

Module A5

Supporting People with HIV/AIDS: Palliative Care, Home-Based Care and Nutrition



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Supporting People Living with HIV/AIDS: Palliative Care, Home-Based Care and Nutrition



Session 1: Palliative Care

In this session, participants learn about the goal and management of palliative care, including management of symptoms such as pain, fatigue, shortness of breath, nausea and vomiting, and persistent diarrhea.

Session 2: Community Home-Based Care

Participants learn about community home-based care, including the essential elements of home-based care, patient assessment in the home, care plan and setting realistic goals, adherence monitoring and follow-up.

Session 3: Nutrition

Participants learn about nutrition, including the interaction between HIV and nutrition, the clinical context of how infections influence nutritional status, the processes that lead to weight loss and wasting, the role of micronutrients, nutrition assessment, options for nutrition support programs and nutrition care and support for adults and children with HIV/AIDS.

SESSION 1 Palliative Care

PURPOSE

In this session, participants will learn about the goal and management of palliative care, including management of symptoms such as pain, fatigue, shortness of breath, nausea and vomiting and persistent diarrhea.

OBJECTIVES:

By the end of this session, the participants will be able to:

1. Discuss the meaning and goal of palliative care.
2. Discuss the management of palliative care interdisciplinary teams and identify the team composition.
3. Describe the management of the following symptoms: pain, fatigue, shortness of breath, nausea and vomiting, and persistent diarrhea.
4. Discuss the causes and assessment of pain, the barriers to its management and the WHO three-step treatment model.
5. Describe the assessment and management of other symptoms.
6. Discuss the needs for palliative care and pain management for children with HIV/AIDS.

TIME:

2 hours

A. Definition and Goals of Palliative Care

1. Introduction

In spite of recent advances in the treatment of HIV/AIDS, there is no known cure; the final outcome for every HIV-infected patient is death. Unlike other terminal diseases, it is not easy to predict when death is imminent. A patient may die as a consequence of his or her first HIV manifestation or may develop a life-threatening OI and recover if appropriate, timely treatment is given.

Most patients, however, will experience an increasing frequency of health problems and finally reach a stage of severe immunosuppression over a period of several years. As the disease progresses, the need for symptomatic relief will become more important than curative treatment.

2. Definition

- a. Palliative care improves the quality of life for patients and families facing the problems associated with life-threatening illness by preventing and relieving suffering through the early identification, assessment and treatment of pain and other physical, psychosocial and spiritual problems (WHO 2003).

3. Goals of palliative care

- a. To provide support and care that makes life comfortable for patients throughout all phases of the disease so they can live as fully and comfortably as possible.
- b. The underlying principles include:
 - Management of symptoms
 - Psychosocial support
 - Teamwork and partnership
 - Appropriate ethical considerations
 - Sustaining hope with realistic goals

4. Initiating and managing palliative care

- a. The decision to stop causal treatment should be based on two criteria:
 - The patient has had a long course of progressively worsening illness (is in an advanced stage of immunodeficiency).
 - Everything possible has been done to investigate and manage the specific conditions from which the patient is suffering and, despite adequate management, the patient continues to deteriorate.
- b. Managing palliative care
 - It is essential to establish interdisciplinary teams to deal with all the problems, for no single health or social worker can adequately address HIV-related problems in all their complexity, and it is emotionally draining on staff to support persons and families affected by HIV.
 - The core of this team are the medical, nursing, counseling, social and other services working in collaboration with NGOs, the private sector, volunteers and community-based support groups.
 - Transition from active care to palliative care does not happen at a single point in time. Palliative care is most successful when initiated early in the disease process since it takes time to develop the necessary supportive relationships between the patient and the interdisciplinary team.

Continuum of Care in the Management of HIV Disease and AIDS

	Medical	Management Palliative	Care	
Stages of HIV disease	Early HIV disease (stage II)	Intermediate HIV disease (stage III)	Advanced HIV disease or AIDS (stage IV)	D
Clinical problems	Frequent infections with common pathogens	Infections with common and opportunistic pathogens	Combination of health problems (e.g., chronic diarrhea, weight loss, fever, anemia)	E
General condition	Mobile and active. Rapid response to treatment	Mostly mobile with increasing periods of illness	Patients often at home or in bed	A
Medical treatment	Curative anti-infectious treatment	Curative or causal treatment. Consider prophylaxis or maintenance treatment. Supportive treatment (skin lesions, anemia, nutrition, vitamins).	Supportive treatment (skin lesions, anemia, diarrhea, etc.). Maintain nutrition. Discontinue causative treatment and prophylaxis?	T
Palliative care	Analgesics, antipyretics. Pre- and post-test counseling. Involve family member(s) or other persons of confidence.	Analgesics, antipyretics. Follow-up counseling with family members. Address social issues. Nursing care during periods of illness.	Narcotic analgesics when needed. Continuous (home) nursing care. Terminal counseling and support.	H

B. Management of Symptoms

1. Introduction

- a. The most common symptoms are:
 - Pain
 - Fatigue/weakness
 - Shortness of breath/dyspnea
 - Persistent diarrhea
 - Difficulty sleeping/insomnia
 - Nausea and vomiting

- b. Providers may overlook these symptoms because they do not know how to manage them or feel inadequate to address them.

- c. Patients may avoid acknowledging them to providers because they believe they must “put up with them” or “it is God’s punishment.”

- d. Effective symptom management is based on a thorough understanding of the symptom and education of patient and family.
 - It requires a multidisciplinary approach
 - Goal is to help the patient move from a feeling of helplessness to a feeling of supremacy over the symptom and develop or retain as much control as possible over his or her life and illness.
 - Medication and/or nonpharmacologic interventions can manage symptoms.

- e. You can identify all symptoms by reviewing each of them: ask about its character (what it feels like), the location, what makes it worse, what makes it better, are other symptoms associated with it and how does it limit or affect the patient’s daily life.
 - Asking these questions conveys your interest in the patient.
 - Just the *act* of asking and being aware how important a symptom is to the patient provides some relief from it; a symptom often worsens when a patient has to deal with it alone and has growing fear about what is causing it.
 - A review of symptoms will also alert the provider to the appearance of new symptoms that might herald progression of disease.

2. Pain

- a. Definition:

Persistent or recurrent pain lasting more than 48 hours and not alleviated by simple comfort measures. It can be burning; tingling; flashes of pain or unremitting pain that is sharp, aching or dull.

b. Assessment of pain

- First principle in managing pain is an adequate and full assessment of the cause, bearing in mind that most patients have more than one pain and different pains have different causes.
- Take a detailed history of the pain
 - Site and radiation (where it is localized or radiating)
 - Nature (sharp, pulsating, dull, burning, stabbing, aching, squeezing)
 - Duration (continuous or intermittent, how long and how frequent)
 - Factors: Aggravating (what brings it on; what makes it worse), relieving (what reduces the pain: drugs and dosages, resting position, and the like)
 - Effect on patient’s mobility, activities of daily living and sleep
 - Intensity and severity (mild, moderate or severe)
 - Assess the intensity using a numeric pain scale (or a faces pain scale for children)

<u>0</u>	<u>5</u>	<u>10</u>
No pain	Moderate	Worst pain

Associated symptoms (nausea, difficulty swallowing, diarrhea or constipation, vomiting, fever, neck stiffness, seizures, neurological symptoms, fatigue, skin problems, anorexia, dyspnea, cognitive problems)

- Do a psychosocial assessment
 - Assess patient’s mood (depressed, anxious, angry, guilty), which will affect his or her perception of pain.
 - Take a detailed social history. Social factors (family problems, lack of care) can affect pain.
- Do a full physical and neurological examination.
- Carry out investigations and follow-up: start with simple, available, affordable tests. Monitor control of pain and adjust treatment, if necessary.

c. Types and common causes of pain

Headache	Cryptococcal meningitis TB meningitis Viral meningitis (HIV, CMV) Malaria Muscle tension headache Neurosyphilis Side effect of some medications Toxoplasmosis Dehydration Lymphoma of the brain Herpes zoster
Peripheral neuropathy	HIV Cytomegalovirus From medication Diabetes Avitaminosis Postherpetic neuralgia
Abdominal pain	Peptic ulcer Gastroenteritis Retroperitoneal adenopathy Abdominal tumors (lymphomas and Kaposi’s sarcoma) Pelvic inflammatory disease

	Abdominal abscesses Worm infestations Acute abdomen
Oropharyngeal and esophageal pain	Reflux esophagitis Candidiasis Herpes simplex Kaposi's sarcoma Tonsillitis/Pharyngitis Aphthous ulcers
Skin pain	Herpes zoster (either acute initial pain or postherpetic pain) Skin sepsis
Chest pain	Lung infections Mediastinal lesions (retrosternal adenopathy, Kaposi's sarcoma, etc.) Esophageal candidiasis
Generalized pain	Fever Bedridden status Rheumatism Nonspecific etiology

d. Barriers to pain management

- Problems related to health care providers
 - Inadequate knowledge of pain management
 - Poor assessment of pain
 - Concern about regulation of controlled substances
 - Fear of patient addiction
 - Concern about side effects of analgesics
 - Concern about patients becoming tolerant of analgesics
- Problems related to patients
 - Reluctance to report pain
 - Concern about distracting physicians from treatment of underlying disease
 - Fear that pain means disease is worse
 - Concern about not being a "good" patient

- Reluctance to take pain medications
- Fear of addiction
- Worries about unmanageable side effects
- Concern about becoming tolerant to pain medications
- Problems related to health care system
 - Low priority given to AIDS pain treatment
 - Most appropriate treatment may be too costly
 - Restrictive regulation of controlled substances
 - Problems of availability or access to it
- e. Therapeutic approaches
 - Principles of pain management:
 - For most patients, physical pain is only one of several symptoms. You should view relief of pain as part of a comprehensive pattern of care.
 - While the cause of pain is often susceptible to specific treatment, you should not delay symptomatic treatment. We recommend oral medication to encourage a patient's autonomy.
 - The later stages and terminal phase of illness require aggressive treatment of pain.
 - Regular medication is preferred over PRN medication. The goal is to prevent pain round-the-clock; addiction should not be a consideration.
 - Anticipate and prevent side effects of nausea and/or vomiting with an antiemetic.
 - Opiates can cause constipation; this may actually be a positive effect in patients who have chronic diarrhea. If they do not, give laxatives or appropriate dietary advice.
 - Inform the patient that sedation usually decreases after 3-5 days.
 - Initially, pain relief may simply allow the exhausted patient to sleep.

The WHO Three-Step Treatment Model for Pain

Drug	Dosage
Step 1: Mild pain—give nonopioids	
<ul style="list-style-type: none"> • Aspirin • Paracetamol • NSAIDs <ul style="list-style-type: none"> Ibuprofen Naproxen 	600mg q 4-6 hrs 1gm q 6-8 hrs 200-400 mg qid 250-500 mg qid
Step 2: Moderate pain—when the above drugs fail, give a weak opioid in addition to the nonopioid	
<ul style="list-style-type: none"> • Codeine 	32-65mg po q 4 hrs
Step 3: Severe pain—when the above combination is no longer effective, give a strong opioid, preferably with a nonopioid	
<ul style="list-style-type: none"> • Morphine (oral or injectable) 	Minimum 5-30 mg q 4 hrs. In severe pain, the patient might need a much larger dose, as high as 60 mg q 4 hrs, depending on the severity of the pain. Dosage should be modified according to the the patient's response , but not limited unnecessarily.
Adjuvant therapies may be used at each step for specific pain treatment.	
<ul style="list-style-type: none"> • Anticonvulsants: For pain of a nervous origin such as herpes zoster • Antidepressants For tingling or burning pains of peripheral neuropathy and nerve compression • NSAIDs For pain of inflammatory origin such as rheumatic conditions and hepatomegaly or bone pain • Anxiolitics, hypnotics • Antihistamines • Neuroleptics To reduce side effects of morphine (that is, nausea and agitation) 	Carbamazepine 200 mg tid Amitripyline 10-25 mg at bedtime Ibuprofen 200-400 mg tid Indomethacin 25 mg tid Lorazepam 1mg at bedtime Hydroxyzine (Atarax) 25 mg tid Promethazine 10 mg at bedtime Haloperidol 1.5 mg at bedtime or 10 mg tid qid Chlorpromazine 10 mg tid qid Hydroxyzine 50-100 mg tid qid

- The use of steroids
 - You can use steroids, provided you treat any concurrent infection at the same time and give nystatin or ketaconazole to prevent/treat thrush.
 - Side effects are seen with prolonged use; use lowest effective dose.
 - If you see no benefit, withdraw steroids after 1-2 weeks.

Indication	Recommended Steroid
<ul style="list-style-type: none"> • Raised intracranial pressure • Spinal cord compression 	Dexamethasone 24 mg daily in divided doses. Reduce by 2 mg on alternative days for maintenance dose.
<ul style="list-style-type: none"> • Nerve compression 	Dexamethasone 8-16 mg qd, then reduce as above to 2 mg bid
<ul style="list-style-type: none"> • Anorexia • Severe itching • Stevens Johnson syndrome 	Dexamethasone 4-6 mg qd, then reduce to 2 mg qd

3. Fatigue or weakness

a. Definition:

Lack of energy, stamina or endurance. Chronic fatigue is present when symptoms of disproportionate tiredness, unrelated to activity or exertion, lasts for one month or more.

b. Assessment:

- Identify and define the problem: do a review of symptoms (see above).
- Take a complete history to rule out correctible causes.

c. Treatable causes of fatigue

- | | |
|---|--|
| <ul style="list-style-type: none"> • Adrenal/hormonal insufficiency • Anemia • Depression • Disease progression • End-stage organ disease • Fear of the unknown • Hypothyroidism | <ul style="list-style-type: none"> • Insomnia • Lack of exercise • Malignancy • Malnutrition • Medications • Metabolic (low kg/mg) • Occult infection (abscess/MAC) |
|---|--|

d. Management

- Treat etiological causes.
- Provide emotional support.
 - Discuss what helps the patient minimize the symptom.
 - As each possible etiological cause is addressed, remind patient to have realistic expectations and avoid having false hopes.
 - Use a positive, encouraging tone, and help patient set small goals.
- Provide spiritual and/or supportive counseling (through the interdisciplinary team).
- Provide physiotherapy of simple exercises to build strength and self-esteem.
- Palliative care could include pharmacologic treatments, using steroids in very advanced cases.

4. Shortness of breath/dyspnea

a. Definition:

Dyspnea is the uncomfortable feeling of not being able to breathe even though oxygen saturation may be normal.

b. Assessment

- Take a full history and do a full physical exam to rule out cardiovascular or pulmonary causes.
- Assess the pattern of the problem.

c. Possible causes

- Cardiovascular or pulmonary problems:
 - Infections (PCP bacterial chest infections)
 - Asthma
 - Heart failure
 - COPD
 - Pneumothorax
 - Tumor (primary, secondary, KS)
 - Superior venacaval obstruction
 - Pleural effusion
 - Anemia
- Studies have shown that dyspnea is one of the five symptoms correlated with a shortened life expectancy, even when the patient has had no demonstrable cardiovascular or pulmonary disease.

d. Management

- Do chest x-ray, PO₂ (using pulse oximeter), FBC
- Treat any underlying cause.
- Provide oxygen therapy, where available.
- Give supportive treatment as appropriate, that is, fluid replacement, temperature management, propping up the patient and fresh air.
- Give symptomatic relief using bronchodilators, diuretics, oral or nebulized morphine, as necessary.

5. Persistent diarrhea

a. Definition

Liquid stools three or more times a day, continuously or intermittently, for more than two weeks. Usually occurs at some point in the clinical course of HIV infections, and incidence/duration increases during the course of the disease.

b. Assessment

- Take a full history and do a physical exam.
- Assess level of dehydration.

Clinical Features	Moderate	Severe
General appearance/condition	Restless/irritable	Usually conscious; cold, apprehensive, sweaty, cyanotic extremities
Pulse	Rapid	Rapid, feeble, sometimes impalpable
Respiration	Deep, may be rapid	Deep and rapid
Skin elasticity	Pinch retracts slowly	Pinch retracts very slowly (>2 seconds)
Eyes	Sunken	Deeply sunken
Mucous membranes	Dry	Very dry
Urine flow	Reduced amount and dark	None passed for 6 or more hours; bladder empty

- Investigate underlying causes and carry out appropriate laboratory tests.

c. Causes of diarrhea

- Infections: parasites, bacteria, viruses, protozoa
- Malignancies such as KS or lymphoma
- Idiopathic (possibly HIV infection)

d. Management

- The first priority is fluid replacement and maintaining adequate hydration, preferably by means of oral fluids.
- Provide electrolyte supplements:
 - Oral rehydration salt solution (ORS)
 - Potassium found in oranges, bananas and other local fruits
- Treat underlying causes of diarrhea with appropriate medication.
- Give supportive treatment with antidiarrheal drugs.

6. Difficulty sleeping/insomnia

a. Definition

Insomnia and excessive daytime sleepiness are primary complaints regardless of the stage of disease. Insomnia includes difficulty falling asleep, difficulty staying asleep and early morning awakening.

b. Assessment

- Determine the pattern of the sleep problem (frequency, associated events, how long it takes to go to sleep and how long the patient can stay asleep).

- Include a full history of alcohol and caffeine intake and other factors that might affect sleep (for example, environment).
- Review current medications that patient is taking to eliminate these as possible causes.
- Take a history to rule out physical cause and/or psychosocial cause.

c. Possible causes of insomnia:

- Headache
- Bad or vivid dreams
- Problems breathing
- Chest pain/heartburn
- Abdominal pains
- Need to pass urine or move bowels
- Fever/night sweats
- Leg cramps
- Fear/anxiety
- Depression

d. Management

- Treat underlying causes, whenever possible.
- Advise patient to avoid exercise, heavy meals, alcohol or arguing just before bed.
- Plain aspirin or paracetamol in low doses may be helpful, or give short-acting hypnotics or a sedative.
- Treat underlying depression.
- Amitriptyline can be used at night to help with sleep.

7. Nausea and vomiting

a. Assessment

- Take a full history including:
 - Gastrointestinal problems
 - Use of medications
- Assess pattern of the problem

b. Possible causes:

- Gastrointestinal problems, such as esophagitis, diarrhea, severe dehydration, CNS disease and other causes
- Must also consider medications as a cause

c. Management

- Treat underlying causes; provide rehydration if necessary.
- Adjust medications, as necessary.
- Give antiemetics such as chlorpromazine 25 mg tid or metoclopramide 10 mg tid.

C. Palliative care and pain management in children

1. Selected palliative care issues in children

- For children, as for adults, palliative care is an integral part of the spectrum of care and is not limited to the terminal stages of the illness.
- Children are often unconsciously aware of the seriousness of their condition, even if no one has discussed it with them. Many children with HIV/AIDS will not have been told their diagnosis. Families may need support in order to address the children's emotional needs.
- Several factors determine and affect the decision and experience of caring for a very ill child at home. These include:
 - Going home might look like a loss of hope.
 - No one outside the family knows the diagnosis.

- The parents themselves may be ill.
 - The family might not have access to community resources and support.
 - A reduction in the child's appetite is often very stressful to families, and they need reassurance and support in dealing with this issue.
- d. Bereavement follow-up is important for families, especially when the caregiver may be the only one aware of the child's diagnosis.

2. Selected pain management issues in children

- a. There is no evidence that the sensitivity to pain of infants and children is different from that of adults. Despite this, children are often undermedicated. We recommend using an analgesic ladder that sequences pain medications for mild to severe pain, using drugs ranging from acetaminophen, to a combination of a nonsteroidal anti-inflammatory medication plus codeine, to morphine.
- b. Principles of pain management in children (adapted from Health Canada. *A Comprehensive Guide for the Care of Persons with HIV Disease*, Module 2):
1. Prevent pain whenever possible, and treat underlying etiology.
 2. Use nonpharmacological interventions as adjunct to pain medications.
 3. Use pain assessment tools tailored to the child's communicative abilities.
 4. Be sure to administer pain medications at regular intervals, rather than on an "as needed" basis, unless the pain is truly very intermittent. Individualize doses and assess frequently to determine the need for adjustments.
 5. The goal is a dose of medication that provides pain relief with few or no side effects, with a plan for doses to treat breakthrough pain.
 6. You must achieve a balance of toxicity and analgesic effectiveness. Intramuscular administration is less desirable than oral, intravenous or rectal routes. Intramuscular injections cause pain, and drug absorption is unpredictable.
 7. You must monitor closely the variables of level of consciousness and respiratory status.
 8. If dependence has developed, we recommend tapering dosages of medicines given for more than two weeks to avoid withdrawal symptoms. Addiction in children is rare, but dependence can occur.
 9. Morphine remains an effective drug for many children with pain when given in appropriate doses.

You need to consider emotional and psychological factors in assessing the experience of disease-related pain. Factors that influence the response to pain include fear, anxiety, anger and frustration. Fostering coping mechanisms and using cognitive and behavioral techniques (for example, relaxation training, structured play and the like) are critical.

SESSION 2 Community Home-Based Care**PURPOSE**

In this session, participants will learn about community home-based care, including the essential elements of home-based care, patient assessment in the home, making the care plan and setting realistic goals, adherence monitoring and follow-up.

OBJECTIVES:

By the end of this session, participants will be able to:

1. Discuss the definition, objectives and types of home-based care.
2. Discuss the essential elements and principles that should be in home-based care programs.
3. Describe major factors to address when assessing potential home-based care clients and families.
4. Discuss issues of home-based care that are specific to their local situation.

TIME:

1 hour

1. Definition of community home-based care (CHBC)

CHBC provides comprehensive services in the home, including health and social services, by formal and informal caregivers. Services are aimed at promoting, restoring and maintaining a person's maximal level of comfort, function and health, and at helping with a dignified death.

CHBC includes physical, psychosocial, palliative and spiritual activities. It is a very important component of the continuum of care, which extends from the hospital, through different levels of the health and social welfare facilities, to the home.

2. Goal of CHBC

The goal of CHBC is to provide hope through good care, helping patients and families maintain their independence and have the best quality of life.

3. Models of home-based care

There are different types or models of home-based care, depending on national policy or local community situations. In determining which model is best for a given situation, you need to take into account such factors as cost, stigma, community resources, sustainability and adequacy of systems available to support CHBC.

a. Facility-based or outreach

- Usually a hospital outreach program that sends health care workers or teams out periodically to visit the homes and families of PLHA
- Often focus on addressing the nursing and medical needs, but have increasingly integrated psychosocial support

b. Community-based model

- Community-driven and owned; typically relies on volunteers who reside in the communities covered by the program
- Volunteers are trained to provide basic nursing care as well as emotional and spiritual support to the patient and family members.
- Volunteers instruct family members in caring for the patient and provide back-up support through regular visits.
- Transportation costs are minimal since volunteers live close to families.
- The challenge is to maintain and support the volunteers.

c. Integrated model

- Combination of a. and b. above. A community-based program that relies on local health facility for training, supervision and supplies for home-care kits and ensures referrals for patients back to the facility, when needed.
- Evolution into this model is a natural one in response to needs of communities, families and patients. It can yield a continuum of care through synergistic working relations and referrals (for example, communities should explore linking pharmacies with HBC services).

d. Community day care model

- Patients come to a site for a few hours during the day and get services such as symptom monitoring, drugs, recreation and counseling. This gives caregivers a respite.

4. Essential elements of home-based care

- Preventative
- Instructive
- Therapeutic
- ARV adherence support
- Rehabilitative
- Long-term maintenance
- Palliative care & pain relief

Examples of services HBC can include:

a. Provision of care

- Basic physical care
 - Recognition of symptoms
 - Treatment and symptom management
 - Examples: reduce fever; relieve pain; treat diarrhea and vomiting; treat skin, mouth, throat and genital problems; address general tiredness and weakness and neurophysiological symptoms
- Referral and follow-up
- Prevention for patient and caregivers, including provision of supplies such as condoms, household bleach
- Basic nursing care
 - Positioning and mobility
 - Bathing
 - Wound cleansing
 - Skin care
 - Oral hygiene
 - Adequate ventilation
 - Guidance and support for adequate nutrition

b. Palliative care—see Part A, Module 5, Session 1 on palliative care

c. Psychosocial support and counseling

Effective psychosocial support and counseling is known to improve quality of life. Caregivers, including both the family and the CHBC team, must themselves receive support if they are to support patients. Burnout is a major risk for families and HBC team members.

d. Care of affected and infected children

- In addition to the more immediate issues addressed below, this also involves advance or succession planning for surviving children and dependents.
- HIV/AIDS and other terminal illnesses have a profound effect on children's lives. Economic hardships lead to malnutrition, prostitution, the life of a street child and early marriage. Their education is often interrupted. They feel the pressure of caring for sick family members or orphaned siblings. Emotional suffering can lead to other problems, such as depression, aggression, drug abuse, insomnia and failure to thrive. Children suffering multiple losses can experience profound grief, stigma and poverty. Psychosocial support is critical and involves a continuing process of meeting their physical, emotional, social and spiritual needs.

- CHBC programs can become involved in orphan care. They can promote an environment that enables psychosocial support for vulnerable children and can help create an expanded response by families, communities, governments and faith-based and other organizations. Programs should include:
 - Information and education for patients and families
 - Training for family caregivers
 - Immediate practical support for children and families in distress (material, nutritional, financial, funeral arrangements)
 - Linkages and referral mechanisms for services such as legal support

5. Assessing the patient in the home and developing a care plan

- a. Using a holistic approach, begin with a thorough assessment that addresses, among other elements:
 - Patient and family needs and current capacity for:
 - Maintaining basic hygiene
 - Maintaining good nutrition
 - Taking comfort measures
 - Preventing transmission of infection
 - Managing symptoms
 - Taking drugs and medical measures that require physician input
 - Maintaining food and income security
 - Reaching sources of psychosocial and spiritual support
 - Getting legal support
- b. Set realistic goals
 - With the patient, family members and interdisciplinary team, establish a care plan based on the assessment above.
 - Set realistic goals based on the patient's condition, disease stage, care plan and available resources.
- c. Establish linkages between CHBC and other care and prevention programs.
 - CHBC volunteers can participate as DOTs monitors in programs that manage HIV-infected patients with TB.
 - Volunteers can also participate as monitors for ARV DOT patients.
 - CHBC programs can provide mechanisms for support in PMTCT programs, including documentation of any inadvertent negative outcomes.
 - CHBC plays a role in ART adherence for PMTCT programs or chronic ART management.

6. Selected basic principles to guide home-based care programs

- a. It is good practice to include all sectors of society, that is, communities, public and private institutions, and traditional groups.
- b. CHBC does not aim to shift the burden solely onto the community, but there should be active efforts to empower families and communities to take responsibility for their health, with the community sharing responsibility for care within that community.
- c. People living with HIV/AIDS should be integral to the planning, design, monitoring and evaluation of programs.
- d. Provide services along a continuum of care that responds to needs of the infected and affected across different stages of illness and in a variety of settings. HBC should reduce unnecessary visits and admissions to health facilities.
- e. Ideally, home-based care workers are part of a multidisciplinary team that provides access to the diverse service needs of patients and families. Where this is a luxury, as is often the case, training must help CHBC workers meet and assess their own needs, so they understand their own limitations and know where they can make needed referrals.
- f. There must be care for the caregivers: family members, community volunteers and health care workers.
- g. Raise awareness and build skills to support confidentiality about disclosing patients' HIV status to families and caregivers. Patients have a right to privacy.
- h. HBC should be an entry point to other services such as legal aid, household aid and facility-based care for patients and families. A home-based care program should ensure that children and families have access to social welfare services within their communities.
- i. Programs must address the special needs of orphans and vulnerable children.

SESSION 3 Nutrition**PURPOSE**

In this session, participants will learn about nutrition, including the interaction between HIV and nutrition, the clinical context of how infections influence nutritional status, and the processes that lead to weight loss and wasting. They will learn about the role of micronutrients, nutrition assessment, options for nutrition support programs, and nutrition care and support for adults and children with HIV/AIDS.

OBJECTIVES:

By the end of this session, participants will be able to:

1. Describe the interaction between HIV and nutrition.
2. Discuss the clinical context of how infectious diseases influence nutritional status, including the vicious cycle of micronutrient deficiencies and HIV pathogenesis, and the symptoms and causes of poor nutrition.
3. Describe the processes that lead to weight loss and wasting.
4. Discuss the role of vitamins and minerals in the body and list locally available sources of these nutrients.
5. Carry out a nutritional assessment for children and adults.
6. Discuss options for nutritional support programs.
7. Make recommendations for nutrition care and support for adults and children with HIV/AIDS and adapt these to their local situation.

TIME:

2 hours and 30 minutes +

A. HIV and Nutrition—the Interaction

1. Introduction

Malnutrition is a serious danger for people living with HIV/AIDS. Even at the early stages of HIV infection, when no symptoms are apparent, HIV makes demands on the body's nutritional status. The risk of malnutrition increases significantly during the course of the infection.

Good nutrition cannot cure AIDS or prevent HIV infection, but it can help to maintain and improve the nutritional status of a person with HIV/AIDS and delay progression of HIV disease, thereby improving the quality of life of PLHA. Nutritional care and support are important from the early stages of the infection to prevent the development of nutritional deficiencies. A healthy and balanced diet will help to maintain body weight and fitness. Eating well helps to maintain and improve the performance of the immune system—the body's protection against infection—and thereby helps a person to stay healthy.

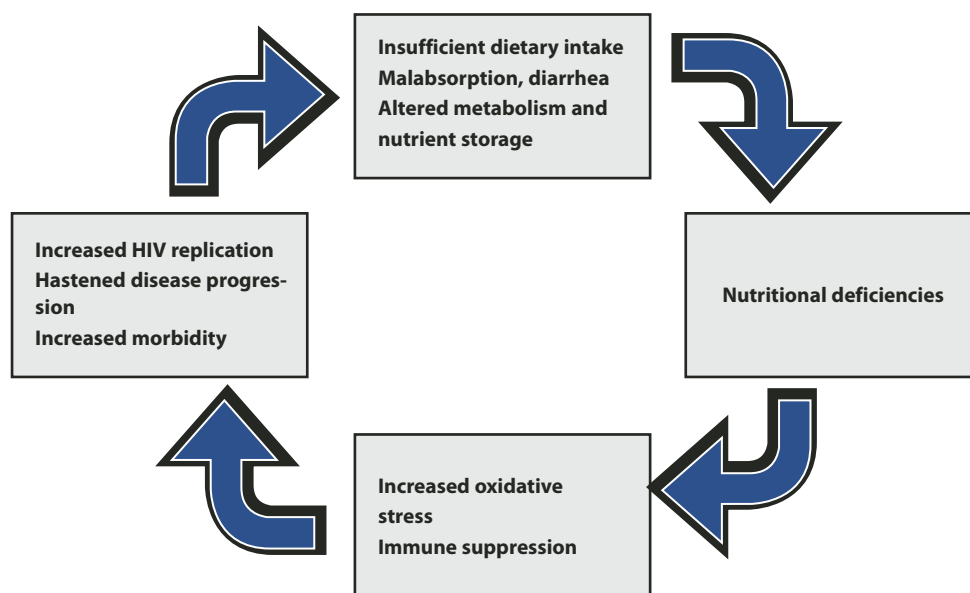
Many of the conditions associated with HIV/AIDS affect food intake, digestion and absorption, while others influence the functions of the body. Many of the symptoms of these conditions (for example, diarrhea, weight loss, sore mouth and throat, nausea or vomiting) are manageable with appropriate nutrition. Good nutrition will complement and reinforce the effect of any medication taken.

2. Malnutrition takes many forms

- a. Protein-energy malnutrition—usually measured in terms of body size
 - Common indicators in children are:
 - Low height-for-age (stunting)
 - Low weight-for-age (underweight)
 - Low weight-for-height (wasting or acute malnutrition)
 - Indicators in adults include:
 - Low body mass index (BMI)
- b. Micronutrient malnutrition—not always recognized in its mild and moderate forms; often referred to as hidden hunger
 - The most commonly reported micronutrient deficiencies in both adults and children are iron, vitamin A and iodine deficiency.
 - Deficiencies in other vitamins and minerals that are vital for the body's normal functions and for the work of the immune system are not commonly measured, but they occur frequently in populations with high infectious disease burdens and monotonous, poor-quality diets characterized by limited consumption of animal products and seasonal or periodic food insecurity.

3. The clinical context

- a. Infectious diseases, no matter how mild, influence nutritional status and almost any nutrient deficiency, if sufficiently severe, will impair resistance to disease.
- b. Infections affect nutritional status by reducing dietary intake and nutrient absorption and by increasing the utilization and excretion of protein and micronutrients as the body responds to invading pathogens.
- c. Anorexia, fever and catabolism of muscle tissue frequently accompany the acute phase response.
- d. Infections also result in the release of prooxidant cytokines and other reactive oxygen species. This leads to the increased utilization of antioxidant vitamins (vitamin E, vitamin C, beta-carotene), as well as the sequestration of several minerals (iron, zinc, selenium, manganese, copper) that are used to form antioxidant enzymes. *Oxidative stress* occurs when there is an imbalance between prooxidants and antioxidants, causing further damage to cells, proteins, and enzymes.
- e. The relationship between HIV and nutrition is complicated by the fact that the virus directly attacks and destroys the cells of the immune system.
- f. The vicious cycle of micronutrient deficiencies and HIV pathogenesis:
 - Nutritional deficiencies affect immune functions that may influence viral expression and replication, further affecting HIV disease. Oxidative stress, for example, may indirectly hasten HIV replication.
 - HIV affects the production of hormones, such as glucagons, insulin, epinephrine and cortisol, which are involved in the metabolism of carbohydrates, proteins and fats. Elevated levels of these hormones contribute to weight loss and the wasting syndrome seen in most adult AIDS patients.

Table A5, 3.1: The Vicious Cycle of Micronutrient Deficiencies and HIV Pathogenesis

g. Symptoms of malnutrition in PLHA include:

- Weight loss
- Loss of muscle tissue and subcutaneous fat
- Vitamin and mineral deficiencies
- Reduced immune competence
- Increased susceptibility to infection

h. Poor nutritional status may have multiple causes:

- Depressed appetite, poor nutrient intake and limited food availability
- Chronic infection, malabsorption, metabolic disturbances and muscle and tissue catabolism
- Fever, nausea, vomiting and diarrhea
- Depression
- Side effects from drugs used to treat HIV-related infections

4. Weight loss and wasting in HIV/AIDS

- a. To understand the relationship between nutrition and HIV/AIDS, one must consider the effect of the disease on body size and composition (weight, lean body mass, body cell mass), as well as on the functioning of the immune system. Nutrition plays a role in each area. Keep in mind that malnutrition may contribute to HIV disease progression and be a consequence of the disease.
- b. The wasting syndrome typically found in adult AIDS patients is a severe nutritional manifestation of the disease. Wasting is usually preceded by:
 - Decrease in appetite
 - Repeated infections
 - Weight fluctuations
 - Subtler changes in body composition, for example, changes in lean body mass and body cell mass, both more difficult to measure than changes in weight alone
- c. Weight loss typically follows two patterns in PLHA:
 - Slow and progressive weight loss from anorexia and gastrointestinal disturbances
 - Rapid, episodic weight loss from secondary infection
 - Even relatively small losses in weight (five percent) have been associated with decreased survival and are therefore important to monitor.
- d. Weight loss and wasting in PLHA develop as a result of three overlapping processes:
 - Reductions in food intake
 - Because of:
 - Painful sores in the mouth, pharynx and/or esophagus
 - Fatigue, depression, changes in mental state and other psychosocial factors
 - Economic factors affecting food availability and nutritional quality
 - Side effects from medications, including nausea, vomiting, metallic taste, diarrhea, abdominal cramps and anorexia
 - Nutrient malabsorption
 - Malabsorption accompanies frequent bouts of diarrhea due to *Giardia*, *cryptosporidium* and other pathogens that affect persons with compromised immune systems.
 - Some HIV-infected individuals have increased intestinal permeability and other intestinal defects, even when asymptomatic.
 - HIV infection itself may cause epithelial damage to the intestinal walls and malabsorption.
 - Malabsorption of fats and carbohydrates is common at all stages of HIV infection in adults and children.
 - Fat malabsorption, in turn, affects the absorption and utilization of fat-soluble vitamins (vitamins A, E), further compromising nutrition and immune status.
 - Metabolic alterations
 - Infection results in increased energy and protein requirements, as well as inefficient utilization and loss of nutrients.
 - During HIV infection, changes in metabolism occur from severe reductions in food intake as well as from the immune system's response to the infection. When food is restricted, the body responds by altering insulin and glucagon production, which regulate the flow of sugar and other nutrients to the intestine, blood, liver and other body tissues. Over time, the body uses up carbohydrate stores from muscle and liver tissue, and it begins to break down body protein to produce glucose. This process causes body loss and muscle wasting.

- Wasting also results from a process called cachexia. This is characterized by a significant loss of lean body mass resulting from metabolic changes during the acute phase response to infection. During this phase, the liver produces large amounts of specific proteins to bind and clear infectious agents. These proteins come, in large part, from skeletal muscle. If the response, induced by immune-system cytokines, is prolonged, muscle wasting may become severe. Cachexia also affects appetite, sleep-wake cycles and other body processes. As a result of these processes, HIV infection increases the body's protein and energy requirements to maintain weight and body composition.

Table A5, 3.2: Metabolic Alterations that Accompany Acute Infections

Protein
<ul style="list-style-type: none"> Increased urinary nitrogen loss Increased protein turnover Decreased skeletal muscle protein synthesis Increased skeletal muscle breakdown Increased hepatic protein synthesis
Lipid (fat)
<ul style="list-style-type: none"> Hypertriglyceridemia Increased hepatic de novo fatty acid synthesis Increased hepatic triglyceride esterification Increased very low-density lipoprotein production Decreased peripheral lipoprotein lipase activity Increased adipocyte triglyceride lipase
Carbohydrate
<ul style="list-style-type: none"> Hyperglycemia Insulin resistance Increased peripheral glucose utilization Increased gluconeogenesis

Source: Babameto and Kotler (1997)

5. Micronutrients: Vitamins and Minerals in HIV/AIDS

- a. Many vitamins and minerals are important to the HIV/nutrition relationship because of their critical roles in cellular differentiation, enzymatic processes, immune system reactions and other body functions.
- b. The following table summarizes the roles of different vitamins and minerals in supporting body functions and lists some of the foods that contain them.

Table A5, 3.3: The Role of Some Vitamins and Minerals in the Body and Sources of Nutrients

Nutrient	Its Role	Sources
Vitamin A	Required for maintenance of epithelial cells, mucous membranes and skin. Needed for immune system function and resistance to infections. Ensures good vision. Needed for bone growth.	Full-cream milk (when fortified), cheese, butter, red palm oil, fish oil, eggs, liver, carrots, mangoes, papaya, pumpkin, green leafy vegetables and yellow sweet potatoes
Vitamin B ₁ /Thiamine	Used in energy metabolism supports appetite and central nervous system functions.	Whole grain cereals, meat, poultry, fish, liver, milk, eggs, oil, seeds and legumes
Vitamin B ₂ /Riboflavin	Used in energy metabolism; supports normal vision, health and integrity of skin.	Milk, eggs, liver, fish, yogurt, green leaves, whole-grained cereals and legumes
Vitamin B ₃ /Niacin	Essential for energy metabolism; supports health and integrity of skin, nervous and digestive system.	Milk, eggs, meat, poultry, fish, peanuts, whole-grained cereals and unpolished rice
Vitamin B ₆	Facilitates metabolism and absorption of fats and proteins; converts tryptophan to niacin; helps make red blood cells. Some TB drugs cause B6 deficiency.	Legumes (white beans), potatoes, meats, fish, poultry, shellfish, watermelon, oil seeds, maize, avocado, broccoli and green leafy vegetables. Alcohol destroys vitamin B ₆ .
Folate (folic acid)	Required for synthesis of new cells, especially red blood cells and gastrointestinal cells.	Liver, green leafy vegetables, fish, legumes, groundnuts and oil seeds
Vitamin B ₁₂	Required for synthesis of new cells; helps to maintain nerve cells. Works together with folate.	Meat, fish, poultry, shellfish, cheese, eggs and milk
Vitamin C	Helps the body to use calcium and other nutrients to build bones and blood vessel walls. Increases non-heme iron absorption. Increases resistance to infection and acts as an antioxidant. Important for protein metabolism.	Citrus fruits such as baobab, guava, oranges and lemons; cabbage, green leaves, tomatoes, peppers, potatoes and yams. Cooking plantains and fresh milk. Vitamin C is lost when food is cut up, heated or left standing after cooking
Vitamin D	Required for mineralization of bones and teeth.	Produced by skin on exposure to sunshine; milk, butter, cheese, fatty fish, eggs and liver

Nutrient	Its Role	Sources
Vitamin E	Acts as an antioxidant. Protects cell membranes and metabolism, especially red and white blood cells. Protects vitamin A and other fats from oxidation. Facilitates resistance against diseases, particularly in lungs.	Green leafy vegetables, vegetable oils, wheat germ, whole-grain products, butter, liver, egg yolk, peanuts, milk fat, nuts and seeds
Calcium	Required for building strong bones and teeth. Important for normal heart and muscle functions, blood clotting and pressure, and immune defenses.	Milk, yogurt, cheese, green leafy vegetables, broccoli, dried fish with bones that are eaten, legumes and peas
Zinc	Important for function of many enzymes. Acts as an antioxidant. Involved with making genetic material and proteins, immune reactions, transport of vitamin A, taste perception, wound healing and sperm production.	Meats, fish, poultry, shellfish, whole grain cereals, legumes, peanuts, milk, cheese, yogurt and vegetables
Selenium	Acts as an antioxidant together with vitamin E. Prevents the impairing of heart muscles.	Meat, eggs, seafood, whole grains and plants grown in selenium-rich soil
Magnesium	Important for building strong bones and teeth, protein synthesis, muscle contraction and transmission of nerve impulses.	Nuts, legumes, whole grain cereals, dark green vegetables and seafood
Iodine	Ensures the development and proper functioning of the brain and of the nervous system. Important for growth, development and metabolism.	Seafood, iodized salt and plants grown in iodine-rich soil

Source: Piwoz & Preble, pp. 15-16

B. Nutrition Assessment

1. Elements of a nutritional assessment:

- a. Identify risk factors (see above)
- b. Determine weight gain or loss, linear growth, growth failure or body mass index (BMI)
 - Weight loss may be so gradual that it is not obvious. There are two basic ways to discover whether weight is being lost:
 - (1) Weigh the person on the same day, once a week, and keep a record of the weight and date. For an average adult, serious weight loss is indicated by a 10 percent loss of body weight or 6-7 kg in one month. If a person does not have a scale at home, it may be possible to take the weight by making an arrangement with a pharmacist, clinic or local health unit having a scale.
 - (2) When clothes become loose and no longer fit properly

- c. Do nutrition laboratory values (if available)
 - CBC
 - ESR
 - Total protein
 - Albumin (dehydration can lead to falsely elevated serum levels)
 - Prealbumin (Albumin and prealbumin assess protein status)
 - Take a dietary intake and feeding history:
 - Actual food intake by 24-hour recall or written record of three-day food intake
 - Types of foods, formulas, fluids, breast milk consumed and amounts
 - Other helpful information:
 - Length of time it takes the patient to eat
 - Appetite
 - Any chewing, sucking or swallowing problems
 - Nausea, vomiting or diarrhea
 - Abdominal pain
 - Any feeding refusal, food intolerance, allergies and/or fatigue

2. Nutrition assessment for children

- a. Assess weight gain and linear growth. WHO recommends using the National Center for Health Statistics (NCHS) growth chart.
- b. For children under the age of three, measurement of the frontal occipital head circumference is a valuable tool for assessing growth.
- c. Weight alone is a valuable tool when no other measurements are available.
- d. Growth failure is defined as:
 - Crossing two major percentile lines on the NCHS growth chart over time
 - For a child <5th percentile weight/age, failing to follow his or her own upward growth curve on the growth chart
 - Loss of five percent or more of body weight

3. Nutrition assessment for adults

- a. Formula for determining ideal body weight:
 - Male: $48 \text{ kg} + 1.07 \text{ kg/cm}$, if over 152 cm
 - Female: $45.5 \text{ kg} + 0.9 \text{ kg/cm}$, if over 152 cm
- b. BMI
Weight kg/height (meters squared)
- c. Malnutrition in an adult is defined as involuntary weight loss greater than 10 percent, weight less than 90 percent estimated ideal weight or BMI less than 20.

C. Nutritional Support [Program Options]

1. Goals of a program to provide nutrition support to PLHA may vary from prevention of nutrition depletion to the provision of palliative nutrition care and support for people with AIDS and the family members who care for them.

The overall program objectives should be to:

- a. Improve or develop better eating habits and diet
- b. Build or replenish body stores of micronutrients
- c. Prevent or stabilize weight loss
- d. Preserve (and gain) muscle mass
- e. Prevent food-borne illness
- f. Prepare for and manage AIDS-related symptoms that affect food consumption and dietary intake
- g. Provide nutritious food for AIDS-affected families living in conditions of food insecurity

2. Nutritional support should be provided in a holistic manner.

- a. When locally available, a nutritionist should be part of the HIV care team, not only to provide education and counseling, but also to assist with referrals for food support.
- b. Components of care should include:
 - Appropriate treatment of opportunistic infections
 - Stress management
 - Physical exercise
 - Emotional, psychological and spiritual counseling and support
- c. Programs that provide nutritional care and support may include:
 - Nutrition education and counseling in health facilities, in community settings or at home (to change dietary habits, to increase consumption of key foods and nutrients or to manage anorexia and other conditions that affect eating patterns)
 - Water, hygiene and food safety interventions to prevent diarrhea
 - Food-for-work programs for healthy family members affected by HIV/AIDS, including orphan caregivers
 - Food baskets for home preparation
 - Home-delivered, ready-to-eat foods for homebound patients who are unable to prepare their own meals

D. Recommendations for nutrition care and support for adults with HIV/AIDS

1. Recommendations for nutritional support of HIV-positive, asymptomatic individuals:

- a. *Promote a healthy diet that is adequate in energy, protein, fat and other essential nutrients.* This is a key component of positive living for people with HIV. Good nutrition and a healthy diet may prolong the period of time between HIV infection and the onset of opportunistic infections commonly attributed to progression of the disease. This is because of the relationship between nutritional status and immune system function/integrity, as described above in section A.3.

You should recognize that people with HIV, even if asymptomatic, may have increased body metabolism; this increases their daily energy, protein and micronutrient requirements (see section A.4). Therefore, a person with HIV requires 10-15 percent more energy and 50-100 percent more protein a day.

- HIV-positive adults (men and women) should increase their energy intakes to an additional 300 to 400 kcal per day. They should take in an additional 25-30 grams per day of protein. This can be accomplished by consuming high energy snacks 2-3 times a day, such as a cup of yogurt, dried fish or peanut butter on bread, with milk (fermented or fresh).
- They should take care to select foods that are rich in micronutrients containing antioxidants and B-vitamins. The PLHA may need to consume 2-5 times the recommended daily allowance for healthy adults in order to delay HIV progression.

They may need daily multiple vitamin-mineral supplements of these micronutrients to reverse underlying nutrition deficiencies and build nutrient stores. Caution is advised with respect to zinc and iron supplements:

- The HIV virus requires zinc for gene expression, replication and integration. PLHA may have low plasma zinc levels but higher zinc intakes may be associated with faster HIV replication and disease progression.
- Although anemia is common in PLHA, advanced HIV disease may also be characterized by increases in iron stores in bone marrow, muscle, liver and other cells. This accumulation of iron likely results from the body's attempts to withhold iron from the plasma, although other factors (like ZDV use, cigarette smoking and blood transfusions) may play a role. Increased iron stores can predispose to microbial infection and also cause oxidative stress, with implications for HIV progression.
- In summary, a healthy diet should contain a balance of:
 - Carbohydrates and fats, to produce energy and growth: rice, maize/millet porridge, barley, oats, wheat, bread, cassava, plantain, bananas, yams, potatoes and the like
 - Proteins to build and repair tissue: meat, chicken, liver, fish, eggs, milk, beans, soybeans, groundnuts and the like
 - Vitamins and minerals (found in fruits and vegetables) to protect against opportunistic infections by ensuring that the lining of skin, lungs and gut remain healthy and that the immune system functions properly

- b. *Provide nutrition counseling and support.* Develop algorithms for the nutritional management of PLHA and identify appropriate locally available foods.

- All health and support personnel who counsel and/or provide medical care for PLHA should be familiar with these algorithms and foods.
- Home-based care providers should be familiar with basic nutritional advice and practices for the patients they care for.
- These providers should also access existing local sources of social support to help address problems of household food security for families affected by HIV/AIDS.
- Nutrition counseling should include information on locally available foods and diets that will meet estimated requirements, given the individual's age, sex and physiologic state (for example, pregnancy, lactation, engaged in laborious physical activity).

- c. *Encourage people living with HIV to maintain their levels of physical activity and to exercise.* Exercise is important for preventing weight loss and wasting; it stimulates the appetite, reduces nausea, improves functioning of the digestive system, strengthens muscles, helps to relieve stress and makes the person feel more alert. Weight-bearing exercise may be helpful in building lean body mass.
- Exercise is the only way to strengthen and build up muscles. The body uses muscles to store energy and protein that the immune system can draw upon when required. Exercise is therefore especially important for maintaining the health of people with HIV/AIDS.
 - It may be that everyday activities such as cleaning, working in the field and collecting firewood and water provide enough exercise. If a person's work does not involve much exercise, PLHA should find an enjoyable exercise program that can be part of their daily life. Exercise should not be tiring or stressful; gentle muscle-building exercise is recommended. Walking, running, riding a bicycle or dancing are all suitable. People living with HIV/AIDS need to make an effort to find the exercise that they enjoy and that suits their situation.
- d. *Provide counseling on hygiene and safe food handling and preparation.* PLHA have an increased susceptibility to bacterial infections. Failure to prevent contamination can result in diarrhea, which could have spiraling nutrition and health consequences.
- Hygiene and food safety messages should include these practices:
- Always wash hands before preparing food and eating and after defecating.
 - Keep all food preparation surfaces clean, and use clean utensils to prepare and serve foods.
 - Cook food thoroughly.
 - Avoid contact between raw foodstuffs and cooked foods.
 - Serve food immediately after preparation, and avoid storing cooked foods unless they can be kept in a refrigerator or a cool place. Do not store them for more than one or two days, and always reheat them at a high temperature.
 - Wash fruits and vegetables before serving.
 - Use safe water that is boiled or filtered.
 - Use clean cups and bowls, and use cups rather than bottles for feeding babies.
 - Protect foods from insects, rodents and other animals.
 - Store nonperishable foodstuffs in a safe place (separate from pesticides, disinfecting agents and other toxic chemicals).
- e. *Encourage PLHA to seek immediate attention for any digestive and health-related problems to prevent further nutritional and physical deterioration.*

2. Recommendations for nutritional support for HIV-positive individuals experiencing weight loss:

- a. *Ascertain circumstances that may have led to weight loss.* Most early weight loss associated with HIV/AIDS occurs episodically and results from depressed appetite during secondary infections.
- b. *Identify and treat any underlying infections early.* This includes any secondary infections, such as mouth sores, skin infections, cough, fever, diarrhea, tuberculosis and oral KS.
- c. *Provide specific advice on how to maintain intake during these periods.* For example, advise the person to take more frequent meals and snacks and to eat well-liked foods.
- d. *Increase intake to promote nutritional recovery following periods of appetite loss, fever or acute diarrhea.* Follow the recommendations in section D. 1, above.
- e. *Minimize the nutritional impact of infection.* See the table below for advice on managing common conditions.
- f. *Advise all PLHA to avoid unhealthy lifestyles.* This includes:
 - Alcohol consumption, tobacco and drug use, which may affect many nutritional processes.
 - Unsafe sexual practices, which increase risk of reinfection or coinfection with HIV and other STDs.

Table A5, 3.4: Practical Suggestions: How to Maximize Food Intake During and Following Common HIV/AIDS-Related Infections

Symptom	Suggested strategy
Fever and Loss of Appetite	Drink high-energy, high-protein liquids and fruit juice. Eat small portions of soft, preferred foods with a pleasing aroma and texture throughout the day. Eat nutritious snacks, whenever possible. Drink liquids often.
Sore Mouth and Throat	Avoid citrus fruits, tomatoes and spicy foods. Avoid sweet foods. Drink high-energy, high-protein liquids with a straw. Eat foods at room temperature or cooler. Eat thick, smooth foods, such as pudding, porridge, mashed potato, mashed carrots or other non-acidic vegetables and fruits.

Table A5, 3.4 (cont.)

Symptom	Suggested strategy
Nausea and Vomiting	<p>Eat small snacks throughout the day, and avoid large meals.</p> <p>Eat crackers, toast and other plain, dry foods.</p> <p>Avoid foods that have a strong aroma.</p> <p>Drink diluted fruit juices, other liquids and soup.</p> <p>Eat simple boiled foods, such as porridge, potato and beans.</p>
Loose Bowels	<p>Eat bananas, mashed fruits, soft rice and porridge.</p> <p>Eat smaller meals more often.</p> <p>Eliminate dairy products to see if they are the cause.</p> <p>Decrease high-fat foods.</p> <p>Don't eat foods with insoluble fiber (roughage).</p> <p>Drink liquids often.</p>
Fat Malabsorption	<p>Eliminate oils, butter, margarine and foods that contain or were prepared with them.</p> <p>Eat only lean meats.</p> <p>Eat fruits and vegetables and other low-fat foods.</p>
Severe Diarrhea	<p>Drink liquids frequently.</p> <p>Drink oral rehydration solution.</p> <p>Drink diluted juices.</p> <p>Eat bananas, mashed fruits, soft and rice porridge.</p>
Fatigue, Lethargy	<p>Have someone precook foods to avoid energy and time spent in preparation (care with reheating).</p> <p>Eat fresh fruits that don't require preparation.</p> <p>Eat snack foods throughout the day.</p> <p>Drink high-energy, high-protein liquids.</p> <p>Set aside time each day for eating.</p>

Adapted from Woods (1999)

1. Recommendations for nutritional support for people with AIDS

- a. *Mitigate the nutritional consequences of the disease at this stage and preserve functional independence, whenever possible.* Give consideration to the nutritional consequences of various drugs that AIDS patients may be taking.
- b. *Take the following points into consideration:*
 - Preservation of lean body mass remains important at this stage; maintain earlier recommendations about energy and protein consumption as long and as often as possible.
 - During periods of nausea and vomiting, people with AIDS should try to eat small snacks throughout the day and avoid foods with strong or unpleasant aromas. They should maintain fluid intake to avoid dehydration.
 - To minimize gastrointestinal discomfort, gas and bloating, consume foods that are low in insoluble fiber and low in fat. If there is lactose intolerance, avoid milk and dairy products. Caregivers should try to identify fermented foods (for example, sour milk, porridge or yogurt) or nondairy, high-protein foods that are easy to prepare and consume. Avoid spicy foods.
 - During diarrhea, ensure that fluid intake is maintained (30 ml/kg body weight per day for adults and somewhat more for children). Patients should continue eating and drinking, whenever possible. Give oral rehydration solutions to avoid life-threatening dehydration.
 - People with mouth and throat sores should avoid hot and spicy or very sweet foods, as well as caffeine and alcohol. Encourage patients to eat preferred foods that are softened, mashed or liquefied, if necessary.
 - For patients with depressed appetites or lack of interest in eating, caregivers should try to increase dietary intake by offering small portions of food several times a day. Set specific eating times; try to find ways to make eating times pleasant and supportive.
 - Treat all infections that affect appetite, ability to eat and nutrient retention immediately.
 - Avoid tobacco products.
 - Follow the guidelines above (section D.1.d) for hygiene and food safety.
- c. *Be sure to address the nutritional consequences of any medications given.* Several medications for treating opportunistic infections may have drug-nutrient interactions or side effects like nausea and vomiting. For example:
 - Administer Vitamin B6 with isoniazid therapy for TB to avoid Vitamin B6 deficiency.
 - Do not give iron and zinc-containing supplements with ciprofloxacin (take at least two hours apart). Many antiretroviral drugs have dietary requirements (for example, to be taken on an empty or full stomach), and most have side effects such as nausea, vomiting, abdominal pain and diarrhea, which must be managed nutritionally. Some drugs, such as ZDV, affect red blood cell production and increase the risk of anemia.

Table A5, 3.5: HIV Medication and Food Interactions

Antiretroviral Medication and Usual Adult Daily Dosage	Food Effect	Dietary Recommendations	Dosage Form
NRTI			
Zidovudine (Retrovir-AZT-ZDV), Glaxo Wellcome, 300 mg bid	Administration of zidovudine capsules with food decreased peak plasma concentration by >50 percent; however, AUC may not be affected; or AUC decreased by 25 percent after meal. Avoid alcohol.	Take on empty stomach, if possible. If this is not possible because of GI side effects, recommend taking with low-fat meal.	300 mg tablet; 100 mg capsule; 50 mg/5 mL syrup
Lamivudine (epivir-3TC), Glaxo Wellcome, 150 mg bid or 300 mg q.d.	Food has little effect on the extent of absorption. Avoid alcohol.	Can be taken without regard to meals. If taken with meals, may decrease GI side effects.	150 mg tablet; 10 mg/ml oral solution
Zidovudine- lamivudine (Combivir, AZT-3TC), Glaxo Wellcome, 1 tablet bid	Administration of zidovudine capsules with food decreased peak plasma concentration by >50 percent; however, AUC may not be affected; or AUC decreased by 25 percent after meal. Avoid alcohol.	Take on empty stomach, if possible. If this is not possible because of GI side effects, recommend taking with low-fat meal.	300 mg AZT and 150 mg 3TC per tablet
Abacavir (Ziagen-ABC), Glaxo Wellcome, 300 mg bid	There was no significant difference in systemic exposure (AUC) in the fed and fasted states. Alcohol increased AUC by 41 percent. Avoid alcohol.	Can be taken without regard to meals.	300 mg tablet; 20 mg/ml oral solution
Zidovudine-lamivudine-abacavir (Trizivir,AZT-3TC-ABC), Glaxo Wellcome, 1 tablet bid	Administration of zidovudine capsules with food decreased peak plasma concentration by >50 percent; however, AUC may not be affected; or AUC decreased by 25 percent after meal. Alcohol increased AUC of ABC by 41 percent.	Take on empty stomach, if possible. If this is not possible because of GI side effects, recommend taking with low-fat meal. Avoid alcohol.	300 mg AZT and 150 mg 3TC and 300 mg ABC per tablet
Didanosine (Videx EC-ddI), Bristol Myers Squibb, 400 mg tablets qd for >60 kg and 250 mg tablets qd for <60 kg	Food decreases absorption. Administration with food results in approximately 55 percent decrease in AUC. Avoid alcohol as it exacerbates toxicity. Avoid antacids containing magnesium and aluminum.	Take on empty stomach, at least 30 min before or 2 h after a meal. Take only with water.	25, 50, 100, 150, 200 mg chewable/buffered tablets; 100,167, 250 mg/packet buffered powder for oral solution; 2 or 4 g/bottle of pediatric powder or oral solution; 125, 200, 250, 400 mg enteric-coated ddl
Stavudine (zerit-d4T), Bristol Myers Squibb, 40 mg bid for >60 kg 30 mg bid for <60 kg	Food has little effect on absorption. Avoid alcohol.	Can be taken without regard to meals.	15, 20, 30, 40 mg capsule, 1 mg/ml oral solution
Tenofovir (Viread), Gilead Sciences, 300 mg qd	Administration with high-fat meal increased AUC by 40 percent. If taking didanosine, must take tenofovir 2 h before or 1 h after didanosine.	Take with food.	300 mg tablets
Zalcitabine (Hivid-ddC), Roche Laboratories, 0.75 mg q8h	Administration with food decreases AUC by 14 percent (not clinically significant). Do not take antacids containing magnesium and aluminum at the same time as medication. Avoid alcohol. Do not take with metoclopramide (decreases AUC by 10 percent).	Can be taken without regard to meals.	0.375, 0.750 mg tablets

Table A5, 3.5 (cont.)

Antiretroviral Medication and Usual Adult Daily Dosage	Food Effect	Dietary Recommendations	Dosage Form
NNRTI			
Delavirdine (Rescriptor-DLV), Pharmacia and Upjohn, 400 mg tid	Concentrations similar in fasting and fed states in steady-state dosing. Medications such as antacids containing aluminum and magnesium and didanosine should be taken at least 1 h after; they can decrease absorption. Avoid St. John's wort (<i>Hypericum perforatum</i>), alcohol.	Can be taken without regard to meals.	100, 200 mg tablets
Efavirenz (Sustiva-EFV), Dupont Merck, 600 mg/d	Low-fat meal improves tolerability. High-fat meal increased bioavailability by 50 percent. Take in the evening or bedtime to minimize side effects. Alcohol may increase side effects. Avoid St. John's wort.	Can be taken without regard to meals; however, avoid high-fat meal.	50, 100, 200 mg capsules; 600 mg tablets
Nevirapine (Viramune-NVP), Roxane, 200 mg/d for 14 d, then 200 mg bid	Absorption not affected by food, antacids or didanosine. Avoid St. John's wort, alcohol.	Can be taken without regard to meals.	200 mg tablet, 50 mg/teaspoon oral suspension
PROTEASE INHIBITOR			
Amprenavir (Agenerase-APV), Glaxo Wellcome, 1200 mg bid	Take with or without food. If taken with food, avoid high-fat meal (>67 g fat), as high-fat decreases absorption (decreases C _{max} and AUC). Avoid grapefruit juice. Increase fluid intake. Avoid extra vitamin E supplements (872 IU vitamin E /1200 mg amprenavir). Avoid St. John's wort. Do not take antacids within 1 h of this medicine.	Can be taken without regard to meals; however, avoid high-fat meal.	50, 150 mg soft-gel capsules (109 IU vitamin E/150 mg capsule) a 15 mg/ml oral solution (14 percent less bioavailable than capsules, thus doses not equivalent to capsules)
Indinavir (Crixivan-IDV), Merck, 800 mg q8h	Administration with high-fat, high-protein meal decreased serum concentrations by 84 percent and decreased AUC by 77 percent. It can be taken with a nonfat snack. Avoid grapefruit juice. Drink an additional 48 ounces of liquid daily to avoid kidney problems. Avoid St. John's wort. Ritonavir-indinavir combination (400 mg q12h each) significantly increases the drug level of indinavir and eliminates the need to fast.	Take on empty stomach at least 1 h before or 2 h after a meal or with a low/non-fat meal (juice, skim milk, etc.). Take 1 h before or after ddl as buffer impairs IDV absorption.	200, 333, 400 mg capsules
Saquinavir (soft-gel capsule) (Fortovase-SQVsgc), Roche Laboratories, 1200 mg tid	Administration with food (i.e., fatty meal) increases AUC 670 percent. Store capsules in refrigerator. Avoid alcohol, St. John's wort.	Take with meal or up to 2 h after a full meal.	200 mg soft-gel capsule

Table A5, 3.5 (cont.)

Antiretroviral Medication and Usual Adult Daily Dosage	Food Effect	Dietary Recommendations	Dosage Form
PROTEASE INHIBITOR			
Saquinavir (hard-gel capsule) (Invirase-SQV), Roche Laboratories, 600 mg tid	Administration with food (i.e., fatty meal) increases AUC 200 percent. Taking with grapefruit juice will also increase absorption by 40 percent - 100 percent because of inhibition of gut CYP3A4. Avoid alcohol, St. John's wort.	Take with meal or up to 2 h after a full meal with high calories and high-fat foods for better absorption.	200 mg hard-gel capsules
Lopinavir-ritonavir(Kaletra, LPV-RTV), Abbott, 3 capsules bid	Take with high-fat food for better absorption. Store the capsules in the refrigerator. Avoid St. John's wort.	Take with meals, especially with high fat content.	133.3 mg LPV and 33.3 mg RTV per soft-gel capsule, 80 mg LPV and 20 mg RTV per mL oral solution
Ritonavir (Norvir-RTV), Abbott, 600 mg bid	Extent of absorption of ritonavir from the soft-gel capsule formulation was 13 percent - 15 percent higher when administered with a meal. Store capsules in refrigerator. Avoid St. John's	Take with meals, if possible. Mix oral solution with chocolate milk or oral supplements to improve taste.	100 mg soft-gel capsules, 80 mg/mL oral solution
Nelfinavir (Viracept-NLF), Agouron, 750 mg tid or 1250 mg bid	Plasma concentrations and AUC were 23-fold higher under fed versus fasting conditions. Increase fluid intake. Lactose-free dairy products or lactase may be needed to minimize diarrhea. Avoid acidic food or liquid. Avoid St. John's wort.	Take with a meal or light snack that includes a high-protein food to increase absorption and to decrease GI side effects.	250 mg tablet, 50 mg/g (1 level scoop) oral powder (or 200 mg per teaspoon of powder. Note: Oral powder contains aspartame, not for children with phenylketonuria.

Source: Nerad et al. (2003). General Nutrition Management in HIV. *Clin Infect Dis* 36:S52-S62.

NOTE: AUC, area under the concentration-time curve (the total amount of drug absorbed is reduced when the AUC is decreased); GI, gastrointestinal; NNRTI, nonnucleoside reverse transcriptase inhibitor; NRTI, nucleoside reverse transcriptase inhibitor. Dosages for protease inhibitors are listed at nonboosted amounts. Ritonavir is often given in combination with other protease inhibitors, and the dosages are different. Refer to a physician with HIV expertise. Recommended daily intake for adults for vitamin E is 30 IU.

- d. *Consider overall nutrition support for PLHA in situations of food insecurity and secure basic foods for families where possible.* However, use caution in giving food donations. If you give food aid, take care to:
- Ensure that these foods complement rather than replace foods normally consumed by the patient.
 - Be aware of the food and nutritional situation of the patient's family. A food ration is likely to be shared or handed over completely to other family members, including children.
 - Provide food supplements of sufficient size to meet the needs of the HIV/AIDS patient and his or her dependents, if resources permit.
 - Counsel the patient and caregivers on how to prepare and offer the supplement to maximize food safety and appropriate consumption by the person with HIV/AIDS.

E. Recommendations for nutrition care and support for children with HIV/AIDS

1. *Provide well-baby care and monitor growth of all children born to HIV-infected mothers.* This is especially important for babies who are not being breast fed and for those who have been weaned early. Failure to gain weight may be a sign of HIV-infection or could reflect inadequate feeding practices.
2. *Follow the same nutritional recommendations as for all young children.* But remember to take into consideration the increased nutritional requirements that accompany an HIV-infection and the increased likelihood of fat and other nutrient malabsorption.
3. *Feed young children patiently and persistently, with supervision and love.* This is especially true of HIV-infected children; they may be frequently ill and suffering from fever, mouth and throat sores, and depressed appetite.
4. *Introduce solid foods gradually to match the age and developmental characteristics of the child.* First foods should be soft and enriched with energy sources (for example, oil, peanut butter, sugar and the like). Give small portions (200-250 ml) frequently (at least three times a day) because the child's stomach is small. Increase the portions as the child gets older. Most children can eat all the foods of an adult diet by the time they are one year old (except very spicy foods) as long as the food is cut up, mashed or ground to prevent choking.
5. *Ensure that the young child's diet contains as much variety as possible to increase the intake of essential vitamins and minerals.* Caregivers should feed children a variety of locally available fruits and vegetables, animal products and fortified foods, if they are available. Provide nutritious snacks between meals to increase consumption. Give daily multivitamin supplements, if available, to help prevent nutritional deficiencies.
6. *Follow the same recommendations offered to adults for safe and hygienic practices and for feeding during and following acute infections* (see section D.1.d). Follow the nutritional management of specific symptoms and conditions as adults. (See Table in section D.2.)
7. *Take the following guidelines into consideration:*
 - a. Monitor body weight, height, arm circumference and triceps skin fold regularly.
 - b. Review the child's diet at every well-child and sick-child health visit. Discuss conditions affecting appetite and food intake and treat, as appropriate. Give advice on how to improve the child's diet, taking into consideration the child's age, local resources and the family's circumstances.
 - c. Provide immunizations and give prophylactic vitamin A supplements, according to local guidelines.
 - d. Promptly treat all secondary infections, such as tuberculosis, oral thrush, persistent diarrhea and pneumonia. Minimize the impact of these infections by maintaining food and fluid intake to the degree possible and by increasing intake after the acute symptoms have subsided.
 - e. Many HIV-infected children are likely to become severely malnourished. Follow the local guidelines for managing severe malnutrition. Consider enteral or parenteral nutrition, when available, if the child is unable to eat.

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PART A: MODULE A5

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