Why do we eat?

Generally, we eat so that our bodies can:

- Develop, repair and replace cells, tissues and muscles.
- Produce energy to keep us warm and enable us to move and work.
- Develop protection and resistance against infections.
- Fight and recover from sickness
Introduction

- HIV/AIDS is a pressing issue of public concern.
- Malnutrition is a serious danger for people living with HIV/AIDS.
- Good nutrition cannot cure AIDS or prevent HIV disease thereby improving the quality of life of PLWHA.
Nutritional care and support are important from the early stages of the infection the development of nutritional deficiencies.

A healthy and balanced diet will help to maintain body weight and fitness, eating well helps maintain and improve the performance of the immune system.

The body's protection against infection thereby helps a person to stay healthy.
Objectives

By the end of this module the participants should be able to:

- Define nutrition, food and nutrients
- Describe nutrients and their sources
- Relate HIV/AIDS and Nutrition
- Management of nutritional deficiencies in HIV/AIDS
Nutrition is the science of foods and the nutrients and other substances that contain and of their actions within the body (including ingestion, digestion, absorption, transport, metabolism and excretion).
FOOD

- Products derived from plants or animals which can be taken into the body to yield energy and nutrients for the maintenance or life and the growth and repair of tissues.
NUTRIENTS

- These are chemical substances obtained from food and used in the body to provide energy, structural materials and regulating agents to support growth, maintenance and repair of the body’s tissues, nutrients may also reduce the risks of diseases.

- Nutrients include: carbohydrates, lipids, proteins, vitamins, minerals, water, fiber.
<table>
<thead>
<tr>
<th><strong>Nutrient</strong></th>
<th><strong>Sources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrates</td>
<td>Whole grain cereals; roots and tubers</td>
</tr>
<tr>
<td>Proteins</td>
<td>Meat, milk, eggs, fish, legumes,</td>
</tr>
<tr>
<td>Fats, oils, lipids</td>
<td>Visible lipids; invisible lipids</td>
</tr>
<tr>
<td>Minerals</td>
<td>Milk, nuts, fish, vegetables, meat, table salt</td>
</tr>
<tr>
<td>Vitamins</td>
<td>Fresh fruits and vegetables</td>
</tr>
<tr>
<td>Fiber</td>
<td>Seeds, whole grain cereals, legumes, fruits</td>
</tr>
<tr>
<td>Water</td>
<td>Water, beverages, all food cooked in water</td>
</tr>
</tbody>
</table>
Unifying Concepts

- Good nutrition is integrally linked to healthy living for people with HIV infection
- Nutrition is vital for growth and development in children
- Nutrients are required for immune system function
- Poor nutrition may accelerate HIV disease progression
- HIV disease may worsen poor nutritional status
HIV and Nutrient Absorption

- Impaired nutrient absorption occurs during infection
- HIV infected individuals require 10-15% more calories/day
- HIV infected individuals require 50-100% more protein/day
Nutritional Impact of HIV

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

1. Factors that increase metabolic demands
   - HIV infection itself
   - Fever
   - Acute illness
2. Factors that decrease food intake
   – Mouth pain
   – Pain when swallowing
   – Nausea, abdominal pain
   – Diarrhea
   – Neurologic disease/dementia
Barriers………cont

3. Economic realities:
- HIV may affect ability to earn a living
- HIV may lead to loss of assets
- HIV may lead to disruption of social networks
Barriers to Nutrition

4. Environmental realities:
   - Famine
   - Socio-political events

These may prevent access to food and/or clean water
What can we do to help improve nutritional status given these obstacles?

- Assess which patients require more extensive nutrition management ("high risk" patients)
- Individualize nutrition care plans
What can we do to help improve nutritional status given these obstacles?

– Maximize food intake during HIV/AIDS related infections by diagnosing and treating the infection and counseling patients about which foods to eat

– Educate patients on ARV therapy about drug-food interactions
Nutritional assessment:

– Weigh patient at each visit
  • Record weight and body mass index (BMI) at each visit
  • Use growth curves to monitor infants and children
– Observe clinical condition
– Ask about food intake/hunger
– Ask about specific symptoms that may prevent food intake
Simple Nutritional Assessment

Mrs. S

<table>
<thead>
<tr>
<th>Visit</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>55kg</td>
<td>56kg</td>
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<tr>
<td>Hb Hemoglobin</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>200</td>
<td>200</td>
<td>200</td>
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</tr>
<tr>
<td>CD4</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
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</table>

ARVs initiated
Mrs. M

<table>
<thead>
<tr>
<th>Visit</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>7</th>
<th>8</th>
</tr>
</thead>
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<tr>
<td>Hb</td>
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<tr>
<td>CD4</td>
<td>350</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>260</td>
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</table>

Acute illness
High Risk Signs and Symptoms

- Appetite loss
- Weight loss
- Diarrhea
- Pain when swallowing (odynophagia)
- Difficulty swallowing (dysphagia)
- Dehydration
- Clinical signs of nutrient deficiency
- Loss of muscle mass.
Individualize the nutrition care plan

- Understand factors which may influence your patients’ ability to eat a sufficient diet
- Know what foods your patient population consumes and how the food is prepared
- Know what foods are locally available, palatable, affordable and can be realistically incorporated into the diet
Maximize food intake during acute infections

- Locally available foods that can be easily incorporated into the diet vary from region to region

- Try to provide patients with available nutrient dense foods that help alleviate their acute symptoms
Mr. L. is a 32-year old man whose partner and child are also enrolled in PMTCT. He has 180 CD4 cells and has been taking antiretroviral medications for four months. He comes to a routine clinical visit noting 2 weeks of diarrhea.

On clinical examination, he has lost 2 kgs and appears mildly dehydrated. He does not have a fever, abdominal pain, or blood in his stool.
Case Study 1

Why might Mr. L. have diarrhea?
– Medication side effect?
– Acute bacterial infection?
– Opportunistic infection?
– Other?
Possible Interventions

- Provide medication for the symptoms
  - Antimotility agents
  - Antibiotics (if acute bacterial infection suspected)
- Assess Mr. L’s current diet by reviewing food eaten in the past three days
- Assess access to clean water
- Provide information on food and water hygiene
- Suggest alternate locally available foods that help alleviate diarrhea
Maximizing Food Intake

- Loose bowels and diarrhea: patient counseling
  - Eat starchy foods such as bananas, soft rice, porridge, maize, sorghum, potato, cassava, and blended foods
  - For protein, eat eggs, chicken or fish
  - May need to reduce fresh dairy products until diarrhea subsides
  - Decrease high fat foods, boil and steam versus frying
Maximizing food intake 2

- Avoid caffeine (coffee and teas) and alcohol
- Drink liquids often to avoid dehydration (soups, fresh fruit juices, boiled water)
- Consume foods that help retain fluid such as millet, banana, peas and lentils
- Eat fermented foods such as yogurt
- Limit gas forming foods such as cabbage, onions, soda
Case Study 2

- Mrs. M is a 19 year-old woman with 50 CD4 cells. She comes to clinic without an appointment, complaining of one week of severe pain when she swallows.
- On examination, she is dehydrated and has oral candidiasis.
Maximizing intake during acute infections

- Provide medications for the underlying condition (e.g. oral/ esophageal candidiasis)
- Mouth or throat pain: patient counseling
  - Avoid foods that cause pain (e.g. citrus, spicy)
  - Avoid very sweet foods
  - Drink high-energy, high-protein liquids with a straw, if possible
  - Eat foods at room temperature or cooler
  - Eat thick, smooth foods such as porridge, pudding, mashed potatoes and carrots or non-acidic fruits and vegetables
Case Study 3

- Miss R is a 17 year-old with 20 CD4 cells. She started antiretroviral medications two weeks ago and returns for an “ARV initiation” visit complaining of nausea. The nausea is mild and has not prevented her from eating her usual diet.

- On examination, she is well-hydrated without abdominal tenderness. She has not lost weight and does not have a fever.

- Why might she be nauseated?
Maximizing intake during acute infections

- Nausea and vomiting: patient counseling
  - Eat small snacks throughout the day
  - Avoid large meals
  - Eat toast and other plain dry foods
  - Avoid foods that have a strong aroma
  - Drink diluted fruit juices, liquids, soup
  - Eat simple boiled foods such as porridge, potato, beans
  - Drink herbal teas and lemon juice in hot water
  - If available, drink ginger root: crush ginger in cold water, boil in water for 1 minute, place in covered container, strain ginger and drink liquid
Maximizing intake during acute infections 2

- Fever and loss of appetite: patient counseling
  - Drink high-energy, high-protein liquids and fruit juices such as soups, maize, potatoes, carrots, and nectars
  - Eat small portions of soft, preferred foods with a pleasing aroma and texture throughout the day
Maximizing intake during acute infections 3

- Frequent small feeds or fruits in between meals.
- Drink liquids often e.g.; fruit juices, milk, soup, tea, cocoa etc
Summary

- Malnutrition can contribute to and result from progression of HIV disease
- A nutrition action plan that includes a surveillance system, individualized care plans, food-related symptom management guidelines and food-drug related information may have positive effects on:
## How to Maximize Food Intake During and Following Common HIV/AIDS-related Infections

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Suggested Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever and loss of appetite</td>
<td>Drink high-energy, high-protein liquids and fruit juice</td>
</tr>
<tr>
<td></td>
<td>Eat small portions of soft, preferred foods with a pleasing aroma and texture throughout the day</td>
</tr>
<tr>
<td></td>
<td>Eat nutritious snacks whenever possible</td>
</tr>
<tr>
<td></td>
<td>Drink liquids often</td>
</tr>
<tr>
<td>Sore mouth and throat</td>
<td>Avoid citrus fruits, tomato, and spicy foods</td>
</tr>
<tr>
<td></td>
<td>Avoid sweet foods</td>
</tr>
<tr>
<td></td>
<td>Drink high-energy, high-protein liquids with a straw</td>
</tr>
<tr>
<td></td>
<td>Eat foods at room temperature or cooler</td>
</tr>
<tr>
<td></td>
<td>Eat thick, smooth foods, such as pudding porridge, mashed potato, mashed carrots or other non-acidic vegetables and fruits</td>
</tr>
<tr>
<td>Symptom</td>
<td>Suggested Strategy</td>
</tr>
<tr>
<td>-----------------------------</td>
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</tr>
</tbody>
</table>
| Nausea and vomiting         | Eat small snacks throughout the day and avoid large meals  
                                Eat crackers, toast, and other plain, dry foods  
                                Avoid foods that have a strong aroma  
                                Drink diluted fruits juices, other liquids, and soup  
                                Eat simple boiled foods, such as porridge, potato, beans |
| Loose bowels                | Eat bananas, mashed fruits, soft rice, porridge  
                                Eat smaller meals, more often  
                                Eliminate dairy products to see if they are the cause  
                                Decrease high-fat foods  
                                Don’t eat foods with insoluble fiber (“roughage”)  
                                Drink liquids often |
| Fat malabsorption           | Eliminate oils, butter, margarine, and foods that contain or were prepared with them  
                                Eat only lean meats  
                                Eat fruits and vegetables and other low-fat foods |
## Practical Suggestions

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Suggested Strategy</th>
</tr>
</thead>
</table>
| Severe diarrhea         | Drink liquids frequently  
                          Drink oral rehydration solution  
                          Drink diluted juices  
                          Eat bananas, mashed fruits, soft, rice porridge |
| Fatigue, lethargy       | Have someone pre-cook foods to avoid energy and time spent in preparation (care with reheating)  
                          Eat fresh fruits that don’t require preparation  
                          Eat snack foods throughout the day  
                          Drink high-energy, high-protein liquids  
                          Set aside time each day for eating |

Adapted from Woods (1999)
Recommendations for Nutrition Care and Support for Children with HIV/AIDS
Support for Children with HIV/AIDS

- Provide well-baby care and monitor growth of all children born to HIV-infected mothers.
- Follow the same nutritional recommendations as for all young children.
- Feed young children patiently and persistently with supervision and love.
- Introduce solid foods gradually to match the age and developmental characteristics of the child.
Children, continued

- Ensure that the young child’s diet contains as much variety as possible to increase the intake of essential vitamins and minerals
- Follow the same recommendations offered to adults for safe and hygienic practices and for feeding during and following acute infections
Children, continued

Take the following guidelines into consideration:

- Monitor body weight, height, arm circumference, and triceps skin fold regularly.
- Review the child’s diet at every well-child and sick-child health visit.
- Provide immunizations and give prophylactic vitamin A supplements, according to local guidelines.
- Promptly treat all secondary infections, such as tuberculosis, oral thrush, persistent diarrhea, and pneumonia.
- Many HIV-infected children are likely to become severely malnourished.
Breastfeeding

- Safer breastfeeding:
  - Immediate, exclusive, good latch-on
  - Avoid cracked nipples & engorgement
  - Practice safer sex
  - Avoid mixed feeding

- Modified breastfeeding:

**NB:** If mother does not meet the AFASS criteria then she should breastfeed baby beyond 6 months.
Replacement feeding

- In combination with ARVs for PMTCT
- Key requirements:
  - Access to clean water (Ready formula)
  - Adequate sanitation
  - Adequate supplies of milk
  - Good personal hygiene
  - Affordable nutritious complementary feeds
Types of replacement feeds

- Infant formula
- Home modified animal milk
  - 2 portions milk, 1 water, sugar to taste
  - initial 1-3 months
- Formula feeding preferred if financially sustainable.
Summary of the dietary action for PLWHA

1. Have periodic nutritional status assessments.
2. Increase energy needs.
3. Maintain high levels of sanitation.
4. Practice positive living behaviors.
5. Physical activity or exercise.
Summary continued

6. Drinking plenty of clean safe water
7. Seek prompt treatment for all OIs
8. Manage drug-food interactions and side effects by following the drug-food schedule
9. Supplementation of Vitamin A.