bacteria that are growing.

### **General Foods Storage and Handling**

- Make sure that the areas where you prepare and eat food are free of flies.
- Cover food that is not eaten to avoid contamination.
- Keep hot foods hot and cold foods cold.
- If food products have expiration labels, do not eat after the "best before" date has expired.
- Store cooked food at most for one day and re-heat before eating.
- If you have a refrigerator, put all leftover foods in refrigerator.

**Safer Sexual and Reproductive Health Practices**

In addition to providing households with information on good dietary practices, it is also important to provide information and education on safer sexual and reproductive health practices. Programs could promote the use of condoms and avoidance of unprotected sex, especially among persons whose HIV status is not known. Having protected sex will lead to healthier and more productive lives by:

- 1) Reducing further spread of the virus;
- 2) Reducing the risk of repeated exposure to HIV infection, (repeated exposure can speed up the disease process in the body of an HIV-infected person);

- 3) Avoiding pregnancy, (pregnancy puts greater strain on a woman's health and risks possible infection of the baby);
- 4) Preventing exposure to other sexually transmitted diseases, (exposure to sexually transmitted diseases can lead to severe morbidity or premature mortality);
- 5) Avoiding infection in women and therefore the possibility of transferring it to their infants.

To obtain more information and useful resources for promoting safe sexual practices in communities, see the reference section at the end of this module.

**Physical Activity**

For PLWHAs, being active plays a very important role in maintaining health. Activity improves appetite, develops muscle, reduces stress, increases energy and helps maintain overall physical and emotional health. Social and everyday

activities such as walking, cleaning and collecting firewood or water are important. PLWHAs should be encouraged to be active and continue with their daily routine as long as they are physically able to do so.

**Immediate Attention for Illnesses**

Illnesses and infections are signs that the body is weak. If left untreated, they can lead to further deterioration. When the signs of illness – such as cough, sore throat

or fever – begin, an HIV-infected person should seek treatment if available. Quick attention to early signs of illness can prevent further damage to the body.

**Eating During and After Illness**

Illnesses such as fever and diarrhea cause the body to underutilize nutrients, leading to weight loss. It is important to continue

to eat during illness and to eat more when recuperating to make up for lost nutrients and weight.

## Psychosocial Support

The needs of PLWHAs are great, going far beyond nutritional and health care. PLWHAs need extra emotional care and psychological support to cope with the implications of having a life-threatening disease, as well as the potential stigma from family and community members. Often, those who suspect or learn that they are HIV-infected feel helpless; they may become depressed and give up hope. People who are married or in stable relationships need support in protecting loved ones from the virus, breaking the news to their partner and dealing with the

issue of extramarital sex. Women, in particular, may find themselves under suspicion, even when their stable partner has infected them. Social support is necessary to help come to terms with the many consequences of an HIV diagnosis and repeated bouts of illness, including support for families who may also be suffering from malnutrition, illness and poverty while coping with the care of an HIV-infected member. An HIV-infected person cannot survive alone and needs help from family and friends.

## Involvement in Community Activities

PLWHAs can help their communities by increasing knowledge and awareness of the causes, symptoms and means of prevention of HIV/AIDS. These individuals can lead nutrition education and counseling activities in community, family or one-on-one settings, encouraging others to increase their consumption of key

foods and nutrients and to practice safe hygiene. They can also help other PLWHAs by providing stress management help and emotional and moral support. PLWHAs serve as credible sources of information and knowledge to their communities, as they themselves struggle with the challenge of living with the virus.

## References

**Bijlsma, Marlou.** 1996. "Living Positively: A Nutrition Guide for People with HIV/AIDS." Mutare City Health Department. Zimbabwe.

**Epstein, Luann.** 1995. "Food for People Living with HIV/AIDS." Network of Malawian People Living with HIV/AIDS and Network for Zambian People Living with HIV/AIDS. Cape Town, South Africa.

**Ministry of Agriculture, Animal Industry and Fisheries, Republic of Uganda, and United Nations Development Programme (UNDP).** 1997. "Feeding Guidelines for People Living with HIV/AIDS: A Handbook for Field Extension Agents."

**Piwoz, E.G., and E.A. Preble.** November 2000. *HIV/AIDS and Nutrition: A Review of the Literature and Recommendations for Nutritional Care and Support in Africa.* Washington, DC: Academy for Educational Development.

**Wences, Msuya, Mustafa Kudrati, Rakesh Rajani, and Heiner Grosskurth.** 1993. "Life First: A Practical Guide for People with HIV/AIDS and Their Families." AMREF/Tanzania and Kuleana.

## Food Management for Adults Living with AIDS-Related Symptoms and Illnesses

This module provides specific dietary information for adults coping with AIDS-related illnesses. General information and recommended foods for typical situations are provided, including suggestions for daily meal planning for adults coping with AIDS. The recommendations build on the general recommendations provided in the previous module but emphasize the special needs of adults especially in situations where resources are limited.

Well-chosen dietary practices can help manage illnesses associated with HIV/AIDS. An HIV-infected person needs to consume foods that meet energy, protein and micronutrient requirements. These foods should also help to increase appetite, be easily digestible and promote and maintain weight gain.

Some general advice to help maintain weight and avoid loss of muscle mass:

- Eat small amounts of low-fat food frequently to ensure better digestion and absorption of nutrients.

- Eat a variety of foods on a daily basis.
- Avoid alcohol—it can cause depression, interfere with medications and lead to reduced food intake and hence weight loss.
- Avoid smoking, because it reduces appetite and leads to decreased food intake.
- Eat more when recovering from an illness to make up lost weight.
- Try to maintain body weight (a body mass index, or BMI, of at least 18.5 kg/m<sup>2</sup> or greater) and avoid weight loss.<sup>2</sup>
- Be as physically active as possible to help build muscle and increase energy.

Table 2 shows how to care for many of the symptoms associated with HIV/AIDS in adults.

<sup>2</sup>To calculate the body mass index, divide weight in kilograms by the square of height in meters (kg/m<sup>2</sup>). For example, a 48.4 kilogram woman with a height of 155 cm or 1.55 m would have a BMI of 20.14. (BMI=(48.4/(1.55\*1.55))



Table 2. Caring for Symptoms and Illnesses Associated with HIV in Adults

Illness	Food	Care and Nutrition Practices
Anorexia (appetite loss)	<ul style="list-style-type: none"> <li>● Try to stimulate appetite by eating favorite foods.</li> <li>● Eat small amounts of food more frequently.</li> <li>● Select foods that are more energy dense.</li> <li>● Avoid strong smelling foods.</li> </ul>	<ul style="list-style-type: none"> <li>● If loss of appetite is due to illness, seek medical attention for treatment.</li> </ul>
Diarrhea	<ul style="list-style-type: none"> <li>● Drink lots of fluids to avoid dehydration (soups, diluted fruit juices, boiled water).</li> <li>● Drink juices such as passion fruit; avoid strong citrus (orange, lemon) because it may irritate the stomach.</li> <li>● Consume foods rich in fiber to help you retain fluids (millet, banana, peas and lentils).</li> <li>● Eat starchy foods like rice, maize, sorghum, potato, cassava and blended foods like corn-soy blend.</li> <li>● For protein, eat eggs, chicken or fish.</li> <li>● Drink light teas (herbal), boiled water.</li> <li>● Boil or steam foods, avoid fried foods.</li> <li>● Consume fermented foods like porridges, yogurt; rampuku.</li> <li>● Consume easily digestible foods high in carbohydrates, like rice, bread, millet, maize porridge, potato, sweet potato, crackers.</li> <li>● Eat soft fruits and vegetables like bananas, squash, banana matoke, mashed sweet potato, mashed carrots.</li> <li>● Drink nonfat milk if no problem with lactose.</li> <li>● Foods to avoid/reduce intake: <ul style="list-style-type: none"> <li>● Some dairy products, such as milk.</li> <li>● Avoid caffeine (coffee and teas) and alcohol.</li> <li>● Reduce intake of fatty foods.</li> <li>● Limit intake of gas-forming food such as cabbage, onions, carbonated softdrinks (sodas).</li> <li>● Avoid excessively fried foods and extra oil, lard or butter.</li> </ul> </li> </ul>	<p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>● Drink plenty of clean boiled water.</li> <li>● Wash hands with soap and water before handling, preparing, serving or storing foods.</li> <li>● Wash hands with soap and water after using a toilet or latrine or cleaning a child after defecation.</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>● Drink more fluids to prevent dehydration. Prepare rehydration solutions using oral rehydration salt packets or a home-made solution of 2 cups of boiled water, 1 cup of sugar and 1 teaspoon of iodized salt (1 cup roughly equals one handful; 1 teaspoon roughly equals one pinch).</li> <li>● Eat small amounts of food frequently and continue to eat following illness to recuperate weight and nutrient loss.</li> <li>● Go to a health center if symptoms such as severe dehydration (low or no urine output, fainting, dizziness, shortness of breath, bloody stools, high fever, vomiting, severe abdominal pain or diarrhea) persist for more than 3 days.</li> </ul>
Fever	<ul style="list-style-type: none"> <li>● Eat soups that are rich in foods that give energy and nutrients, like maize, potatoes and carrots.</li> <li>● Drink plenty of liquids.</li> <li>● Drink teas from lemon, guava and gum tree.</li> <li>● Drink more than usual beyond thirst.</li> </ul>	<ul style="list-style-type: none"> <li>● Drink fluids to prevent dehydration, particularly clean boiled water.</li> <li>● Bathe in cool water.</li> <li>● Rest.</li> </ul>

**Table 2. Caring for Symptoms and Illnesses Associated with HIV in Adults**

Illness	Food	Care and Nutrition Practices
		<ul style="list-style-type: none"> <li>● Take 2 aspirin or panadol with a meal three times a day (morning, afternoon and evening) if available.</li> <li>● Continue to eat small frequent meals as tolerated.</li> <li>● Go to the health center in case of:               <ul style="list-style-type: none"> <li>➢ Fever that last several days and is not relieved with aspirin</li> <li>➢ Loss of consciousness</li> <li>➢ Severe body pain</li> <li>➢ Yellow eyes</li> <li>➢ Severe diarrhea</li> <li>➢ Fits.</li> </ul> </li> </ul>
Nausea and Vomiting	<ul style="list-style-type: none"> <li>● Eat foods like soups, unsweetened porridge and fruits like bananas.</li> <li>● Eat lightly salty and dry foods like crackers to calm the stomach.</li> <li>● Drink herbal teas and lemon juice in hot water.</li> <li>● If available, drink ginger root: crush ginger in cold water, boil in water for 10 minutes; place in a covered container; strain ginger and drink liquid.</li> <li>● Avoid spicy and fatty foods.</li> <li>● Avoid caffeine (coffee and tea) and alcohol.</li> <li>● Drink liquids, such as clean boiled water.</li> </ul>	<ul style="list-style-type: none"> <li>● Eat small frequent meals. Nausea is worse if nothing is in the stomach.</li> <li>● Avoid lying down immediately after eating; wait at least 20 minutes to avoid vomiting.</li> <li>● Rest between meals.</li> </ul>
Thrush	<ul style="list-style-type: none"> <li>● Eat soft mashed foods, such as carrot, scrambled eggs, mashed potatoes, bananas, soups, porridge.</li> <li>● Eat cold or room temperature foods.</li> <li>● Avoid spicy, salty or sticky foods; these may irritate mouth sores.</li> <li>● Avoid sugary foods; these cause yeast to grow.</li> <li>● Avoid strong citrus fruits and juices which may irritate mouth sores.</li> <li>● Avoid alcohol.</li> </ul>	<ul style="list-style-type: none"> <li>● Seek medical attention for treatment.</li> <li>● If available, use a spoon or cup to eat small amounts of foods.</li> <li>● Tilt head back when eating to help with swallowing.</li> <li>● Rinse mouth with boiled warm salt water after eating to reduce irritation and keep infected areas clean so yeast cannot grow.</li> <li>● Drink liquids.</li> </ul>
Anemia	<ul style="list-style-type: none"> <li>● Eat more iron-rich foods, such as animal products (eggs, fish, meat and liver) green leafy vegetables (collard greens, spinach), fruits and vegetables, legumes (beans, lentils, groundnuts), nuts, oil seeds and fortified cereals.</li> <li>● Take iron supplements.</li> </ul>	<ul style="list-style-type: none"> <li>● If available, adults take one iron tablet once a day with some food. Best if taken with a source of Vitamin C such as tomatoes or orange juice to help with absorption.</li> </ul>

		<ul style="list-style-type: none"> <li>● Treat malaria and hookworm.</li> </ul>
Muscle Wasting	<ul style="list-style-type: none"> <li>● Increase food intake by increasing quantity of food and frequency of consumption.</li> <li>● Improve quality and quantity of foods by providing a variety of foods.</li> </ul>	<ul style="list-style-type: none"> <li>● Eat small frequent meals.</li> <li>● Eat soft liquid food if mouth sores present.</li> <li>● Increase protein in diet.</li> <li>● Slowly introduce fat in the diet.</li> <li>● Increase intake of starchy foods in cereals and other staples.</li> <li>● Use fortified foods.</li> </ul>
Constipation	<ul style="list-style-type: none"> <li>● Eat more foods that are high in fiber content, such as maize, whole-wheat bread, green vegetables and fruits with the skin.</li> <li>● Drink plenty of liquids.</li> <li>● Avoid processed or refined foods.</li> </ul>	<ul style="list-style-type: none"> <li>● Avoid using cleansing practices, such as enemas and medications.</li> <li>● Drink plenty of fluids including boiled water.</li> </ul>
Bloatedness/ Heartburn	<ul style="list-style-type: none"> <li>● Eat small frequent meals.</li> <li>● Avoid gas-forming foods (cabbage, soda).</li> <li>● Drink fluids.</li> </ul>	<ul style="list-style-type: none"> <li>● Eat long enough before sleeping so food can digest.</li> </ul>
Tuberculosis	<ul style="list-style-type: none"> <li>● Consume foods high in protein, energy, iron and vitamins.</li> </ul>	<ul style="list-style-type: none"> <li>● Seek medical attention immediately.</li> <li>● Consult medical personnel about taking food with medications.</li> <li>● If taking isoniazid for treatment, take a Vitamin B6 supplement to avoid deficiency of this micronutrient.</li> </ul>
Loss of Taste and/or Abnormal Taste	<ul style="list-style-type: none"> <li>● Use flour enhancers, e.g., salt, spices, herbs and lemon.</li> <li>● Chew food well and move around mouth to stimulate receptors.</li> </ul>	

### Planning Meals for PLWHAs

Select foods available to the household that can be prepared, cooked and served in a given time. In planning meals, the following elements should be considered:

- Good nutrient value and variety of the available foods (animal foods, legumes, nuts, fruits, vegetables, staples and fats);
- The needs of the person(s);
- The time available; and
- The costs of foods.

Persons caring for PLWHAs need to plan meals that are adequate and satisfy the

needs of the body. It is estimated that PLWHAs need 10-15 percent additional energy and 50-100 percent more protein than a non-HIV-infected person. Meals should contribute to good health, be attractive and stimulate the appetite.

In planning a meal for an HIV-affected household, the following guidelines are useful:

- 1) Always select body-building foods (such as proteins) to form the core of the meal.

Proteins are the elements that make other cells work and help to absorb all nutrients in the body. Protein dishes include:

- All legumes such as beans, soya, cowpeas, pigeon peas, groundnuts or peanuts and sauces, and
- Meat (chicken, pork or beef), dairy products, fish, eggs and insects.

2) Choose available vegetables, such as carrots, rap and tomatoes. Dark green leafy vegetables and yellow fruits and vegetables like pumpkin are very important.

3) Use energy foods (such as meals based on cereals, including maize, rice, matooke or banana and roots and tubers such as cassava) to fill up the body.

4) When possible, increase the energy value during food preparation by, for example,

- Adding sugar to porridge or juice, or
- Adding a teaspoon per person of oil to porridge.

5) Add fruits such as mangos and papayas (paw paw) to enhance nutrient intake.

### Nutritional Counseling and Support

At all points of contact with PLWHAs, program managers, health workers and care providers should provide counseling on nutrition and feeding practices to ensure that PLWHAs maintain a healthy diet, manage illness and monitor and maintain nutritional status. Ensuring that PLWHAs are eating well and are eating a variety of foods can help to suppress illness and maintain a healthy life.

Extension workers and providers should also work with households to plan for those periods or “hungry seasons” when supplies of some foods are low or non-existent. Individuals may cut back food

intake by reducing portion size or skipping meals. Program managers should work with communities to investigate all options for obtaining nutrients and promote food habits that improve the intake of roots, local vegetables and fruits, nuts, insects and oilseeds that may provide nutrients but not be recognized as important to the diet. To maintain health, persons with HIV should try to eat throughout the day. In cases where a variety of foods are not available, working with households to ensure that sick members are being fed more frequently and receiving extra servings is important to maintaining their well-being.

#### Sample Menu

*Example of a Menu for PLWHAs in Malawi:*

Breakfast:	Maize porridge, fruit (banana or paw paw), tea with milk and sugar, bread
Tea meal:	Tea with biscuit, eggs
Lunch:	Groundnuts, potatoes or maize nsima, fruit juice
Snack:	Tea with milk, bread, fruits (mangos, oranges, bananas)
Supper:	Chicken or fish stew, maize nsima, cooked vegetable
Bedtime:	Milk

## References

- Abdale, Frank, and Vivica Kraak.** 1995. "Community-Based Nutrition Support for People Living with HIV/AIDS." A Technical Assistance Manual. New York: God's Love We Deliver.
- AIDSLINK.** 1997. "Eating with Hope: Taking Control of Your Life through Good Nutrition." Gauteng Department of Health, Greater Johannesburg Metropolitan Council, South Africa.
- Bijlsma, Marlou.** 1996. "Living Positively: A Nutrition Guide for People with HIV/AIDS." Mutare City Health Department, Zimbabwe.
- Ministry of Agriculture, Animal Industry and Fisheries, Republic of Uganda, and United Nations Development Programme (UNDP).** 1998. "Nutrition and HIV/AIDS: A Handbook for Field Extension Agents."
- Network of African People Living with HIV/AIDS.** 1997. "A Healthy Diet for Better Nutrition for People Living with HIV/AIDS." Nairobi, Kenya.
- Van der Maas, Tine, and Nelly Van der Maas.** 1999. "Straight Talk." Somerset West, South Africa: Helderber Printer.

## Nutritional Issues Associated with Modern and Traditional Therapies

This module provides information on nutritional issues related to modern and traditional therapies that PLWHAs and their caregivers may use to treat illnesses. Modern medications such as antibiotics and antiretroviral drugs may have negative nutritional effects and require specific instructions for consuming with food. The effects on the person taking these medications are explained and approaches to minimizing the negative impact on diet and nutrition are presented.

Traditional therapies usually include the use of foods or herbs that are promoted as having healing or curative properties. Many of the traditional approaches are not well documented. The nutritional effects of traditional therapies, therefore, are not known. For program managers who are working with HIV-affected populations, it is important to gain a general understanding of modern and traditional therapies being used and to ensure that the therapies do not worsen a person's nutrition and ability to consume a varied and healthy diet.

### Role of Traditional Medicine

*Traditional medicine plays an important role in both the treatment and the prevention of illnesses, and programs should recognize that:*

- People use them widely.
- Traditional therapies may be beneficial or detrimental to a person's health.
- There is a cost associated with the therapies and often people are willing to pay.
- It is worthwhile to find out the common traditional therapies used in the program area.
- Dietary recommendations often still apply during the use of traditional medications.

## Modern Medications

Medications are available to control the virus that causes AIDS and to treat many of the opportunistic infections that result from a weakened immune system. Antiretrovirals (ARVs) are the drugs used to treat HIV/AIDS by reducing viral loads in the blood. The high cost and lack of availability of these drugs represent a great challenge to health systems especially in resource-poor settings in developing countries. Familiar treatments (such as antibiotics and anti-malarials) for common illnesses are restricted due to cost and supply.

As strategies are developed by program planners and governments to increase access to ARVs and other drugs, proper counseling concerning their safe and effective use should also be included in the programming effort. Some ARVs and medications for managing opportunistic infections can result in side effects, which have nutritional implications. Slight changes in dietary intake can help to reduce side effects and minimize weight loss, which if left untreated can worsen the infected person's overall health and possibility for recovery.

The two major side effects of ARVs are:

*Changes in Taste:* Foods and spices such as mint, garlic and ginger can lose their appeal as a result of medications. Using flavor enhancers such as salt, sugar, spices, vinegar or lemon can help to stimulate the taste buds, increase taste acuity and mask any unpleasant flavors due to the medication. Adding simple foods like onions to soup will boost flavor and improve intake.

*Nausea:* Medications often cause nausea or the feeling of wanting to vomit. This may be worse when taking medications without food. Eating a savory biscuit, cracker or piece of dry bread can reduce nausea. People with nausea should avoid lying down for at least 20 minutes after eating so food can be digested. Reducing intake of spicy foods can also help to reduce nausea.

Table 3 lists some of the better known and more widely consumed medications in Africa. The table shows their purpose, side effects and recommended ways to take the medications. Program managers are encouraged to add or update the list as medications become available.

## Traditional Therapies

There may be locally available remedies for treating the illnesses that are common to people living with HIV/AIDS. These illnesses include headaches, sore throat, cough, mild diarrhea, rashes and fatigue and can be treated by the patient or the caregiver at the patient's home.

Program managers should seek out local remedies by asking traditional healers and their clients about these illnesses. After assessing the traditional treatment, analyze the benefits and potential disadvantages and then with the therapists determine the best course of action for the different illnesses associated with HIV infection. The enquiry is not to establish

whether the traditional approach is effective, as this information may be difficult given the range of materials used such as herbs, barks, etc. Rather, the goal is to ensure that the approach is generally consistent with the nutritional guidelines provided in this guide. In situations where the treatment is in conflict with sound nutritional or medical approaches, it will be necessary to review the recommendations with the traditional healer and the health authorities. For example, if the traditional healer recommends that during diarrhea no fluids be drunk, then this is cause for concern. However, if the recommendation is for a tea made with boiling water and a

**Table 3. Side Effects and Recommended Food Intakes with Modern Medications**

Medication	Purpose	Recommended To Be Taken	Potential Side Effects
Sulfanamides: Sulfamethoxazole, Cotrimoxazole (Bactrim <sup>®</sup> , Septra <sup>®</sup> )	Antibiotic for treatment of pneumonia and toxoplasmosis	With food	Nausea, vomiting and abdominal pain.
Rifampin	Treatment of tuberculosis	On an empty stomach at least 1-2 hours before meals	Nausea, vomiting, diarrhea and loss of appetite.
Isoniazid	Treatment of tuberculosis	On an empty stomach at least 1-2 hours before meals	May cause possible reactions with foods such as bananas, beer, avocados, caffeinated beverages, chocolate, sausage, liver, smoked pickled fish, yeast and yogurt. May interfere with Vitamin B6 metabolism, and therefore require administration of Vitamin B6 supplement.
Quinine	Treatment of malaria	With food	Abdominal or stomach pain, diarrhea, nausea, vomiting; lower blood sugar.
Sulfadoxine and Pyrimethamine (Fansidar <sup>®</sup> )	Treatment of malaria	With food and continuously drink clean boiled water	Nausea, vomiting. Not recommended if folate deficient. Not recommended for women breastfeeding.
Chloroquine	Treatment of malaria	With food	Stomach pain, diarrhea, loss of appetite, nausea, vomiting. Not recommended for women breastfeeding.
Fluconazole	Treatment of candida (thrush)	With food	Nausea, vomiting, diarrhea. Can be used during breastfeeding.
Nystatin	Treatment of thrush	With food	Infrequent occurrence of diarrhea, vomiting, nausea.
Zidovudine (AZT)	Antiretroviral	With food	Anemia, nausea, vomiting.
Nevirapine	Antiretroviral	With food	Sedative effect, diarrhea, nausea, rash.



## Properties of Traditional Medicines

*Garlic:* Used to build a healthy heart; helps soothe symptoms of thrush, mild diarrhea and headaches.  
*Tea made from lemon leaves, guava leaves, or gum or Neem tree leaves:* Used to treat sore throats and coughs.

*Gum tree leaves with vegetable oil:* Used to treat minor skin problems.

*Lavender or geranium, crushed and boiled with water:* Used to treat skin rashes associated with shingles.

local herb, then the benefit is likely to be positive.

The box titled “Properties of Some Traditional Remedies” presents selected remedies because of their well-known efficacy, limited side effects and ease of preparation. The ingredients listed in these are available in eastern and southern Africa. The program manager can compile an expanded list of approaches used to alleviate the symptoms associated with AIDS.

Suggested below are a number of dietary approaches as well as some alternative or traditional ways of dealing with common illnesses. A caregiver or patient may want to try one or more of these remedies. In all cases, however, if symptoms persist or worsen, it is important to seek medical care before the illness becomes more serious.

### **Diarrhea**

Diarrhea occurs when a person has several watery or loose bowel movements in a day. There are several causes for diarrhea: unclean drinking water, poor hygiene, infections, parasites or even some medical treatments. Diarrhea results in losses of water and essential nutrients, and leaves a person at greater risk of dehydration, which can be life threatening. Diarrhea also reduces appetite and interferes with nutrient absorption. If diarrhea is frequent or continues for a prolonged period, severe malnutrition results. Diarrhea has the most serious nutritional implications for people with HIV infection.

### **Actions to Take**

- Drink lots of fluids, especially clean boiled water, to prevent dehydration.
- Eat fruits such as papaya, ripe bananas and mango.
- Drink the water from boiled white rice and light porridges made of maize and cassava.
- Prepare rice soup. Boil 1 cup of rice in 5-6 cups of water and a bit of salt for 1 hour. Drink the soup while it is warm.
- Drink fermented milk 3-4 times a day. Fermented milk does not contain lactose, a sugar that can be associated with abdominal pain during diarrhea.
- Drink garlic tea. Chop 3 or 4 cloves of garlic and add to 1 cup of boiling water. Simmer for 10 minutes and then cool slightly before drinking. Drink the tea 3-4 times per day.

### **When to Go to the Health Center**

- If there is blood in the diarrhea.
- If diarrhea is accompanied by fever that cannot be relieved by aspirin or home treatment.
- If the patient is too weak to eat or very dehydrated and efforts to rehydrate are not working.
- If diarrhea does not go away after 2-3 days.

### **Fever**

Fever means that your body feels warmer than normal. People with fever may have chills, sweat more, have muscle and joint aches or be fatigued. Fever is common in people with HIV/AIDS, and does not necessarily indicate a serious illness. There are many reasons for fever. It is often hard to determine if fever is due to HIV or to other illnesses such as malaria.

From a nutritional point of view, fever may result in increased nutrient requirements, as the body utilizes nutrients poorly when fever is present.

#### *Actions to Take*

Caregivers can take the following actions for fever:

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

#### *When to Go to the Health Center*

- If fever lasts more than three days.
- If the patient is very hot or delirious.
- If fever is accompanied by other signs of serious illness.

### **Cough**

Everyone experiences a cough or cold at some time. Home treatment for coughs is safe if the cough is short-lived and uncomplicated.

#### *Actions to Take*

- Crush some fresh gum tree leaves and place them in boiling water. When the water is boiling, remove the pot from the fire. Place a cloth over the person's head and lean over the pot to breathe the vapors.
- Place 3-4 dried gum tree leaves in a cup of hot water and boil for 10 minutes. Let the tea cool slightly before drinking. Drink this tea 2-3 times a day.
- Tea can also be made with lemon or guava leaves.

#### *When to Go to the Health Center*

- If the person is coughing blood or thick, bad-smelling sputum or mucous.
- If the cough lasts more than two weeks.

### **Headaches**

People with HIV/AIDS may experience headaches for a variety of reasons. Headaches are also caused by many illnesses other than HIV infection. The most important thing to do is rest, and usually headaches will go away.

#### *Actions to Take*

- Rest.
- Take aspirin or panadol with a cup of clean boiled water.
- Crush some lavender leaves with a little cooking oil until a paste is formed. Rub it into the temples and forehead. Also rub some dried lavender leaves in your hands and smell them frequently while you rest.
- Make garlic and onion tea. Chop 2-3 cloves of garlic and one half bulb of onion. Put the chopped garlic and onion into a cup of hot water. Allow the water to simmer for 10 minutes. After 10 minutes, let the tea cool slightly before drinking.

#### *When to Go to the Health Center*

- If the patient's neck is stiff.
- If the patient also has a high fever.
- If the headache does not go away after 2-3 days.

### **Sore Throats**

Sore throats are not usually very serious, but can be a sign of another illness, such as flu or a cold.

#### *Actions to Take*

- Squeeze a whole lemon and mix with honey. Take a large spoonful as necessary.
- Mix a strong solution of salt and warm water. Gargle with this solution several times a day.
- Eat raw garlic or make garlic tea. Chop 3-4 cloves of garlic. Add chopped cloves to 1 cup of boiling water. Allow water to simmer for 10

minutes. Let it cool before drinking. Add honey or sugar to sweeten if available.

#### *When to Go to the Health Center*

- If the patient cannot swallow or breathe properly.
- If the patient has a fever that cannot be relieved by aspirin or home treatment.
- If the patient develops a rash.
- If the sore throat lasts more than two weeks.

#### **Sores in the Mouth and Thrush**

Thrush is a fungal or yeast (*candida*) infection and is common in HIV-infected people. Thrush refers to the whitish spots on the inside of the mouth, tongue, vagina or anus. Although these sores are uncomfortable, or even painful, they are not life threatening. The danger is that these sores can result in difficulty eating and loss of appetite and thus reduce food intake and lead to weight loss. Simple treatment of thrush is necessary to ensure sufficient and diverse food intake.

#### *Actions to Take*

- Avoid sweet foods and sweet drinks (carbonated softdrinks), which will increase the soreness and help the yeast to grow. Avoid sugar and honey.
- Eat 1-2 cloves of raw garlic every 3-4 hours if available. If the raw garlic is too strong, crush the cloves and mix with a small amount of clean boiled water. Rinse the mouth with this mixture and then swallow the rest. Repeat every 3-4 hours.
- Drink sour/fermented milk. This will help to prevent yeast from growing.
- Eat green paw paw as a relish or side dish.
- Gargle with slightly salty, warm, clean water.

#### *When to Go to the Health Center*

- When a fever is present and cannot be relieved by aspirin or home treatment.
- If no improvement occurs after a few days.
- If pain causes a complete loss of appetite.

#### **Shingles**

Shingles is a skin condition caused by a virus that leads to painful blisters that usually appear on one side of the body, such as the chest, back, neck or face. Before the blisters appear the patient may feel fatigue, chills, fever and stomach problems. The area where the blisters will appear feels sensitive 3-4 days before the blisters appear. Normally the blisters and the pain will go away after 2-3 weeks. People who are HIV-infected are susceptible to repeated episodes of shingles because of the damaged immune system.

#### *Actions to Take*

- Crush gum/eucalyptus leaves and place in a small amount of boiling water. Continue to boil leaves for 15 minutes. Remove pot from fire and let the mixture cool. Place a clean cloth in the cooled water. Wring excess water from the cloth, fold and place on top of the affected part of the body. Cover the cloth with a clean plastic bag or sugar bag. Cover the water mixture with a towel or other type of cloth. Repeat every 2 hours.
- Substitute geranium or lavender leaves if gum/eucalyptus tree leaves are not available.
- Crush one aspirin and mix it with two small spoonfuls of vaseline. Gently rub the mixture onto the affected area. Repeat this 3-4 times a day. (Note that panadol, cafemoland and paracetamol are not useful for shingles.)

#### *When to Go to the Health Center*

- If the condition does not improve in four weeks to see if anti-viral treatments are available.
- If the blisters lead to other infections on the skin.

#### **Other Skin Rashes**

Rashes on the skin can be due to many causes, including HIV. The rashes can be painful and itchy and cause discomfort. They are usually not a serious health problem but can require some form of treatment.

### *Actions to Take*

- If the rash is hot, crush gum or eucalyptus leaves and place in a small amount of boiling water. Continue to boil leaves for 15 minutes. Remove pot from fire. Place a clean cloth in the hot water. Wring excess water from the cloth, fold and place on top of the affected part of the body. Cover the cloth with a clean plastic bag or sugar bag. Cover the water mixture with a towel or other type of cloth. Repeat every 2 hours.
- If the rash is itchy, do the same as above but let the gum leaves mixture cool before placing on the rash.

- Crush papaya leaves or gum tree leaves with a small amount of vegetable oil. Pound into a paste and place on the rash. Repeat 3-4 times a day.

### *When to Go to the Health Center*

- If rash does not disappear with home treatment.
- If fever develops and persists for several days and cannot be relieved with aspirin or home treatment.

## References

### *Medical Management*

**Bartlett, John.** 2000. "Medical Management of HIV 2000-2001." Baltimore: Johns Hopkins University Press. [www.hopkins-aids.edu](http://www.hopkins-aids.edu)

**Immunodeficiency Clinic University Health Network.** Toronto, Canada. [www.tthivclinic.com](http://www.tthivclinic.com)

**Journal of American Medical Association. HIV/AIDS Information Center.** [www.ama-assn.org](http://www.ama-assn.org)

**National Institutes of Health. Medline Plus Information System.** Washington, DC. [www.nlm.nih.gov/medlineplus](http://www.nlm.nih.gov/medlineplus).

**World Health Organization/Joint United Nations Program on HIV/AIDS (WHO/UNAIDS).** 1998. "Guidance Modules on Antiretroviral Treatments; Module 4: Safe and Effective Use of Antiretrovirals." [www.unaids.org](http://www.unaids.org)

### *Traditional Therapies*

**Bijlsma, Marlou.** 1996. "Living Positively: A Nutrition Guide for People with HIV/AIDS." Mutare City Health Department, Zimbabwe.

**Malawi National AIDS Control Programme.** 1996. "Handbook of Herbal Remedies for Some AIDS-Related Illnesses." Lilongwe.

**National Association of People Living with HIV/AIDS (NAPWA).** "Natural Remedies for HIV." South Africa.

**Traditional and Modern Health Practitioners Together Against AIDS and Other Diseases (THETA).** *THETA News* 5, No. 1 (January –June 2000). Kampala, Uganda.

## Nutrition and Care Recommendations for Infants/Children

# 5.

MODULE

This module stresses the role of good nutrition in promoting adequate growth and health for all children. It provides feeding and care recommendations from birth through five years of age.

Adequate nutrition is especially important for young children, to ensure they grow properly and have sufficient nutrients to boost their immune systems and fight infection. A malnourished child is more susceptible to various infections, leading to inadequate physical growth, reduced cognitive development and a higher risk of mortality.

Malnutrition in the young child has serious long term effects. The woman who has inadequate food intake before and during pregnancy is at increased risk during labor and delivery and more likely to have a baby with low birthweight.

Growth failure as a result of malnutrition is a common problem across developing countries. Children infected with HIV need even greater care and attention because their immune systems are even

weaker than those of malnourished children, increasing the likelihood that opportunistic infections will be severe. HIV-infected children may suffer further complications from metabolic problems, resulting in poor nutrient absorption and utilization. In addition to nutrition problems, HIV-infected children may also face more illnesses such as diarrhea, neurological problems and developmental delays.

### Nutrition and HIV-Infected Children

Because HIV-infected children are at higher risk of malnutrition and growth failure, the following problems should receive special medical attention:

- 1) Inadequate food intake resulting from poor appetite, eating very little or high degree of selectivity around food choices.
- 2) Stomach pain.
- 3) Feeding difficulties: poor sucking, swallowing or breathing reflex.
- 4) Nausea, vomiting and diarrhea.

Nutritional care and support recommendations for children are provided below. The suggestions do not include drug therapies. For orphans or children living with a parent sick with AIDS, additional care practices, such as psychosocial support from other family members, friends and communities, are essential to helping them cope with illness and loss and to leading healthy, productive lives. Programs should treat all children the same, regardless of their HIV or orphan

status. Program managers should consult the national guidelines for infant and child feeding and check with UNICEF, WHO and others on the most current guidance.

Since the vast majority of women are HIV-negative and counseling and testing are not widely available, program managers are encouraged to follow the guidelines for mothers whose HIV status unknown or negative.

### Messages for Health Workers and Promoters Working with Mothers Whose Status is Unknown or HIV-Negative

#### **Infants 0-5 Months**

Exclusive breastfeeding during the first six months of life has nutritional, health, fertility and psycho-social benefits for the mother and child. The recommendation is to breastfeed exclusively until six months of age. Exclusive breastfeeding means no other foods, teas, water, juices, milks or infant formula: only breastmilk. Listed below are some suggestions for the mother to follow to ensure exclusive breastfeeding and the best nutrition for her infant:

- Initiate skin contact immediately, and breastfeed within one hour after birth.
- Give colostrum.
- Feed frequently (10 to 12 or more times daily in first days, then at least 8 to 10 times daily) and on-demand.
- Breastfeed exclusively for the first six months (with no other liquids or solid foods introduced).
- Continue to breastfeed (and feed more frequently) during and immediately following illness.
- Take the child to the health center for growth promotion and monitoring.
- If Vitamin A deficiency is prevalent, eat Vitamin-A-rich foods. Mothers should take a high-dose Vitamin A capsule (see Box L2 for the WHO

recommended supplementation levels). Other vitamin and mineral supplements should be taken following delivery (ideally within the first eight weeks) to ensure adequate vitamin and mineral content in breastmilk.

- Eat iron rich foods, fortified foods and supplements.
- Space pregnancies at least three years apart to ensure adequate maternal nutrition and health status, with at least six months following weaning before next pregnancy.
- Counsel mothers on safe sex practices to remain HIV-negative and to understand the risks of HIV transmission through labor and delivery and breastfeeding.

#### **Recommendation**

In resource poor settings, all infants from birth to six months of age should be exclusively breastfed irrespective of the HIV-status of the mother.

### **Infants 6-8 Months**

After six months, breastfeeding may no longer provide all nutritional requirements, but breastfeeding continues to provide protection against infection and contributes to good nutrition for at least two years or longer.

Therefore, all children aged six to eight months of age should begin to receive complementary food in addition to breastmilk. These infants need semi-solid and solid foods to meet their energy, protein and micronutrient requirements to grow and develop adequately.

The quality and quantity of foods that children receive will affect their nutrition and health status. Preparing foods in a form that the child can easily digest and encouraging the child to eat, will help ensure that the child receives adequate food. Listed below are simple recommendations caregivers can follow to feed children in ways that promote growth and development.

Continue to breastfeed on demand and breastfeed before each complementary feeding.

- Complementary foods should increase over time providing an additional 280 kcal per day. This amounts to approximately one cup of enriched maize porridge with 1/4cup cooked mashed beans, and three tablespoons or a handful of mashed fruits or vegetables. Complementary food can be mixtures of cereals, fruits, vegetables and a protein source such as beans, eggs and meat when possible.
- Feed complementary food two to three times per day.
- Give a separate plate to the child with a portion of at least a handful of food.
- Feed mashed and semi-solid foods, such as porridge softened with breastmilk if possible.
- Feed energy-dense and protein-rich foods, such as maize porridge with crushed groundnut.
- Introduce foods that children can eat

alone at eight months, such as mango, paw paw and banana.

- Provide a variety of foods including fruits and vegetables; animal products such as eggs, chicken and fish and fortified foods if available.
- Provide extra amounts of food during and following illness.
  - Feed patiently and persistently with lots of care and supervision.
  - If available and affordable, feed fortified staple foods.

### **Infants 9-11 Months**

- Continue to breastfeed several times per 24 hours.
- Provide an additional 450 kcal per day from complementary food (approximately two cups of maize porridge, mashed fruits or vegetables and 1/2cup of mashed beans).
- Feed solid food three to four times daily.

### **Sample Diet**

#### *Sample diet for infants 6-8 months in Malawi*

Breastfeed frequently and on demand day and night

#### *Morning*

Breastfeed two to three times

Half of the maize porridge with ground nut flour (Prepare for the whole day the following: approximately 1 cup of maize and 1/2 cup of ground nut paste with 2 teaspoons of oil if possible)

#### *Afternoon*

Breastfeed two to three times

Tobwe—drink made with mashed millet and maize

Paw paw, mashed

#### *Afternoon/Evening*

Breastfeed two to three times

Remainder of maize porridge with mixed greens (raip), mashed carrots, mashed potato or mashed sweet potato

Mashed cow peas or beans with porridge

- Feed energy-dense combinations of soft foods, such as porridge with crushed groundnut.
- Give protein and iron rich foods such as eggs, meats (e.g. chicken and fish) and insects.
- Provide micronutrient rich snacks like mangos, paw paw, melon, apples or bananas.
- Feed extra amounts of food during and following illness

#### **Children 12-23 Months**

- Continue to breastfeed several times per 24 hours.
- At 12 months, children can eat the same foods as adults, except very spicy foods.
- Provide an additional 750 kcal per day from complementary food. This is approximately two to three cups of maize porridge, one cup of beans, a fruit snack such as paw paw, mango or banana.
- Feed four to five times per day from separate plate.
- Feed protein-rich foods such as eggs, chicken, beef or fish daily, or as often as possible.
- Feed extra amounts of food during and following illness.

#### **Children 24 Months-5 Years**

- Feed a variety of fruits and vegetables, legumes, animal products and fortified foods.
- Give nutritious snacks (such as fruit, bread, nuts) between meals.
- Feed a variety of foods at least five to six times per day (three meals plus snacks such as mangos, bananas, paw paw).

#### **For All Children**

- Ensure that the infant has received all vaccinations by one year (polio, BCG for tuberculosis and DPT for diphtheria, pertussis, tetanus and measles).
- Encourage intake of Vitamin-A-rich foods and give the child a Vitamin A capsule every six months and iron drops daily or weekly starting at 6 months of age.

- Encourage the intake of iron and Vitamin C rich foods, and give liquid iron supplements daily (12.5mg/day to infants 6 months to 1 year). If anemia prevalence is high, continue to 24 months of age or beyond.
- During diarrhea continue breastfeeding and provide oral rehydration therapy. Make a sugar/salt solution to rehydrate children or use ORS during diarrhea episodes.
- Practice good hygiene and proper food handling.
- Use clean utensils, cups and bowls and avoid bottle-feeding children.
- Seek appropriate health care for fever, diarrhea, chronic cough, malaria, hookworm and other parasitic infections.

#### **Feeding Practices**

##### *Summary of Feeding Practices for Children 6-23 months*

- Continue to breastfeed frequently.
- Give appropriate quantity, frequency and variety of foods to children according to their age group.
- Practice active feeding by:
  - Feeding infants directly and assisting older children.
  - Talk and engage children during feeding.
  - Offer favorite foods to encourage children to eat when they lose interest or have depressed appetite.
  - If a child refuses many foods, try different food combinations, tastes and textures.
  - Feed slowly and patiently and minimize distractions.
  - Do not force children to eat.
- Practice active and frequent feeding during and after illness.
- Practice good hygiene and proper food handling.
- Feed extra amounts of food during and following illness.
- Continue to breastfeed before meals and give appropriate complementary foods.



## Recommendations for Health Workers and Promoters Working with HIV-Infected Mothers

The feeding recommendations for infants of HIV-infected mothers are being reviewed by the World Health Organization and others. Program managers are encouraged to check with local health authorities and UN agencies for the most current guidelines.

Partial/mixed breastfeeding is associated with a significant additional risk of HIV transmission from mother to child. If breastmilk substitutes are affordable, available, sustainable and safe, replacement feeding is recommended.

However, for the vast majority of HIV-infected mothers in resource-poor situations, replacement feeding is not a safe alternative to exclusive breastfeeding for the first six months. Until evidence suggests otherwise, exclusive breastfeeding is recommended to six months of age for infants of mothers regardless of their HIV status.

For the first six months, even for HIV-infected mothers, it is important not to “mix feed.” Mixing breastfeeding and complementary feeding at this early age introduces infections to the developing infant that can increase the risk of HIV and other illnesses.

To minimize HIV transmission risk, partial/mixed breastfeeding should be discontinued as soon as feasible, taking into account local circumstances, the individual woman’s situation and the risks of replacement feeding (including infections other than HIV and malnutrition).

All HIV-infected mothers should receive counseling so that they make the best decision about feeding options. The infant feeding choice depends on the individual mother and her decision should be supported.

## WHO Guidelines for High Dose Vitamin A Supplementation (in International Units (IU))

Time	Mother	Infant
At delivery	200,000 IU at delivery or during the safe infertile postpartum period*,	**
Post-Partum period	Low dose not exceeding 10,000 IU per day or 25,000 IU per week at any time postpartum	
0-5 months		Three doses of 50,000 IU with one month interval. Doses should be given at any health or immunization contact, in particular at each DTP (6, 10 and 14 weeks)
6-11 months		A single dose of 100,000 IU given at any health or immunization contact, in particular at measles vaccination (9 months)
12-59 months		200,000 IU every 6 months at any health or immunization contact

\* The safe infertile period for breastfeeding mothers to receive a high-dose Vitamin A is within 8 weeks of delivery; for non-breastfeeding women within 6 weeks of delivery.

\*\* WHO recommends that infants born to HIV infected women should receive 50,000 IU dose of Vitamin A at birth, in addition to the three subsequent 50,000 IU doses of Vitamin A administered over the first six months of life.

## References

**Academy for Educational Development (AED).** 2001. "Breastfeeding and HIV/AIDS Frequently Asked Questions" FAQ Sheet 1. Linkages Project. Washington, DC: AED.

\_\_\_\_\_. 1999. "Facts for Feeding: Recommended Practices to Improve Infant Nutrition During the First Six Months." Linkages and SARA Project. Washington, DC: AED.

\_\_\_\_\_. 1998. "Facts for Feeding: Guidelines for Appropriate Complementary Feeding of Breastfed Children 6-24 Months of Age." Linkages and SARA Project. Washington, DC: AED.

**BASICS/WHO/UNICEF.** 1999. *Nutrition Essentials: A Guide for Health Managers.* Geneva.

**Coutsoudis A., K. Pillay, E. Spooner et al.** "Method of Feeding and Transmission of HIV-1 From Mothers to Children By 15 Months of Age: Prospective Cohort Study from Durban, South Africa." *AIDS*. 15:379-387, 2001.

**King, Felicity Savage, and Ann Burgess.** *Nutrition for Developing Countries.* 1993. New York: Oxford Medical Publications. Second Edition.

**Preble, E.A. and E. G. Piwoz.** 1998. *HIV and Infant Feeding: A Chronology of Research and Policy Advances and their Implications for Programs.* Washington DC: Academy for Educational Development.

**UNICEF/UNAIDS/WHO.** 1998. *"HIV and Infant Feeding: A Guide for Health Managers and Supervisors."* Geneva: WHO.

**WHO/UNICEF.** 1998. *Complementary Feeding of Young Children in Developing Countries: A Review of Current Scientific Knowledge.* Davis, CA and Geneva: University of California at Davis and WHO.

**WHO/UNICEF/IVACG,** 1997. *Vitamin A Supplements: A Guide To Their Use In the Prevention of Vitamin A Deficiency and Xerophthalmia.* Geneva.

**WHO/UNICEF/UNAIDS,** 2000. "HIV and Infant Feeding and Counseling: A Training Course." Geneva: World Health Organization.

**WHO.** 2001. "New data on the prevention of Mother-to-Child Transmission of HIV and their Policy Recommendations: Conclusions and Recommendations." WHO Technical Consultation on behalf of the UNFPA/UNICEF/WHO/UNAIDS Inter-Agency Task Team on Mother-to-Child Transmission of HIV. Report No. WHO/RHR/01.28. Geneva: World Health Organization.

### Websites

**The LINKAGES Project:**  
[www.linkagesproject.org](http://www.linkagesproject.org)

**The MOST Project:**  
[www.mostproject.org](http://www.mostproject.org)

**The SARA Project:** [www.aed.org/sara](http://www.aed.org/sara)

# A Food-Based Approach to Support HIV/AIDS Affected Households and Communities

## 6. MODULE

This module provides guidance to program managers on the use of food and donated food to address HIV/AIDS-affected communities. The steps for doing a community needs assessment are explained. The result of the needs assessment will help define the objectives and specific actions that will determine the type of food ration, size of the food ration and who is eligible to receive it. The module includes questions to consider

when designing a program to address malnutrition and household food security. Suggestions for determining a ration for a household are provided with special attention to the increased energy and protein requirements for household members that are HIV-infected. While the focus is on external food donations for short- and medium- term strategies, this approach is applicable to other community-based care and support.

### Introduction

This guide stresses the importance of consuming a varied diet of sufficient amount for a healthy and productive life. In many communities people face substantial challenges in acquiring and consuming a good diet. These challenges may be due to livelihoods threatened by environmental, social, cultural and economic factors that affect the production, purchase and storage of food. An analysis of food security in a household and community will highlight the barriers and constraints for a varied and quality diet. In many parts of the world, food insecurity translates into challenges for families to meet even their basic needs. HIV/AIDS worsens this already precarious situation.

The HIV/AIDS epidemic accelerates the decline towards food insecurity and destitution in a number of ways. Money once used to purchase food for a family may be diverted to buy medicines for an ill family member. As their illness worsens, their ability to work diminishes. This can lead to reduced income and food production. Children who lose family members to AIDS may drop out of school due to a lack of money for school fees. The HIV/AIDS epidemic presents not only short-term impacts through reduced food production and consumption, but also longer-term impacts as future generations are less likely to develop skills, leading to lost opportunities for income.

The impact of HIV/AIDS on food security in sub-Saharan Africa requires short-medium- and long-term strategies to help households and communities deal with the epidemic and maintain their nutritional status and health.

Food can be obtained from external donations or locally. While it is recognized that external food aid is not a sustainable resource, the intent is to make the best use

of food to ensure that no harm is done and eventually communities will be able to respond to food security shocks. In the long term, sustainable strategies should include local ownership, skills development, infrastructure development, income-generating activities and sustainable agricultural and natural resource development particularly focused on locally available resources and foods.

### Community-Based Care and Support

To use food effectively as a means of providing care and support to HIV-affected households, program managers should pursue a four-step process:

- Step 1: Facilitate a community-led assessment of local food sources and care practices to determine effective uses of all food;
- Step 2: Work with the community to design and implement a food strategy based on decisions about: the purpose of the food, how food will be delivered and stored and who is eligible to participate;
- Step 3: Decide and calculate ration composition and size and frequency of schedule for distribution; and
- Step 4: Link communities to other services, including health, hygiene, water, sanitation, growth promotion and other food-security interventions.

#### ***Facilitating a Community-Led Situation Assessment***

In designing a program to address a particular dimension of food insecurity, especially the additional burden of HIV/AIDS, it is necessary to work backwards from the immediate manifestations of food insecurity to the root causes of the problem. Understanding the causes of food insecurity requires a significant amount of information gathering. Normally, quantitative information will be available to begin this analysis from data collected routinely by the host government Agriculture, Health or Planning Ministries, national survey data

sets such as those developed under the USAID-sponsored Demographic and Health Surveys (DHS) Project, as well as information in existing studies and reports. In addition, it is also typically necessary to conduct field studies using, at a minimum, qualitative techniques to develop a refined understanding of local conditions in the intended program area, or even quantitative assessments using survey methods.

Work with the community to ensure that the community conducts its own assessment of the situation and then devises an appropriate action plan based on the findings.

In most cases, a series of simple and related questions can provide a very general structure to guide the information-gathering process. While the questions themselves are simple, obtaining their answers may be quite complex, requiring expertise from a variety of relevant technical disciplines. The questions to begin the information gathering process include:

*Where do households get their food?*

*What factors limit the ability of households to obtain food from each of these sources?*

*How do households obtain their cash income, and what factors limit the ability of households to obtain income from each of these sources?*

*What factors limit how well households use their food to meet the dietary needs of the individuals within them?*

*Who are the most food insecure or vulnerable population groups?*

Involving community leaders, health workers, educators, household members and persons living with HIV/AIDS in both the gathering and analysis of the information is useful for obtaining accurate information and designing an intervention that will be beneficial to all members of the community. Issues that may need to be included are:

*What traditional community feeding and care practices promote good health and nutrition for adults and which practices promote appropriate breastfeeding and complementary feeding practices for young children?*

*What traditional feeding and care practices exist for special needs groups, such as persons living with HIV/AIDS, pregnant and lactating women and children (orphans and non-orphans)?*

*What locally available foods are used for household consumption or sold as cash crops, and what is their availability throughout the seasons? This should include all current items consumed by the family including insects, herbs, fruits, vegetables, legumes, nuts and other plant and animal products that are grown or gathered by households.*

*What food preparation and storage techniques are commonly used?*

*What are the market services, including where people buy food and medicines, micronutrients or herbal supplements for promoting good health, including traditional medicines?*

*What are the links to health services and other government and nongovernmental assistance?*

Program managers may be able to obtain existing information from government and

nongovernmental reports, household surveys and food consumption surveys. Rapid food security assessments and qualitative data using techniques such as key informant interviews, focus group discussions and observational studies are some of the methods that can be used to gather and complement this information. This phase is also important for identifying the beneficial and harmful practices that support or undermine good health; knowing these is useful for designing programs and developing messages for good nutrition. The reference section at the end of this module contains a list of publications that are useful to program managers to work with communities in assessing the food situation and feeding practices at the household level.

### ***Designing and Implementing a Food Program***

The initial assessment should provide an understanding of food security conditions and constraints in a given area. Program managers should continue to work with the community to develop a set of program goals and objectives where the probability of a successful intervention is highest including addressing constraints. A clear and measurable set of goals and objectives is the first step towards developing performance indicators and establishing an effective monitoring and evaluation system.

Once the goals and objectives have been established, it is necessary to agree on how the objectives will be met, including developing a strategy for delivering food and other services. In many instances, it is preferable to work with existing organizations and committees in a community rather than creating entirely new structures. Experience has shown that mobilizing groups for the sole purpose of receiving and distributing external aid often results in weak short-lived structures that are less able and willing to mobilize their own local resources in the long-term.

Three basic questions should be considered when using food as an input for a program:

*What is the purpose of introducing a food program to the community?*

The use of food to achieve program objectives normally has one or more purposes.

First, it assists households in meeting dietary or nutritional requirements. For example, in maternal and child health programs, food may be given to mothers to help restore the health of a malnourished child.

Second, food can serve as a form of income transfer to a household. In food-for-work programs, households receive a food ration in exchange for their labor on road building, irrigation or other infrastructure development projects.

Third, food can serve as an incentive to attract household members to participate in a program. For example, food might be provided to schools to encourage families to keep children in school.

In some programs, food serves multiple purposes. For example, in maternal and child health programs, food plays a nutritional role and is an incentive for mothers to participate in key health services such as immunization. The use of the food will determine its type, quantity, who is eligible and the likely result. It is important to understand and agree on the use of the food. The use can change over time and in response to a community emergency such as a flood or drought.

In programs to assist HIV-affected households, food is focused on helping household members maintain their nutritional status. Although this guide provides information on nutritional issues related to HIV/AIDS, the food rations described below are based on the nutritional needs of all household members. This is because most households seriously affected by HIV/AIDS experience chronic food shortages that affect all members.

This guide focuses only on the use of food to meet nutritional needs; discussions of

food as an income transfer or incentive can be obtained from other resources listed at the end of this module.

*What is the appropriate way to deliver food aid in a community?*

A program manager should work with the community to determine the most effective and efficient means of distributing the food based on the human, financial and other resources the community can provide. If food is available, two approaches to distribute food are *take-home rations* and *on-site feeding*. The decision is between a more flexible and administratively simpler take-home option and the more controlled on-site feeding option. Other approaches including cash transfers and food stamp programs are not discussed here.

**Take-Home Rations.** This is the most common method of food distribution, in which dry food rations are provided to households to be taken home for preparation and consumption. Take-home rations are targeted to households with the greatest need, or provided generally to a community (as in the case of emergencies or natural disasters).

**On-Site Feeding.** Food is prepared at a center, and participants consume the meal or snack (such as biscuits) on site. Snacks provided at schools can help increase school attendance as well as address children's nutritional needs. Providing a meal to all students, not just orphans, can forestall the stigma and resentment that can arise in some community-based feeding programs.

Communities affected by HIV/AIDS have created a variety of institutions to care for and provide services to affected children. Some examples include community schools established especially for orphans and other vulnerable children; community day care centers that free caretakers for other tasks and also provide a meal and activities for the children; and orphanages or other residential facilities for children. Food aid has been used to help support such self-help efforts, but programs should be monitored carefully to ensure that they

do not undermine community integration or development.

Each method has advantages and disadvantages. Take-home rations generally require fewer resources to manage and take less time to establish a distribution system. In addition, this approach is less time-consuming for recipients, who do not have to travel long distances to obtain food every day. However, in cases where only certain groups are targeted for food distribution and the program seeks to prevent dilution to other family members, on-site feeding may be more advantageous. It may also be more effective where firewood and cooking utensils are in short supply and households are unable to prepare meals or where the security situation is poor and beneficiaries are at risk when carrying food home.

It is recommended that in each community, an existing group be identified to help manage the food program. This group should already be actively engaged in assisting vulnerable persons in the community, preferably drawing mostly or entirely on locally available resources. If no such group exists, a committee can be organized by the external agency or a partner. If a program wants to provide take-home rations to households with PLWHAs or orphans, a team should be employed to be responsible for the logistics. This includes advance planning and ordering of food, receiving and storing the food from the donor, delivering food to the recipient households and establishing a simple monitoring system to keep track of the food provided to each household.

In an on-site feeding program, the committee selects community members to be responsible for preparing and serving the meals daily. An exit strategy that defines more sustainable food interventions should be developed, since food donations will not continue indefinitely. As part of the exit strategy, the committee should also define criteria for deciding when a household should stop receiving donated foods and become

involved in other interventions that promote livelihood security.

*Who are the beneficiaries and what are their energy needs?*

Once the approach for food distribution is decided, it is important to determine who the beneficiaries will be and the appropriate eligibility criteria. A program working with community leaders may want to review whether it will be providing food for all households in a community or targeting specific groups—such as households with PLWHAs or orphans, or more specifically, orphans under the age of five. These decisions will depend on the prevalence of HIV in the community, people's awareness about the disease and whether families will be stigmatized if they participate in a program.

The first step in determining potential beneficiaries and their energy and protein requirements is to examine the composition of the household and estimate their intake and the gap in meeting their nutritional needs. Table 4 shows the energy and protein requirements for healthy adults and children, as well as the added increments needed for persons who are HIV-infected or sick with AIDS and for pregnant and lactating women. This information can be used to estimate daily household energy and protein requirements (Table 5).

A family of nine people is represented in the example in Table 5. Each adult is active and an adult male is HIV-infected. The woman is breastfeeding her one-year-old infant, and two adolescent orphans are part of the household. The calculation of requirements indicates that a total of 19,760 kcal/day are needed. Note the total consists of the sum of each person's requirements and not the average multiplied by the number of people in the household. In situations where individual age and sex information is not easily available, an average of 2,070 or 2,100 kcal/person is often used. While it is preferred that the age and sex breakdown is used, if an average is chosen, make the calculation explicit.

### **Selecting Ration Size and Composition**

Decisions about both the ration size and the composition of the foods included in a food basket should be made based on the objectives such as addressing nutritional needs or serving as an incentive to participate in a program.

Before determining the ration size, a brief assessment should be conducted to determine the community definition of a household. The definition will vary, particularly in heavily HIV-prevalent areas where household composition changes as relatives and friends care for children and others.

The selection of foods for inclusion in a food aid program should be influenced by four considerations: 1) whether it is nutritionally appropriate; 2) culturally

acceptable; 3) able to be properly processed, stored and prepared; and 4) complements rather than replaces local food production. Other factors (such as which commodities are available) sometimes restrict choice. Table 6 shows the nutritional value of foods available through the US Title II food program.

**Nutritional Value.** Does the food to be included meet the nutritional needs of adults and children? Is it well-tolerated and easily digestible by a child or an adult who is sick with AIDS? For many young children and infants, there are limits in the volume and bulk that can be digested. For a person sick with AIDS, poor absorption of foods is common. For young children and HIV-infected persons, foods that are high in protein and micronutrient content (such as fortified corn soy blend) are more

## **Lessons from Malawi**

### *Providing Food Aid to HIV-Affected Communities*

In Malawi, Catholic Relief Services (CRS) and Save the Children have implemented programs to enhance the food security status of HIV-affected communities. CRS implemented an integrated program involving agricultural interventions, as well as food distributions, as a safety net to vulnerable households in Chikwawa and Phalombe. CRS selected the two districts based on the level of food insecurity and the estimated prevalence of HIV/AIDS. Working with local leaders and existing communities, committees were formed to develop eligibility criteria for determining which households receive food aid. All community members were invited to receive training to improve skills on agricultural production. In Save the Children's COPE project, the communities established gardens to provide sweet potato and cassava to families caring for orphans and people living with HIV/AIDS.

#### *Recommendations:*

1. Work with existing traditional community structures to select vulnerable households. CRS worked with village chiefs and communities to establish an "orphan care committee" responsible for identifying and monitoring the most vulnerable households to receive food.
2. Involve the community in defining criteria for its most vulnerable members and establishing a system to monitor participation in the program. The system should provide feedback on progress in meeting the community's food security objectives. In areas where CRS is working, the communities identified middle-aged persons who are sick, orphans and vulnerable children, households led by elderly relatives or women, and families with a sick relative. CRS established community registers to identify the participants who received food, as well as whether family members are involved in other activities.
3. Involve families in safety-net programs in other, more sustainable food-security interventions such as agricultural and vocational skills training.
4. Establish clear entry/exit criteria for families receiving the food component of the intervention.
5. Provide direct skills training for orphans or advocacy activities that encourage guardian families to continue to promote the child's attendance at school.



**Table 4. Daily Energy and Protein Requirements for Adults and Children**

Mean Requirements for Adults (kcal/day) 2070	Energy Kcal/day	Protein g/day
a) Adjustment for Activity Level		
Moderate: Males	+360	57
Females	+100	48
Whole population	+140	
Heavy: Males	+850	57
Females	+330	48
Whole Populations	+350	
b) Pregnancy	+285	55
c) Lactation	+500	68
d) HIV-infected Adults	<b>Increase of 10-15%</b>	<b>Increase of 50 to 100%</b>
<b>Mean Requirement for Children by Age</b>		
0-2 months	404	
3-5 months	550	
6-8 months	682	
9-11 months	830	
12-23 months	1092	12
1-3 years	1250	23
3-5 years	1500	26
5-7 years	1710	30
7-10 years	1880	38
Boys		
10-12 years	2170	50
12-14 years	2360	64
14-16 years	2620	75
16-18 years	2820	84
Girls		
10-12 years	1925	52
12-14 years	2040	62
14-16 years	2135	69
16-18 years	2150	66
If pregnant	+285	+7

**Note:** The mean requirement is 2,070 kcals per day. A moderately active female aged 27 years who is pregnant and HIV-infected would require:

<b>Average</b> 2,070	+	<b>Activity level</b> 100	+	<b>Pregnancy</b> 285	+	<b>HIV status*</b> 368		<b>TOTAL</b> 2,823 kcals
-------------------------	---	------------------------------	---	-------------------------	---	---------------------------	--	-----------------------------

\* The addition for the woman's HIV infection was estimated to be 15% of 2,070+100+285 = 368 kcals.

Sources: James and Schofield (1990) and WHO (1985).

**Table 5. Illustrative Calculation of Daily Household Requirements**

For a family of nine people with three very active adults (including one HIV-infected male and one lactating female) and six children (including two adolescent healthy orphans and four with ages ranging from 1 year to 10 years).

			Energy Kcal/day	Protein g/day
Adults:				
	Male active	2,070 + 850	2,920	57
	Female active lactating	2,070 + 330 + 500	2,900	68
	Male active HIV-infected	2,070 + 850 + 438*	3,358	114
Children: (ages in years)				
	1		1,092	12
	4		1,500	26
	7		1,710	30
	10		1,880	38
	Girl 13		2,040	62
	Boy 14		2,360	64
Total household daily requirements:			<b>19,760</b>	<b>471</b>
*HIV infection results in a need for 10-15% more energy and 50-100% for more protein.				

beneficial and easily digestible. (See Module 3 on managing symptoms.)

**Cultural Acceptability.** A community or household may have food preferences or taboos, particularly during times of pregnancy, lactation or illness. It is important to select foods that promote practices that will enhance nutritional status and discourage potential harmful practices. As noted, this is an important component of the assessment phase. Program planners should make suggestions of available food choices to community members and get their input before determining the ration.

**Availability of Processing, Storage and Preparation Techniques.** The availability of milling facilities and fuel should be considered when selecting food aid commodities. In areas where fuel shortages are common, selecting foods that require less preparation and cooking time may be advisable. Flours and pre-mixes will not require milling. It is also important to consider the shelf-life, type of storage facility and packaging, particularly in tropical climates where pests, heat and humidity can result in food losses.

**Compatibility with Local Production.** Donated food should not impede local production or reduce the demand for local foods. Finding commodities that can complement local foods or replace them during seasonal shortages is an important consideration when selecting the commodity for inclusion in a food basket. Table 7 provides an example for calculating the ration size based on energy and protein for the household shown in

Table 5 (including a person living with HIV/AIDS). The ration size is based on the estimated nutritional needs for all household members based only on the energy and protein requirements. The example illustrates the need to 1) understand how much energy and protein households are consuming from sources other than the proposed food basket, 2) have flexibility to choose among commodities but the need to meet requirements in terms of energy and protein, 3) round up to balance requirements with managing odd quantities such as 9 liters/month instead of 8.7 liters/month, and 4) be familiar with the food composition tables to ensure accuracy.

The ration consists of three commodities common in Title II programs. A micronutrient fortified cereal (corn soy blend), combined with a good protein source (either beans or lentils) and a widely acceptable high-energy source (refined vegetable oil). Other combinations are possible and the program manager is encouraged to go through the calculation and adapt it to other scenarios using a spreadsheet-type tool.

In the example in Table 7, the monthly ration was determined based on total family daily needs. The calculations captured the additional needs of the HIV-infected family member as well as a condition that approximately 25-30 percent of the energy needs should come from the oil. Note that the ration provided approximately half of the family needs for energy and protein.

Whole grain cereals, such as wheat and corn, are not fortified. All processed food cereals under Title II programs, however, with the exception of rice, are fortified with B vitamins (thiamin, riboflavin, folic acid and niacin), Vitamin A, calcium and iron. Blended cereals (corn-soy blend and wheat-soy blend) are further fortified with zinc, B12, pantothenic acid, iodine, magnesium, Vitamin C, Vitamin D and Vitamin E.

The micronutrient content of blended cereals are estimates. Because some of these vitamins are lost during storage and cooking, they do not accurately reflect the quantities available to the body after consumption. For example, up to 40 percent of Vitamin A is lost from fortified cereals that are exposed for several months to heat, light and air. Minerals are not subject to deterioration by environmental factors; however, their bioavailability in cereal can be greatly reduced by absorption inhibitors present in food aid commodities and other foods commonly consumed, such as tea and coffee.

All oil provided through Title II is fortified with Vitamin A, a nutrient essential for the protection of the health of any population,

but particularly young children. One tablespoon (or 14 grams) of fortified vegetable oil potentially satisfies over 70 percent of a 5-to-10-year-old child's daily requirement and about 50 percent of an adult requirement for Vitamin A. The calculation for the family ration in Table 7 was not based on meeting the requirements for key micronutrients such as Vitamin A or iron. But the CSB, lentil and oil ration for the family of nine provides 43,070 IU/day of Vitamin A, excluding the contribution from the family diet. This is in excess of three times the requirement for this size of family but losses due to storage and cooking would be expected, especially in the CSB which provided over 60 percent of the Vitamin A in the ration.

Calculations of a ration based on specific nutrients can be done with the information provided in the Commodity Reference Guide based on the nutrient composition of the commodities (Part 1) and the nutrient needs (Part 2). Due to the inhibiting and enhancing effects of different food components on micronutrient utilization, any calculation on specific micronutrients should be carried out by someone familiar with micronutrient malnutrition. Given the difficulty of planning diets based on specific micronutrients, it is recommended that ration calculations be based on energy and protein needs instead.

### ***Linking Communities with Other Services***

Providing food can play an important role in: (a) assisting HIV-affected households to cope with a member who is living with AIDS, (b) providing extra food to overburdened households caring for children orphaned by the disease or (c) assisting households that have suffered the recent loss of a member to allocate resources to cover other expenses associated with an illness or loss. If food aid is provided, it should be part of an overall intervention strategy that builds the capacity of AIDS-affected households and communities to sustain themselves over the long-term. Programs that use food to provide nutritional support to households

**Table 6. Foods Provided Through the US Title II Food Program**

Food	Energy (Kcal/100g)	Protein (per 100g)	Iron (mg/100g)	Vitamin A* (IU/100g)
<b>Cereals</b>				
Bulghur	342	12.3	2.9	2,205
Cornmeal	366	8.5	2.9	2,205
Rice	365	7.1	.80	0.0
Sorghum	339	11.3	3.0	2,205
Soy-fortified sorghum grits	337	17.3	2.9	2,205
Wheat flour	333	11.7	4.4	2,205
<b>Pulses</b>				
Lentils	338	28.1	9.02	39
Peas	341	24.6	4.40	149
<b>Fortified blended foods</b>				
Corn soy blend (CSB)	374.3	17.1	17.49	2,612
Wheat soy blend	354.5	21.5	17.85	2,323
<b>Fats</b>				
Vegetable oil	884	0.0	.02	6,000

\* Note that Vitamin A composition is often presented as micrograms of retinol equivalents (µg RE). International Units (IU) conversions: 1000 IU = 333 µg RE

For complete specifications, go to the Fact Sheets in Part I of the Commodity Reference Guide at: [www.usaid.gov/hum\\_response/crg/](http://www.usaid.gov/hum_response/crg/).

### Donated Foods

*A program should select donated foods that are acceptable to the communities and complement the local diet.*

are most efficient when combined or linked to other services such as:

- Nutrition education and counseling to ensure proper utilization, preparation and storage of foods;
- Growth promotion, breastfeeding and basic child health services to promote the health of young children;
- Health services to manage and treat infections, especially diarrhea, TB and malaria, which can worsen malnutrition;

- Reproductive health services, particularly pre- and post-natal care to assist pregnant and lactating women;
- Psychosocial support for people living with HIV/AIDS and family members to cope with the illness and plan for the future;
- Other types of economic and social support, including microfinance, agricultural training, vocational training and school feeding programs, and programs that help HIV-affected households maintain their income, savings and overall livelihood security.

Table 7. Illustrative Calculation of a Food Basket for a Household

**Calculation for household food ration requirements:** (Based on 9 people already consuming 10,000 kcal and 100 grams of protein per day – see Table 5)

A) HOUSEHOLD REQUIREMENT		Energy	Protein
Adults:		Kcal/day	g/day
Male active	2,070 + 850	2,920	57
Female active lactating	2,070 + 330 + 500	2,900	68
Male active HIV-infected	2,070 + 850 + 438*	3,358	114
Children (age in years):			
1		1,092	12
4		1,500	26
7		1,710	30
10		1,880	38
Girl 13		2,040	62
Boy 14		2,360	64
Total household daily requirements:		19,760	471

B) DEFICIT: To calculate subtract family intake from requirement (Daily requirement - Estimated current intake) =				Deficit
Energy	19,760 kcal - 10,000 kcal	=	9,760	
Protein	471 g - 100 g	=		371

### C) CONSTRUCTING A FOOD BASKET

#### ► Select no more than 3 commodities for the food basket

For HIV infection, choose a high energy source (vegetable oil), a milled cereal fortified with micronutrients (Corn Soy Blend, CSB) and a high protein source (lentils) (Table 6). Base the ration on at least 25-30% of the calories coming from fats and oils (or  $0.33 \times 9,760 = 2,440$  kcal from oil).

#### ► Calculate household daily ration size

- 1) Oil: Need 2,440 calories from vegetable oil in ration = 276 g  
(based on 100 g oil = 884 kcal; then 276 g = 2,440 kcal)
- 2) Cereals/Pulses are needed to supply remainder energy:  
(based on total energy deficit – energy from oil)  
(Total deficit of 9,760 – oil supply of 2,440) = 7,320 kcal  
Remaining energy supplied by equal amounts of CSB (1 kg) and lentils (1 kg)  
Where 1 kg of CSB = 3,743 kcal; 1 kg of Lentils = 3,380 kcal  
Total energy provided by 1 kg each of CSB and Lentils = 7,123 kcal

#### ► Calculate monthly ration size

- 1) Oil: 276 g x 30 days = 8.28 kg or 9 liters (since 920 g = 1 liter)
- 2) CSB: 1 kg x 30 days = 30 kg
- 3) Lentils: 1 kg x 30 days = 30 kg

#### ► Check to be sure ration meets protein requirements

Since CSB and Lentils are the source of protein and the deficit is 371 grams/day

- 1) CSB: Protein per kg = 171 g or Ration = 171 g/day
- 2) Lentils: Protein per kg = 281 g or Ration = 281 g/day  
Family needs additional 371g/day (see above)  
CSB and Lentils provides (171g + 281g) = 452 g/day  
No Deficit in daily or monthly protein from ration (with slightly extra for needs)  
No additional CSB or Lentils are needed

#### ► Monthly Family Ration

- Oil: 9 liters  
CSB: 30 kg  
Lentils: 30 kg

Ration quantities have been rounded up to supply about 286,885 of kcal/month or 9,563 kcal/day and 13,560 grams of protein/month or 452 g/day. If the oil is increased from 9 to 10 liters/month, the slight energy deficit of 6,000 kcal/month will be met. Ration depends on an estimate of household intake of foods other than the ration.

\*HIV infection results in a need for 10-15% more energy and 50-100% for more protein.

### **Institution-Based Feeding Programs**

Institutions such as orphanages, community groups, hospices and clinics provide on-site and take-home rations for specific groups, including HIV/AIDS-affected people. These programs are usually targeted to specific groups: people who are living with AIDS who come for medical treatment and care, children who have lost a parent to HIV/AIDS or street children.

Designing a complete diet for participants fed at institutions requires careful consideration of how to meet nutritional needs and ensure that food is appealing, culturally acceptable, easy to prepare, serve and consume and that resources are available to ensure needs can be met over time. The role of food aid should be to complement locally available foods, especially fruits and vegetables. Earlier suggestions for estimating a food basket can be used, but consideration must be given to additional foods and flavorings such as spices, salt, sugar, fruits and vegetables.

### **Institutional Care for Severely Malnourished Individuals**

In some cases, people suffering from AIDS or children orphaned by the death of a parent may become severely malnourished and need therapeutic treatment to reduce the risk of death or excessive morbidity. In therapeutic feeding, a person receives both medical and nutritional care until he/she gains sufficient weight. The timeframe for rehabilitating a malnourished child is generally four to six weeks. For HIV-infected adults and children, however, weight gain may not be sufficient, and programs will need to assess with households whether nutritional care or more intensive medical treatment is needed.

Most community-based programs lack the resources to run therapeutic feeding centers. Thus in areas where the prevalence of wasting (low weight for height in under fives) or severely malnourished persons is greater than 10 percent, it is recommended that a program work with local nongovernmental organizations and governments to establish centers where both medical and therapeutic feeding can be administered. For more information, consult guidelines from UNICEF, WHO and national authorities.

## References

**Dickin, Kate, M. Griffiths, and E. Piwoz.** 1998. *Designing by Dialogue: A Program Planning Guide for Consultative Research for Improving Young Child Feeding Practices*. Washington, DC: Academy for Educational Development and The Manoff Group.

**Donahue, Jill, and J. Williamson.** "Community Mobilization to Mitigate the Impacts of HIV/AIDS." September 1999. Washington, DC: Displaced Children and Orphans Fund, US Agency for International Development.

**Food and Agricultural Organization (FAO).** 1988. *Requirements of Vitamin A, Iron, Folate and Vitamin B12*. Report of a joint FAO/WHO expert consultation. Rome: FAO.

**Food and Nutrition Technical Assistance Project (FANTA).** "The Use of Food Rations in Maternal Child Health Programs." December 1999. Washington DC: Academy for Educational Development.

**James, W.P.T., and E. C. Schofield** 1990. *Human Energy Requirements: A Manual for Planners and Nutritionists*. Oxford: Oxford University Press. Food and Agriculture Organization.

**Lorey, M.** December 2000. "Handbook for Programs to Assist Children Affected by HIV/AIDS." USAID.

**United Nations High Commissioner for Refugees and World Food Program (UNHCR/WFP).** 1999. *Guidelines for Selective Feeding Programmes in Emergency Situations*. Geneva: UNHCR.

**US Agency for International Development (USAID).** 2000. *Commodities Reference Guide*. Washington, DC: Office of Food for Peace, Bureau for Food for Peace and Voluntary Assistance, USAID.

**World Health Organization (WHO).** 1999. *The Management of Severe Malnutrition: A Manual for Physicians and other Senior Health Workers*. Geneva.

**World Health Organization (WHO).** 1985. *Energy and Protein Requirements*. Technical Report Series 724. Geneva.

### Websites

**Commodity Reference Guide** (Parts 1 and 2) contains a comprehensive explanation of the use of donated food in a range of development activities: [www.usaid.gov/hum\\_response/crg/](http://www.usaid.gov/hum_response/crg/)

Food and Nutrition Technical Assistance Project  
Academy for Educational Development  
1825 Connecticut Ave, NW,  
Washington D.C., 20009-5721  
Tel: 202-884 8000  
Fax: 202-884 8432  
E-Mail: [fanta@aed.org](mailto:fanta@aed.org)  
Website: [www.fantaproject.org](http://www.fantaproject.org)