

SESSION 12: NUTRITION CARE OF ADOLESCENTS LIVING WITH HIV

Purpose (slide 2)

The purpose of this session is to provide current knowledge and understanding of the special considerations for nutrition care and support for adolescents living with HIV.

Learning objectives (slide 3)

By the end of this session the student will be able to:

- Explain the importance of adolescent nutrition in the lifecycle
- Describe the nutritional requirements for adolescent boys and girls
- Describe the essential components for nutrition care of the HIV-infected adolescent
- Know factors to consider when planning nutrition care and support for HIV-infected adolescents
- Know contact points that can be used to deliver services to adolescents and their caregivers

Prerequisite knowledge

- Basic science (biology, physiology)
- Basic nutrition throughout the life cycle (Session 1)
- Basics of HIV and AIDS in Africa (Session 2)

Estimated time: 110 minutes, excluding time for the field visit

Session guide (slide 4)

Content	Methodology	Activities	Estimated time (minutes)
Introduction	Presentation	Introduce the session and rationale.	5
Importance of adolescent nutrition	Participatory presentation	Describe the importance of nutrition during adolescent growth and development.	10
Adolescent nutrition in the context of HIV	Participatory presentation	Explain the impact of HIV on adolescent nutritional status.	10
Goals of nutrition care and support for HIV-infected adolescents	Participatory presentation	Present the goals of nutrition care and support for adolescents with HIV.	10
Nutritional requirements of adolescents in the context of HIV	Participatory presentation	Describe the dietary recommendations for HIV-infected adolescents.	15
Nutrition issues that affect the HIV-infected adolescent	Participatory presentation	Describe adolescent vulnerability to chronic energy deficiency, iron deficiency anemia, and vitamin A deficiency and ways to address these issues.	15
Components of nutrition care and support for HIV-infected adolescents	Participatory presentation	Review the essential components of nutrition care for HIV-infected adolescents.	15
Issues and challenges for nutrition care and support of HIV-Infected adolescents	Participatory presentation Field visit	Explain factors to consider when planning nutrition care and support for HIV-infected adolescents. Organize a field visit to services or programs that provide health or nutrition services to adolescents with HIV.	15
Discussion points		Facilitate discussion based on the content of the session.	15

Conclusions			5
Review			5
Total time			120

Required materials

- Flipchart stand and paper
- Writing pens
- Blackboard and chalk or whiteboard and markers
- Overhead projector and transparencies or LCD projector and laptop

Materials provided

- PowerPoint 12
- **Handout 12.1. Field Visit Questionnaire:**

Preparation

1. Be familiar with Lecture Notes and PowerPoint 12.
2. Review the handout and Discussion Points to identify relevant questions to help students master the concepts.
3. Contact sites to request field visits, inform them of the objectives, arrange the timing and content of the visits, and identify contact people for students to contact on arrival.

Suggested reading

American Dietetic Association and Dietitians of Canada. 2000. Manual of Clinical Dietetics, 6th edition. Chicago.

Delisle, H., V. Chandra-Mouli, and B. de Benoist. 2005. Should Adolescents Be Specifically Targeted for Nutrition in Developing Countries? To Address Which Problems? And How?. Geneva: World Health Organization (WHO).

Joint United Nations Programme on HIV/AIDS (UNAIDS). 2008. 2008 Report on the Global AIDS Epidemic. Geneva.

Piwoz, E., and E. Preble. 2000. HIV/AIDS and Nutrition: A Review of the Literature and Recommendations for Nutritional Care and Support in Sub-Saharan Africa. Washington, DC: SARA Project, Academy for Educational Development.

Regional Centre for Quality of Health Care: Nutrition and HIV/AIDS: A Training Manual. 2003. Kampala. Uganda.

UNAIDS. 2001. Fact Sheet: Preventing HIV/AIDS among Young People. United Nations Special Session on HIV/AIDS. Geneva.

WHO. 1991. Energy and Protein Requirements: Report of a Joint FAO/WHO/UNU Consultation. Geneva. Switzerland

_____. 2003. Adolescent Friendly Health Services. An Agenda for Change. Geneva.

Importance of adolescent nutrition (slides 5 and 6)

Tomorrow's adults are today's adolescents. The World Health Organization (WHO) defines adolescence as the period between 10 and 19 years old (WHO defines "youth" as people between 15 and 24 years, including adolescents). Approximately one-fifth of the world's population is in this age group. The adolescent period is a critical part of development in the life cycle, a time of physical and emotional change as the body matures. Most adolescents tend to have a lower prevalence of infection than children under 5 and a lower prevalence of chronic disease than aging adults. As a result, adolescents generally receive little health and nutrition attention except in regard to reproductive health issues.

The adolescent period is one of rapid growth and development that includes physical, psychological, intellectual, and social changes. This growth and development creates increased demands for energy and nutrients. Because nutrition and physical growth are integrally related, inadequate energy and nutrients can slow or stop linear growth (stunting) and delay sexual maturation.

Adolescents have different needs according to their stage of development (table 1) and personal circumstances.

Table 1. Adolescent changes according to stage of development

Period	Characteristics
Early adolescence: 10–13 years	The body experiences a spurt in growth and the beginnings of sexual maturation, while thinking is more abstract.
Mid-adolescence: 14–15 years	The main physical changes are complete. The person develops a stronger sense of identity and relates more strongly to peers, although family usually remains important. Thinking becomes more reflective.
Late adolescence: 16–19 years	The body fills out and takes its adult form, while the person now has a distinct identity and more settled ideas and opinions.

Source: WHO 2003.

Adequate nutrition is required to reach full growth potential. In sub-Saharan Africa, where undernutrition is endemic, many adolescents do not get adequate energy and nutrients, resulting in stunted growth and micronutrient deficiencies. Iron deficiency anemia is particularly evident in young girls. Undernutrition in Africa is complicated by HIV, which compromises nutritional status and increases vulnerability to infection. Adequate nutrition can help delay HIV disease progression, but improving the diet and hence nutritional status of adolescents, who are rarely a priority group for nutrition interventions, is a challenge for policymakers, service providers, and caregivers.

Adolescent nutrition in the context of HIV (slide 7)

One-half of all new HIV infections—over 7,000 every day—occur in young people between the ages of 15 and 25. An estimated 10.3 million young people are living with HIV, 70 percent of them in sub-Saharan Africa. Two girls are infected for every boy in the same age group. Biological, social, and economic factors play a major role in making

young women vulnerable to HIV, leading to infection soon after they become sexually active. A study of young women in Zambia found that 18 percent were HIV positive within 1 year of becoming sexually active. Most young people who are infected do not know their status, and only a few adolescents who engage in sex know the HIV status of their partners.

Adolescents are particularly vulnerable to HIV infection and usually carry the burden of taking care of family members living with HIV. Risky sexual behavior, lack of access to HIV information and prevention services, and a host of social and economic reasons increase the vulnerability of adolescents to HIV. Many adolescents do not go to school and therefore do not have access to information or opportunities to develop the skills they need to turn this information into action. In addition, many services that are available do not take the specific needs of adolescents into account. As a result, many young people often perceive health services as irrelevant to their needs and distrust them. They tend to avoid the services altogether or seek them only when they are desperate. Nevertheless, adolescents offer the most hope for changing the course of the HIV epidemic if given the right tools and support.

Goals of nutrition care and support for HIV-infected adolescents (slide 7)

As noted, adolescents are rarely considered a priority target group for nutrition interventions, yet adolescence is a time of rapid change and growth that increase the need for energy and micronutrients such as iron. Physical changes that require extra nutrition include changes in weight, height, the onset of menarche for girls, and increases in fat and muscle mass. Approximately 25 percent of person's height is achieved during adolescence, which usually marks the end of height growth. This growth depends on adequate nutrition, including both the quantity and the quality of the food and the ability to digest, absorb and utilize food. Chronic undernutrition during this period can lead to stunting.

Consequently, the nutritional status of the HIV-infected adolescent will have a great impact on overall health, growth, and development. The goals of nutrition care and support for adolescents with HIV are listed below.

- Provide adequate nutrient intake to promote normal growth and development during puberty.
- Maintain adequate nutritional status to promote health and prevent disease after physiological growth is complete.
- Promote optimal nutrition and prevention of malnutrition.
- Manage or reduce symptoms of HIV disease.
- Enhance drug compliance and efficacy through diet counseling.
- Prevent food-borne illness.
- Manage complications associated with HIV and antiretroviral therapy (ART).

Nutritional requirements of adolescents in the context of HIV (slides 8–15)

Adolescence is considered a nutritionally vulnerable period of life for a number of reasons. The body demands more nutrients and calories as a result of the increase in physical growth and maturation and changes in body composition. Eating habits and

behavior may be affected by a change in lifestyle and activity level, growing independence, the need for peer acceptance, and concern with appearance

The growth spurt in adolescents results from changes in the quantity and distribution of fat and the enlargement of many organ systems. In girls this growth spurt occurs at the ages of 10 to 12 and in males about 2 years later, although this may vary. These changes have important implications for the nutritional needs of adolescents. Adequate intake of energy, protein, fat, and micronutrients is required to meet the needs of the rapidly growing, developing, and maturing body.

The HIV-infected adolescent is at high nutritional risk. HIV infection causes excess nutrient loss and malabsorption, further increasing nutritional requirements over those needed for the rapid growth and development that occurs during puberty. The requirements may even be higher if the HIV-infected adolescent suffers from secondary infections or is pregnant or lactating.

Recommended dietary allowances (RDAs) provide guidelines for normal nutrition intake for healthy adolescent girls and boys in two age categories: 11–14 and 15–18. The increases in requirements for energy and nutrients (protein, calcium, iron, zinc) are determined by increases in lean body mass rather than increases in weight. The RDAs are set to meet the needs of almost all (97–98 percent) of people in a group. The nutrient requirements for both healthy and HIV-infected adolescents are discussed below.

Macronutrient requirements (slide 10)

As for adults, a caloric distribution of 55–60 percent carbohydrate, 12–20 percent protein, and no more than 30 percent fat is recommended for most adolescents. Session 2 provides information on the food source of these nutrients in the diet.

It is helpful for health service providers to know the locally available and affordable food sources of energy, protein, and fats in their communities. Keeping a list of locally available and affordable foods can be helpful for providing nutrition counselling.

Energy

Energy needs increase during adolescence and vary based on activity level and stage of growth. WHO energy estimates for adolescents are presented in table 2. The energy estimates are based on actual measurement of energy expenditure in adolescents and presented as an estimation of basal energy expenditure (BEE) based on actual weight. The average activity and growth needs are accounted for.

Table 2. WHO energy estimates for adolescents

Sex	Age (years)	Estimated energy requirements (BEE equation)
Male	10–18	Kcal per day = 17.5 x weight (kg) + 651
Female	10–18	kcal per day= 12.2 x weight (kg) + 746

Source: FAO and WHO 1985.

Energy needs of the HIV-infected adolescent

The HIV-infected adolescent needs more energy because of the infection and changes in metabolism. The current recommended increase in energy intake for the adolescent is the same as that recommended for HIV-infected adults.

Table 3. Recommended energy intake for the HIV-infected adolescent

Asymptomatic HIV-infected adolescent	10% more than the basic energy requirements for a non-HIV-infected adolescent of the same age, sex and physical activity level
Symptomatic HIV-infected adolescent	20–30% more than basic energy requirements for a non-HIV-infected adolescent of the same age, sex and physical activity level

Protein requirements of the HIV-infected adolescent (slide 11)

Protein is a body building food that serves as a major structural component of all cells in the body. Protein needs should be estimated using actual body weight. Table 4 shows the RDA for protein for adolescents.

Table 4. RDA for protein for adolescents

Sex and age group	RDA for protein
Males	
9–13 years old	34 g/day
14–18 years old	52 g/day
Females	
9–13 years old	34 g/day
14–18 years old	46 g/day

The estimates are based on 0.95 g/kg/day for 4–13 years old age and 0.85 g/kg/day for 13–18 years old.

It is important that adolescents get adequate protein in their diet to meet the demands of their rapidly growing bodies. If energy intake is inadequate, protein is used to provide the body with energy, making it unavailable to meet the demands of the rapid growth and development during puberty.

Although infection increases protein requirements, there are currently no recommendations to increase protein intake for adults and adolescents infected with HIV. Any additional protein needs should be individualized and based on nutrition

assessment and pre-existing (e.g., resulting from pregnancy) and concurrent protein deficiencies. The diet should contain foods that provide both adequate protein and energy.

Fat requirements of the HIV-infected adolescent (slide 11)

Fats are a good source of energy and can be used to maintain or regain weight, but eating too much fat can be harmful. No more than 30 percent of total calories in the diet should come from fat. Adolescents taking certain antiretroviral drugs (ARVs) may need to change their fat intake to address interactions between fats and the ARVs.

Although fat is a good source of additional of energy in the diet, there are no current recommendations to increase fat intake as a result of HIV infection. Additional fat needs should be based on an individual nutrition assessment to increase energy intake for the HIV-infected adolescent.

Micronutrient requirements (slides 12 and 13)

As the adolescent grows, vitamin and mineral needs increase. Of particular importance during puberty are iron, calcium, and zinc. Many people with HIV experience micronutrient deficiencies such as deficiencies in vitamin A, vitamin B₆, vitamin B₁₂, vitamin C, vitamin E, magnesium, iron, selenium, or zinc. Correcting deficiencies of these micronutrients can help strengthen immune response.

Iron (slide 12)

Iron needs increase during adolescence because of an increase in muscle mass and blood volume. Females need more iron than males because of iron losses from menses. Adolescents who have low energy intake and/or do not regularly eat meat may not meet the RDA and thus need supplementation. Developing countries have a high prevalence of anemia, largely caused by deficiency. Table 5 shows the RDA for iron.

Table 5. RDA for iron for adolescents

Sex and age group	RDA for iron
Males	
9–13 years old	8 mg/day
11–18 years old	11 mg/day
Females	
9–13 years old	8 mg/day
11–18 years old	15 mg/day

Zinc (slide 13)

Zinc is involved in protein synthesis, wound healing, immune function, and growth and maintenance of tissues. During adolescence zinc is especially important because of its role in growth and sexual maturation. The RDA for zinc is shown in table 6.

Table 6. RDA for zinc for adolescents

Sex and age group	RDA for zinc
Males	
9–13 years old	8 mg/day
14–18 years old	11 mg/day
Females	
9–13 years old	8 mg/day
14–18 years old	9 mg/day

Calcium (slide 13)

Calcium needs increase as a result of skeletal and muscular development, Adolescence is a critical time for bone growth and deposition of calcium. The RDA for calcium is shown in table 6.

Table 7. RDA for calcium for adolescents

Sex and age group	RDA for calcium
Males	
9–18 years old	1,300 mg/day
Females	
9–18 years old	1,300 mg/day

Vitamin A (slide 14)

Between the ages of 10 and 19, the need for vitamin A reaches the levels of those for non-pregnant adults. Lack of sufficient vitamin A and recurrent infections are a major cause of vitamin A deficiency in adolescents. Supplementation with vitamin A should not

exceed two times the RDA, as excess amounts could impair rather than improve the immune system. The RDA for vitamin A in healthy adolescents is shown in table 7.

Table 8. RDA for vitamin A for adolescents

Sex and age group	RDA for vitamin A
Males	
9–13 years old	600 mg/day
14–18 years old	900 mg/day
Females	
9–13 years old	600 mg/day
14–18 years old	700 mg/day

Other vitamins and minerals

The body needs thiamin, riboflavin, and niacin to utilize carbohydrates. Vitamin A and C are important for new cell growth and healthy skin, and vitamin D is essential for rapid skeletal growth. Adequate intake of all these vitamins is essential to ensure proper growth and development and avoid deficiencies during adolescence.

The use of iodized salt in food should be encouraged for adolescents and their caregivers to prevent iodine deficiency, especially for pregnant and lactating adolescents.

Micronutrient supplementation of the HIV-infected adolescent (slide 15)

Multivitamin supplements can be provided to help meet the nutrient requirements for HIV-infected adolescents whose diet is inadequate. Wherever available, multivitamin supplements should also be provided to infected adolescents during pregnancy as this has been shown to lead to positive birth outcomes.

As with adults, evidence is currently insufficient to support micronutrient intake for HIV-infected adolescents different from the requirement for non-HIV-infected adolescents. HIV-infected adolescents should consume the RDA of all micronutrients, and higher levels may be needed if deficiencies are present. When it is not possible to obtain sufficient micronutrients from a diverse diet, a multiple micronutrient supplement (formulated to provide 1 RDA of micronutrients) may be needed.

Nutrition care and support guidelines for the HIV-infected pregnant or lactating adolescent are presented in detail in Session 9.

Nutrition issues that affect the health of HIV-infected adolescents (slides 16 and 17)

HIV-infected adolescents are vulnerable to chronic energy deficiency, iron deficiency anemia, and vitamin A deficiency, described below.

Chronic energy deficiency (slide 16)

Adolescents need additional energy to meet the demands of their growing and maturing bodies. However, for many adolescents, intake of energy is inadequate over several months or years, leading to chronic energy deficiency, also known as protein-energy malnutrition (PEM) or protein-calorie malnutrition. This results in stunting, which is common among adolescents in populations where malnutrition is high.

The main causes of chronic energy deficiency in adolescents include insufficient quantity and quality of food, parasitic infection including worms and malaria, and malabsorption mainly because of diarrhea and heavy workloads. The daily energy needs of adolescents are among the highest of any age group.

Chronic energy deficiency has several implications for adolescents. HIV-infected adolescents may not know their HIV status, and poor nutritional status puts them at higher risk for poor clinical outcomes. Studies have shown that clinical outcomes for HIV are poorer among people with poorer nutritional status. Supporting HIV-infected adolescents to improve nutritional status is a challenge because malnutrition is endemic problem in sub-Saharan Africa, compounded by the effects of poverty and food insecurity. Moreover, adolescents are usually not a priority group for nutrition interventions.

Programs that provide care and support for adolescents and youth should provide appropriate nutrition counselling and education to encourage increased intake of energy. Increased energy intake will help meet increased needs resulting from infection and therefore prevent weight loss and loss of lean body mass. Programs providing HIV care and support services for adolescents and youth should encourage them to develop home gardens and grow nutritious foods that are less labor intensive, such as sweet potatoes. If food insecurity is an issue, referral to food assistance programs may be warranted to help the HIV-infected adolescent meet increased energy requirements. This is particularly important for the HIV-positive pregnant or lactating adolescent.

Iron deficiency anemia (slide 17)

During adolescence, the body's needs for iron increase markedly because of the rapid growth that occurs. Adolescent boys need more iron to manufacture myoglobin for their expanding muscle mass and hemoglobin for the expanding blood volume. Adolescent girls need more iron because of the onset of menses and their expanding blood volume.

Iron deficiency anemia is a critical health concern for adolescents because it affects their growth and energy levels. In developing countries approximately 27 percent of adolescents are estimated to be anemic. In Africa the prevalence of anemia is estimated to be higher in boys (57 percent) than in girls (45 percent). The fact that boys develop more muscle mass than girls, which requires more iron than fat deposition, may explain the high prevalence of anemia in boys during this stage of development. For girls, anemia is associated with premature births, low birth weight, and perinatal and maternal

mortality during pregnancy. Anemia in adolescents is also associated with impaired cognitive functioning, lower school achievement, and lower physical work capacity.

Inadequate intake of iron to meet the needs of development, parasitic infections, diarrhea, intestinal infections, and HIV are the most likely cause of anemia among adolescents. Anemia is common in people living PLHIV. The HIV-infected adolescent with anemia may present with complaints of fatigue, anorexia, and reduced ability to work or exercise. If severe, physical signs of anemia may include glossitis, angular stomatitis, and conjunctival pallor.

It is important to screen adolescents routinely for iron deficiency to prevent and treat early deficiencies. Iron supplementation in PLHIV is controversial because iron may contribute to the development of opportunistic infections (OIs). Therefore, HIV-infected adolescents should be given oral iron supplements under medical supervision. Like all pregnant women, pregnant HIV-infected adolescents should receive iron supplements as per national or WHO protocols.

Health service providers who work with HIV-infected adolescents should encourage them to eat iron-rich foods, including foods from animal sources, whose iron is more bioavailable than that of plant sources. However, animal foods such as meat are usually expensive. Adolescents can be counseled to increase the bioavailability of iron from plant sources by eating vitamin C-rich foods at the same time. Health service providers should have a list of locally available and affordable foods to counsel HIV-infected adolescents and their caregivers on ways to increase iron-rich foods, including iron-fortified foods, in their diets. Adolescents, like adults, should be advised to eliminate or avoid foods that inhibit the absorption of iron, such as coffee and tea, or wait 2–3 hours after eating before drinking tea or coffee. They should be encouraged to eat a variety of foods that are good sources of iron and to be treated for parasitic infections and dewormed regularly.

Vitamin A deficiency (slide 18)

Vitamin A is essential for normal vision, gene expression, reproduction, embryonic development, and immune function. Vitamin A deficiency in adolescents is associated with impaired immune function, poor growth, and late sexual maturation. In sub-Saharan Africa the main cause of vitamin A deficiency in adolescents is lack of sufficient vitamin A in the diet and recurrent infections.

To manage vitamin A deficiency in HIV-infected adolescents, health service providers should identify dietary sources of vitamin A that are locally available and affordable and encourage adolescents to eat these foods. Good sources of vitamin A include liver, dairy products, fish, dark-colored fruits, and leafy vegetables. Where necessary, supplementation should be provided to adolescents with vitamin A deficiency to meet the requirements for non-pregnant adults. However, health service providers should be cautious in recommending vitamin A supplementation for adolescents because adolescents with severe protein malnutrition may be more susceptible to the adverse effects of excess vitamin A.

Adolescents who are pregnant or may become pregnant should not take high-dose vitamin A supplements because this can put the fetus at risk for birth defects. Pregnant adolescents diagnosed with severe vitamin A deficiency (night blindness is an indicator of

such deficiency) should be treated with daily oral doses of 10,000 international units (IU) daily or 25,000 IU weekly for 4–8 weeks. However, these recommended low-dose formulations are not widely available. In areas where they are not accessible, adolescents should eat vitamin A-rich animal source foods, especially liver, to increase their vitamin A intake.

Because the role vitamin A plays in HIV disease progression is not fully known, supplementation of HIV-infected adolescents and youth with vitamin A should be done under medical supervision.

Components of nutrition care and support for HIV-infected adolescents (slide 19)

Ideally, nutrition interventions for the HIV-infected adolescent should begin as early as possible in the course of the disease to help minimize weight loss and slow progression of the disease to AIDS. However, because this group is usually not targeted for HIV testing and counselling, the HIV status of adolescents may not be known until they present with OIs. Health service providers and programs need to form close links with youth services, youth groups, and schools to provide appropriate care, interventions, and prevention services for adolescents. Nutrition care and support should be part of comprehensive HIV services for adolescents and include the following components:

1. Nutrition assessment and screening (slide 20)

Nutrition assessment provides the basis for determining appropriate nutrition interventions. Nutrition assessment and screening and diet recommendations for the HIV-infected adolescent should be individualized based on symptoms and the adolescent's ability to meet nutrient requirements. The adequacy of the intervention can be monitored with frequent follow-up using nutrition assessment parameters.

As for adults, nutrition assessment includes the following components:

- Anthropometric measurement: Weight, height, body mass index (BMI), and mid-upper arm circumference (MUAC)
- Dietary intake: 24 hour recall
- Biochemical assessment: hemoglobin and albumin (if available)
- Behavioral and environmental influences

Analysis of the nutrition assessment will provide information for the nutrition intervention, nutrition education, monitoring, and follow-up that is required. The information should be considered along with relevant information on medical status (e.g., diabetes), psychosocial needs (orphan, head of household, child abuse), and lifestyle issues.

Signs of potential nutrition problems in adolescents (American Dietetic Association 1998) are listed below.

Inappropriate food intake

- Irregular meal patterns (skipping meals)
- Limited diet
- Poor appetite

Poverty

- Inadequate income
- Inadequate food resources
- Lack of access to food

Nutrition-related conditions

- Pregnancy
- Iron deficiency anemia
- Chronic diseases, e.g., diabetes
- Underweight
- Overweight

Psychosocial factors

- Significant emotional stress or depression
- Stigma and discrimination

Lifestyle factors

- Heavy use of alcohol, drugs or tobacco
- Living alone
- Living in an unstable family or environment

2. Nutrition education and counselling (slide 21)

Nutrition education and counselling should be tailored to the results of nutrition screening and assessment and the age of the adolescent. The health service provider should help the older adolescent and/or caregiver understand the need to maintain an adequate diet and ways to manage common gastrointestinal problems related to HIV that may have a negative impact on diet. The health service provider also can help the adolescent explore feelings about and reactions to HIV. It is important to build a trusting relationship, maintain professionalism and confidentiality at all times, and treat adolescents with respect and acceptance despite their age, even if the counselor does not agree with their attitude, beliefs or life choices.

3. Food safety and hygiene (slide 22)

Food-borne illnesses can cause further damage to the weakened immune systems of PLHIV, increasing susceptibility to other infections. Health service providers should provide information on proper food safety and hygiene to HIV-infected adolescents and/or their caregivers to help prevent infections that cause diarrhea, a common cause of weight loss and HIV disease progression. Adolescents and their caregivers should be encouraged to keep their home environments clean, keep water outside the toilet to wash their hands with water and soap after using the toilet, and follow the safe food handling practices listed below.

- Wash hands thoroughly with soap and water before preparing, handling, or eating food and after using the toilet.
- Drink clean, safe water (boiled or bottled).
- Do not eat moldy, spoiled, or rotten foods.
- Do not eat raw eggs or foods that contain raw eggs.
- Keep food covered and away from insects, flies, rodents, and other animals.

- Wash and keep food preparation surfaces, utensils, and dishes clean.
- Eat food that is thoroughly cooked, particularly meats and chicken.

4. **Management of diet-related HIV problems** (slide 23)

The common diet-related HIV problems of adolescents are the same as those for adults, namely anorexia, nausea, vomiting, diarrhea, constipation, bloating, mouth or throat sores, fever, malabsorption, fatigue, and taste alterations. All these symptoms can affect the nutritional status of the HIV-infected adolescent by decreasing food intake and hence nutrient intake. Dietary modification to manage these symptoms will help minimize their impact on the adolescent's nutritional status, maximize nutrient intake, ensure adequate growth and development, and prevent weight loss. Session 4 provides detailed guidance on the dietary management of these symptoms.

Follow-up and monitoring of progress in managing these symptoms is important to prevent worsening of symptoms or development or worsening of undernutrition.

5. **Physical activity** (slide 24)

Physical activity has been shown to improve body composition and quality of life for PLHIV. Exercise also helps stimulate appetite and increase energy, improve blood circulation, and reduce stiffness in the joints, muscle aches, and wasting. Health service providers working with HIV-infected and -affected adolescents should encourage them to do simple exercise such as walking.

6. **Psychosocial support** (slide 25)

Referral to peer support or youth groups in the community that work with HIV-infected adolescents is encouraged because puberty is a period in which adolescents are easily influenced by their peers. Support from peers who have similar issues that they can identify with can have a profound effect on adolescents' self-esteem and hence acceptance of and adherence to advice on nutrition and other care.

7. **Food security** (slide 26)

Improving adolescents' access to food and control over their food resources is a major component of a supportive environment and a primary factor for food security. The impact of HIV has left many adolescents to fend for themselves and take responsibility for younger siblings after the sickness or death of one or both parents. Unsafe and unhealthy ways to find money for food can lead to exploitation and abuse and behaviors that increase the risk of HIV infection.

Addressing food security should be an integral part of the comprehensive care and support of HIV-infected and -affected adolescents. Health service providers who provide nutrition care and support to adolescents need to understand the constraints they face as a group and as individuals to following recommendations to maintain good nutritional status. Programs working with HIV-infected adolescents and those vulnerable to HIV infection should be aware of services that can strengthen food access and availability and where possible link and refer them to these services to improve their access to food. An assessment should be carried out to assess gaps, sources of food, and food security

options. Based on the assessment, the most appropriate and feasible options should be identified to improve dietary practices and nutritional status.

8. Safer sex practices and reproductive health services (slide 27)

Re-infection of the already HIV-infected adolescent can lead to faster disease progression. Sexual health education and counselling should be part of any program targeting young people, as many do not have the skills and services to protect themselves from sexual relations that expose them to HIV re-infection and sexually transmitted infections (STIs). Promoting safer sex practices such as condom use and fidelity to one partner should be integral to the care of HIV-infected adolescents. Services should be youth friendly, taking into account issues of confidentiality, convenience, caring, counselling, community support, and costs.

Issues and challenges for nutrition care and support of HIV-infected adolescents (slide 28)

All adolescents have the right to knowledge and skills to help them reduce their vulnerability to HIV and prevent HIV infection. Health care services and service providers should bear in mind the following challenges when providing nutrition care and support to young people.

Psychosocial issues

HIV can affect the self-esteem of an adolescent, leading to depression, feelings of isolation, lack of appetite, and stigmatization and discrimination. Emotional, spiritual, and social support is essential to well-being and survival. At the same time, puberty is a time of self-identification and desire for peer acceptance. Stigma and discrimination associated with HIV can compound the effect on the HIV-infected adolescent's self-esteem. These important developmental issues should be noted in programs and services that provide care and support for the HIV-infected adolescent and young person. Feelings of guilt, fear, and denial may need to be explored. Health service providers should be sensitive to signs of anxiety in adolescents and know where to refer them for psychosocial counseling or support.

Food insecurity

Food insecurity increases the vulnerability of adolescents to HIV in sub-Saharan Africa. In food-insecure areas, adolescents may be the heads of households and need food assistance or livelihood support.

Access to HIV prevention and treatment services

Like adults, many adolescents who become infected with HIV do not know that they are infected until the disease has advanced, yet nutrition intervention is needed early in HIV disease. This means that counselling and testing services need to be made accessible to adolescents, not just adults. Most social and health services have been designed for adults, and adolescent needs have not always been taken into consideration in the health system. Forging links with youth peer groups, for example, can help provide a place where adolescents can go for testing and counselling and referral to other HIV-related services, including nutrition care and support.

Better communication and social mobilization efforts are needed to increase awareness of HIV and AIDS among adolescents in areas where the education system may be in disarray. HIV and AIDS programs that target adolescents need to respect their role in looking out for their own well-being and involve them in the programs while being sensitive to their cultures. Media, art, and culture can be used to draw young people into discussions about HIV, leading to discussion of testing, prevention, care, support, and treatment.

Adolescent-friendly services can be delivered in hospitals, health centers, schools, or community settings. Many adolescents have expressed a desire for welcoming facilities where they can drop in and be attended to quickly, be treated with respect, and not judged. Adolescents place high priority on confidentiality which affects treatment-seeking behavior. Health facility staff need to develop an empathetic approach that encourages young people to attend nutrition HIV assessment and counseling services. Health service providers can hold special clinics with peer educators who can provide information on nutrition and HIV put adolescents in touch with relevant health and support services.

Young people who are unlikely to attend health facilities can be reached through youth and community centers. Outreach services can also help to reach street youths, who are marginalized and young people living in isolated communities. Schools provide an entry point for reaching young people with health education and services and can refer young people to local health facilities for further follow-up. It is important however to link the school health services to local health services so that students are not lost to follow-up care and to avoid duplication of services.

Young people in crisis, such as those newly diagnosed with HIV may need counselling and community support that goes beyond what health services can provide. This support can come from family, parents, teachers, trained counselors, religious leaders, peers, or youth leaders and other adults.

Gender inequity

Young women 15–24 years old bear the brunt of new HIV infections in sub-Saharan Africa. A number of factors make adolescent girls more vulnerable than adolescent boys, increasing their risk of infection and re-infection. Programs should seek opportunities to help girl children stay in school and prevent unwanted teenage pregnancies. Linkages and referrals to appropriate peer and women support groups are also important.

Field visit

Divide the students into groups of not more than five and assign each group to visit a different site that offers health services for adolescents.

Review the objectives of the field visits with the students and direct them to the sites. Arrange for them to observe and talk to the contact persons or other relevant staff about the services provided for adolescents at the site. The students should be given copies of **Handout 12.1. Field Visit Questionnaire** in advance of their visits.

Follow up the field visit by asking each group to present its experience and findings to the rest of the class by answering the questions in the questionnaire.

Conclusions (slide 29)

Adolescence is a time of rapid physical growth that increases demands for energy and nutrients. One-half of all new HIV infections occur in young people 15–25 years old, and HIV compromises the nutritional status of adolescents and increases vulnerability to infection.

Adolescents have increased requirements for energy and nutrients (protein, calcium, and iron, micronutrients). Many adolescents are vulnerable to chronic energy deficiency (protein-energy malnutrition), iron deficiency anemia, and vitamin A deficiency because of inadequate intake and infections. It is important to screen and counsel adolescents to prevent and treat these deficiencies. However, adolescents are rarely a priority group for nutrition interventions.

The goals of nutrition care and support for adolescents with HIV are to promote adequate nutrient intake for growth and development during puberty and prevent infection, manage diet-related symptoms of HIV, and manage drug-related complications. This care and support should include nutrition assessment and screening, nutrition education and counseling, psychosocial support, and food security support. Adolescents are particularly sensitive to stigma and discrimination because of their need for peer acceptance and need adolescent-friendly and confidential nutrition and HIV care and support services.

Discussion points

1. Adolescents are subject to many of the same diseases as children and adults. What health risks are especially connected to adolescence? Identify and discuss these health risks.
2. Health services are often not readily accessible to adolescents and many adolescents do not use the existing health services. What services can be used to delivery nutrition care and support to HIV-infected adolescents in your community?
3. Discuss the gaps and challenges in providing nutrition care and support to adolescents in these services. How can they be addressed?

Handout 12.1. Field Visit Questionnaire

1. What health services are provided to adolescents at the site you visited?
2. Does the service also serve HIV-infected adolescents? What is offered?
3. What health information on HIV and nutrition and HIV does the service offer, including for adolescents?
4. Are nutrition assessments carried out? What is done?
5. What other services other than nutrition are provided for adolescents?
6. Assess how accessible, equitable, acceptable, appropriate, comprehensive, effective, and efficient the service is.
7. What services, if any, exist to help adolescents who are food insecure?
8. What issues and challenges did you note?
9. What recommendations would you make to improve the services for adolescents at the site visited?

Session 12: Nutrition Care of Adolescents Living with HIV



Purpose

Provide current knowledge and understanding of the special considerations for nutrition care and support for adolescents living with HIV.

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Learning Objectives

- Explain the importance of nutrition for adolescents.
- Describe adolescent nutritional requirements
- Describe the essential components of nutrition care of HIV-infected adolescents.
- List factors to consider when planning nutrition care and support for HIV-infected adolescents.
- List contact points where nutrition care services can be delivered to adolescents.

3

Session Outline

- Importance of adolescent nutrition
- Adolescent nutrition in the context of HIV
- Goals of nutrition care and support for HIV-infected adolescents

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Importance of Adolescent Nutrition

- 1/5 of the world's population are 10–19 years old.
- Adolescence is a critical part of development, with rapid growth and physical, psychological, social, and intellectual changes.
- Adolescents have a lower prevalence of infection and chronic disease than children under 5 and aging adults.

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Importance of Adolescent Nutrition, Cont.

- Adolescents have increased energy and nutrient demands.
- Inadequate consumption of nutrients can slow or stop linear growth, resulting in stunting and delayed sexual maturation.
- Adolescents receive little health and nutrition attention except regarding reproductive health.

6

Adolescent Nutrition in the Context of HIV

- ½ of new HIV infections occur in 15–25-year-olds.
- 10 million PLHIV are ages 15–25 years old.
- 70% of all young PLHIV live in sub-Saharan Africa.
- Adolescents are especially vulnerable to HIV
 - Risky sexual behavior
 - Lack of access to information and prevention
 - Social and economic challenges
 - Neglect of adolescent needs by HIV services

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Goals of Nutrition Care and Support for HIV-Infected Adolescents

- Provide adequate nutrients for growth and development during puberty.
- Maintain nutritional status and prevent disease.
- Promote optimal nutrition, prevent malnutrition.
- Manage or reduce HIV-related symptoms.
- Enhance compliance with ART.
- Prevent food-borne illness.
- Manage complications associated with HIV and OIs.

8

Nutritional Requirements of Adolescents in the Context of HIV

- Adolescence a nutritionally vulnerable period:
 - Increased demand for nutrients and calories for physical growth and changes in body composition
 - Eating habits and behavior affected by lifestyle, activity level, growing independence, need for peer acceptance, and concern with appearance
- Increased nutrition risk if HIV positive
- Increased nutrient requirements if HIV positive because of nutrient loss and malabsorption
- Higher nutrient requirements if secondary infections, pregnancy, or lactation

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Nutritional Requirements of Adolescents in the Context of HIV, Cont.

- Macronutrient distribution of calories
 - 55–60% carbohydrates
 - 12–20% protein
 - No more than 30% fat
- Energy increases based on activity level and stage of growth
 - Male (10–18 years) kcal/day = $17.5 \times \text{kg} + 651$
 - Female (10–18 years) kcal/day = $12.2 \times \text{kg} + 746$
- Energy requirements for HIV+ adolescent
 - Asymptomatic: 10% energy increase above
 - Symptomatic: 20–30% energy increase

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Protein Requirements of Adolescents in the Context of HIV

- Protein
 - Male
 - 9–13 years: 34 g/day
 - 14–18 years: 52 g/day
 - Female
 - 9–13 years: 34 g/day
 - 14–18 years: 46 g/day
- Same protein requirements for HIV-positive and HIV-negative adolescents
- Same fat requirements for HIV-positive and HIV-negative adolescents

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Iron Requirements of Adolescents in the Context of HIV,

- Iron (for muscle promotion and increased blood volume)
 - Male
 - 9–13 years: 8 mg/day
 - 14–18 years: 11 mg/day
 - Female
 - 9–13 years: 8 mg/day
 - 14–18 years: 15 mg/day
- High risk of iron deficiency because of rapid growth
- Females even more vulnerable if pregnant

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Zinc and Calcium Requirements of Adolescents in the Context of HIV

- Zinc (for wound healing, immune function, and tissue growth)

Male

- 9–13 years: 8 mg/day
- 14–18 years: 11 mg/day

Female

- 9–13 years: 8 mg/day
- 14–18 years: 9 mg/day

- Calcium (for skeletal and muscular development)

Male and female

- 9–18 years: 1,300 mg/day

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Vitamin A Requirements of Adolescents in the Context of HIV

- Vitamin A (for growth, reproduction, immune function, vision)

Male

- 9–13 years: 600 mg/day
- 14–18 years: 900 mg/day

Female

- 9–13 years: 600 mg/day
- 14–18 years: 700 mg/day

- High-dose vitamin A can have teratogenic effects on the fetus and should not be given to pregnant adolescents.

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Micronutrient Supplement Requirements of Adolescents in the Context of HIV

- Micronutrient supplementation
 - Unknown whether needs differ for HIV-infected and -uninfected adolescents
 - If micronutrients supplements are available, WHO recommends no more than 1 RDA per day.

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Nutrition Issues for the Health of HIV-Infected Adolescents

- Chronic energy deficiency or protein-energy malnutrition
 - Result of inadequate food intake, parasites, or malabsorption over time
 - Nutritional status reduced by HIV
 - Addressed by improving diet, increasing food intake, and treating associated illness
- Adolescents less likely than adults to know their HIV status

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Nutrition Issues for the Health of HIV-Infected Adolescents, Cont.

- Iron deficiency anemia
 - Result of insufficient iron intake and parasites
 - Adolescents particularly vulnerable because increased demand for iron
 - Affects 57% of adolescent males and 45% of adolescent females and in sub-Saharan Africa
 - May cause premature births, low birth weight, maternal mortality, impaired cognitive functioning, reduced physical capacity
 - Addressed by eating iron-rich foods, eating a variety of foods, and treating parasites

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Nutrition Issues for the Health of HIV-Infected Adolescents, Cont.

- Vitamin A deficiency
 - Result of inadequate vitamin A in diet
 - Impairs immune function, vision, growth, and sexual maturation
 - Addressed by eating local foods rich in vitamin A and taking vitamin A supplements according to national protocol

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Components of Nutrition Care and Support for HIV-Infected Adolescents

1. Nutrition screening and assessment
2. Nutrition education and counseling
3. Food safety and hygiene
4. Management of diet-related HIV problems
5. Physical activity
6. Psychosocial support
7. Food security
8. Safer sex and reproductive health services

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1. Nutrition Screening and Assessment

- Adolescents need more calories and may change eating habits and behaviors.
- Nutrition assessment to determine appropriate interventions and diet changes may include:
 - Anthropometry
 - Dietary intake
 - Biochemical assessment
 - Assessment of behavioral and environmental influences
- Potential nutrition problems include inappropriate food intake, poverty, nutrition-related conditions, and psychosocial and lifestyle factors.

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2. Nutrition Education and Counseling

- Is based on nutrition assessment
- Should be appropriately tailored to adolescents
- Should be confidential and respectful even if the counselor disagrees with the adolescent's attitudes, beliefs, or life choices
- Can help adolescents explore feelings about being HIV positive

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3. Food Safety and Hygiene

- Food-borne illness can further damage immune system weakened by HIV.
- HIV-positive adolescents and their caregivers need information on food safety and hygiene practices.
- Practices include washing hands, drinking safe boiled water, eating unspoiled and thoroughly cooked food (especially meat and chicken), and keeping food free of insects and rodents.

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4. Management of Diet-Related HIV Problems

- Diet-related HIV problems for adolescents are the same as those for adults.
- Dietary modification can minimize the impact of the symptoms on nutritional status, maximize nutrient intake, ensure adequate growth and development, and prevent weight loss.
- Follow-up and monitoring of symptoms can prevent development of severe malnutrition, which requires clinical care.

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5. Physical Activity

- Improves body composition and quality of life
- Can stimulate appetite, increase energy, improve circulation, reduce joint stiffness, and soothe muscle aches and wasting
- Can include simple exercise such as walking

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6. Psychosocial Support

- Is an important part of nutrition care and support
- Helps address fear, guilt, and need for self-esteem and acceptance
- Is especially effective through peer support

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7. Food Security

- Adolescent orphans may be exposed to exploitation, abuse, and risk of HIV when trying to obtain food for themselves or siblings.
- Discrimination in household may lead to food insecurity.
- Food access gaps, sources, and options should be assessed.
- Adolescents should be referred and linked to services to strengthen food access and availability.

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8. Safer Sex and Reproductive Health Services

- Adolescents may engage in sexually risky behavior without adequate knowledge, information, and services to protect themselves.
- Risk of HIV infection increases because sexual encounters are often unplanned.
- Adolescents need information about abstinence, condoms, and safer sex practices is needed.
- Programs should be youth friendly and offer supportive services.

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Challenges for Nutrition Care and Support of HIV-Infected Adolescents

- Psychosocial issue
- Food insecurity
- Adult-focused HIV education and services
- Gender inequity

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Conclusions

- Rapid physical growth in adolescence increases energy and nutrient requirements.
- HIV compromises the nutrition of adolescents and increases vulnerability to infection.
- Adolescents are vulnerable to chronic energy deficiency and iron and vitamin A deficiency but are rarely a priority group for nutrition interventions.
- Adolescent-friendly nutrition and HIV care and support should promote adequate nutrient intake and help manage diet-related symptoms of HIV and drug-related complications.

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