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ANNEX 1: MACRONUTRIENTS AND MICRONUTRIENTS NEEDED BY THE BODY

Macronutrients (Nutrients required in large amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTOMS
Protein	Beef, game meat, pork, fish, poultry, beans, dried peas, groundnuts, edible insects, e.g., ifinkubala (caterpillars), inswa. Milk and milk products, eggs, Soya beans, dried mushrooms.	<ul style="list-style-type: none"> ● Provide necessary materials for building, repair and maintenance of the body's tissues. ● Develop the immune system and resistance to infections. 	<ul style="list-style-type: none"> ● Protein Energy Malnutrition ● Marasmus (wasting), Kwashiorkor ● Anaemia, failure to thrive (failure to grow)
Carbohydrates	Maize meal, millet meal, sorghum meal and cassava meal, rice, potatoes, sweet potatoes, cassava, bread, sugar, yams	<ul style="list-style-type: none"> ● Provide energy to the body ● Fibre in carbohydrates prevents constipation, coronary heart disease and diabetes. ● Soluble fibres are also used in diarrhoea treatment. 	<ul style="list-style-type: none"> ● Protein Energy Malnutrition ● Marasmus (wasting), Kwashiorkor ● Anaemia ● Failure to thrive (failure to grow)
Fats	Edible insects e.g. Inswa, Tunkubyu, matingatila, cooking oil, margarine, cream, peanut butter, groundnuts, avocado pear.	<ul style="list-style-type: none"> ● Source of energy and heat ● production, therefore important for weight gain. ● Aids absorption and transportation of fat. 	<ul style="list-style-type: none"> ● Marasums (wasting) ● Skin problem ● Anaemia ● Hypothermia (excessively feeling cold in the body, hands and feet).

ANNEX 1:

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

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTOMS
Vitamin A	Carrots, eggs, liver, mangoes, papaya, pumpkins, green leafy vegetables, yellow sweet potatoes, red palm oil, full-cream milk (when fortified), cheese, butter, amaranthus (Ibondwe), cassava leaves (katapa), cowpea leaves, sweet potatoes leaves (kalembula), turnip, wild fruits Zambian household sugar, fortified maize meal .e.g. National Milling	<ul style="list-style-type: none"> ● White blood cells formation. ● Good eyesight ● Healthy skin. ● Bone development. ● Antioxidant. Needed for the immune function and resistance to infection 	<ul style="list-style-type: none"> ● Dry eye, skin and hair. ● Prone to problems. ● Blindness ● Skin and infections.
Vitamin B1 (Thiamine)	Whole-grain cereals, meat, beef kidney, poultry, fish, liver, milk, eggs, oil, seeds and legumes, bambara groundnuts, soya, cashew nuts, cowpeas, pork.	<ul style="list-style-type: none"> ● Used in energy production. ● Promotes appetite. ● Supports the central nervous system. 	<ul style="list-style-type: none"> ● Beri-beri (enlargement of the nerves, loss of weight, oedema, disturbances in the functions of the heart). ● Loss of appetite, Nausea; Tiredness, Numbness of the hands and feet.

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTOMS
Vitamin B2 (Riboflavin)	Milk, eggs, liver, meat, fish, yoghurt, green leaves, whole-grained and legumes, amaranthus, okra leaves.	<ul style="list-style-type: none"> ● Energy production. ● Supports vision. ● Healthy skin. 	<ul style="list-style-type: none"> ● Cracking of the mouth corners, ● Cracked lips, ● Rough skin.
Vitamin B3 (Niacin)	Milk, eggs, meat, poultry, fish, peanuts, whole-grained cereals, unpolished rice, cassava, potatoes, sweet potatoes, yam, beans, soya, cowpeas, bambara groundnuts, groundnuts, cashew nuts, pumpkin seeds, carrots, cauliflower, cowpea leaves, eggplant, mushrooms, okra, pepper, caterpillar, pork, sweet potato leaves, avocado, guava, mango, pawpaw.	<ul style="list-style-type: none"> ● Energy production ● Healthy Skin 	<ul style="list-style-type: none"> ● Pellagra (darkening of the skin which is mostly exposed to sun, scaly skin, Diarrhoea, confusion and vomiting. In some cases, the tongue is red and sore.) ● Dementia (loss of memory)
Vitamin B6	Legumes (white beans), potatoes, meats. Fish, poultry, shellfish, watermelon, oil seeds, maize, avocado, broccoli, green leafy vegetables, pepper, banana, groundnuts, Soya, liver	<ul style="list-style-type: none"> ● Breakdown of proteins and fats. ● Production of antibodies, red blood cells protein and nerve transmitters. 	<ul style="list-style-type: none"> ● Anaemia; ● Tiredness ● Irritability; ● Depression ● Dizziness, ● Muscle twitching ● Nerve problems

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTOMS
Vitamin B12	Meat, fish, poultry, cheese, eggs, milk, liver.	<ul style="list-style-type: none"> ● Formation of red blood cells and white blood cells. ● Maintains the nerves and the digestive tissues. 	<ul style="list-style-type: none"> ● Anaemia, tiredness. ● Confusion, Numbness, Nerve problems, Memory problems ● Ringing in ears.
Vitamin C	Guava, oranges and lemons; cabbage, green leaves, tomatoes, peppers, potatoes, yams, cooked plantains, wild fruits.	<ul style="list-style-type: none"> ● Helps the body to use calcium and other nutrients to build bones and the walls of blood vessel. ● Increases non-heme iron absorption ● Increases resistance to infections ● Acts as an antioxidant. ● Important for protein metabolism. 	<ul style="list-style-type: none"> ● Scurvy (bleeding of the gums) ● Gingivitis (bleeding, sore and inflamed gums) ● Stomatitis (sores on corners of the mouth) ● Anaemia

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTOMS
Folic Acid	Liver, green leafy vegetables such as kalebwe/kalembula, chibwabwa, Katapa, ibondwe, fish, pork, kidneys, legumes, groundnuts, oil seeds	<ul style="list-style-type: none"> ● For healthy teeth, gums, and bones. ● fights infections ● Helps iron absorption, ● Works as an antioxidant 	<ul style="list-style-type: none"> ● Bleeding gums, Slow hearing ● Prone to infections; Anaemia, ● Muscle and joint pains ● Frequent colds; Depression
Vitamin E	Green and leafy vegetables, vegetable oils and wheat germ. Whole-grain products butter, liver, egg yolk, peanuts, milk fat, nuts, seeds.	<ul style="list-style-type: none"> ● Increases disease resistance ● Enhances reproduction ● Slows ageing process ● Treats scar tissue ● Antioxidant 	<ul style="list-style-type: none"> ● Tiredness, Dry hair ● Leg cramps, Muscle weakness ● Nerve problems, Hearing problems ● Infertility, Impotence
Calcium	Milk, yogurt, cheese, green leafy vegetables, broccoli, dried fish with bones that are eaten, legumes, peas.	<ul style="list-style-type: none"> ● Building strong bones and teeth ● Normal functioning of the heart muscle ● Helps in blood clotting ● Helps to maintain normal blood pressure 	<ul style="list-style-type: none"> ● Delayed blood clotting. ● Weak breakable bones ● Problem teeth ● Low resistance to infection ● Rickets (weak bones and are easily bent and deformed. This is very common in children) ● Stunting

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTOMS
Iodine	Seafood, iodated salt.	<ul style="list-style-type: none"> ● Development and proper functioning of the brain and the nervous system ● Important for normal growth and development ● Important for reproduction. 	<ul style="list-style-type: none"> ● Goitre (swelling on the neck) ● Cretinism (imbecile) ● Impaired brain function ● Dwarfism (gross stunting) ● Abortions
Zinc	Meats, fish, poultry, shellfish, whole grain cereals, legumes, peanuts, milk cheese, yogurt, vegetables.	<ul style="list-style-type: none"> ● Protects immune system needed for digestive and immune systems ● Formation of Enzymes ● Wound healing ● Vitamin A metabolism ● Normal development of male organs ● Antioxidant 	<ul style="list-style-type: none"> ● Slow growth ● loss of smell and taste ● Loss of appetite ● Diarrhoea, Poor wound healing ● Skin problems, Ringing in ears ● Prostate cancer
Selenium	Brown rice, nuts, whole grain, onions, garlic egg Yolk, milk, meat, sea food.	<ul style="list-style-type: none"> ● Prevents oxidation and breakdown of fat and other body cells. ● Antioxidant 	<ul style="list-style-type: none"> ● Weakness ● Pancreatitis (blockage of the pancreatic ducts), Impaired growth ● Impaired hearing, Faster HIV disease progress and reduced survival ● Impaired immune system

ANNEX 1:

Micronutrients (Nutrients required in smaller amounts in the body)

NUTRIENT	SOURCE OF FOOD	FUNCTION / ROLE	DEFICIENCY, SIGNS AND SYMPTOMS
Magnesium	Legumes, nuts, seeds, whole grains, avocado, green leafy vegetables, e.g. okra, broccoli, cucumber skin, sea food	<ul style="list-style-type: none"> ● For muscle and nerve function ● Release of energy from fats, proteins and carbohydrates. ● Strong bone and teeth 	<ul style="list-style-type: none"> ● Spasms (twitching of muscles) ● Cramps, Tremors ● Constipation
Iron	Main sources are red meat, liver, fish, poultry, and shellfish. Other sources include eggs, legumes, nuts including peanuts .	<ul style="list-style-type: none"> ● Needed for oxygen exchange in blood ● Needed by enzymes. ● Vitamin C is important for absorption of iron ● Energy production 	<ul style="list-style-type: none"> ● Anaemia, Headache ● Tiredness, Irritability ● Paleness, Dizziness ● Decreased mental Alertness

Adapted from NZP+, 2002

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

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

ANNEX 2:

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

ANNEX 3: SUMMARY OF NUTRITIONAL ASSESSMENT FOR PLWHA

<p>Nutrition History</p>	<ul style="list-style-type: none"> ● Dietary intake and adequacy, eating habits ● Food intolerances and aversions related to symptoms ● Dietary problems: poor appetite, difficulty chewing and swallowing, gastrointestinal problems, pain in mouth and gums) ● Sanitation and hygiene practices in food preparation and handling ● Psychosocial factors contributing to inadequacy of intake e.g. social isolation, depression, stigma, inability to prepare food) ● Fatigue and physical activity ● Use of vitamin and mineral supplements or alternative practices ● Knowledge about food and nutrition issues
<p>Physical Assessment</p>	<ul style="list-style-type: none"> ● Anthropometric measurements: height, weight, ● Body mass index: weight/height². A body mass index of <18.5 indicates nutrition risk ● Evidence of loss of muscle mass (wasting); mid-upper arm circumference (<23cm indicates nutrition risk) ● Oral or Pharyngeal inflammation ● Pallor (inner eyelids and palms) ● General malaise (weakness)
<p>Medical History</p>	<ul style="list-style-type: none"> ● Gastrointestinal problems (diarrhoea, abdominal pain, nausea, vomiting) ● Pattern of bowel movements (constipation, diarrhoea) ● Presence of opportunistic infections ● Concurrent medical problems (e.g. diabetes, hypertension, Tuberculosis, malaria)
<p>Medication Profile</p>	<ul style="list-style-type: none"> ● Drug use (antiretrovirals, alternative therapies and other medications) ● Medication side effects with nutrition implications ● Nutrition-medication interactions and traditional herbs or medicine interactions

ANNEX 3:

Laboratory data (where available)	<ul style="list-style-type: none">● Serum albumin● Serum retinol● CD4 and viral load counts● Evaluation of anaemia (haemoglobin, iron, folate, vitamin B-12 status)● Parasites e.g. worms
Psychosocial profile	<ul style="list-style-type: none">● Living environment and functional status (income, housing, amenities to cook, access to food, attitude regarding nutrition and food preparation)● Lifestyle practices (smoking, alcohol and drug abuse)● Age● Family support system● Educational level

ANNEX 4: COMMON SIGNS AND SYMPTOMS AND DIETARY MANAGEMENT

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Diarrhoea	<p>Loose watery stools, more frequent than usual.</p> <p>Check stool for infections and get treatment when accordingly</p> <p>Dehydration</p> <p>Weight loss</p>	<ul style="list-style-type: none"> ● Bacteria or viral and fungal infections ● Effects of the HIV itself on the gut ● Food poisoning ● Drugs or medications (esp. antibiotics) ● Poor absorption of and intolerance to nutrient e.g. lactose and sugar. 	<ul style="list-style-type: none"> ● Drink sufficient fluids such as water, diluted and unsweetened fresh fruit juices. ● Drink an ORT solution if the diarrhoea is severe. ● Eat salty foods e.g. soup, or add extra salt to meals. Once diarrhoea stops, follow normal intakes. ● Eat small frequent meals. ● Eat fermented foods like maheu, sour porridge ● Decrease fatty and fried foods in the diet, instead steam or boil foods ● If milk and dairy products cause cramps try using fermented products like yoghurt ● Include soluble fibre (pectin) by eating foods like bananas, peeled apples and pears, oats, carrots, pumpkin, paw-paw, potatoes. ● Avoid insoluble fibre like in whole grain foods and beans ● Avoid caffeine (tea/ coffee) and alcohol

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Fat Intolerance	Steatorrhea (fat in the stool) Foul smelling, frothy and floating stools	<ul style="list-style-type: none"> ● Malabsorption of fat ● Incomplete digestion of fat ● Malnutrition 	<ul style="list-style-type: none"> ● Include more fruits and vegetables in the diet ● Bake, boil, steam or roast food ● Trim all visible fat from meat and remove skin from chicken before cooking ● Eliminate use of oils, butter, margarine in food preparation and avoid foods that contain or are prepared with them ● Avoid fatty foods such as potato chips, butter/margarine, mayonnaise and cream ● Avoid deep fried and greasy foods ● Eat smaller, more frequent meals spaced out evenly throughout the day. ● Take a daily multivitamin, if available
Taste Changes	Food does not taste normal or pleasant Metallic taste Food tasting too sweet or too salty	<ul style="list-style-type: none"> ● Stress ● Side effects of medications ● Common cold ● Flu ● Malaria 	<ul style="list-style-type: none"> ● Add a variety of seasonings to food to give more flavour . ● Try different textures and varieties of food ● Try rinsing out the mouth after meals.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			<ul style="list-style-type: none"> ● Use lemon, raw tomatoes or tonic water to stimulate taste buds. ● Chew food well and move around mouth to stimulate taste buds
<p>Nausea and Vomiting</p>	<p>Loss of appetite, Dehydration Weight loss</p>	<ul style="list-style-type: none"> ● Side effect of medications ● Infections ● Food with strong aromas ● Food intolerances 	<ul style="list-style-type: none"> ● Take small frequent meals. ● Avoid having an empty stomach which makes the nausea worse ● Cool or cold meals are better tolerated than hot. ● Take diluted and unsweetened fruit juice, especially lemon. ● Try dry, salty, and bland foods such as dry bread or toast or other plain dry foods and boiled foods ● Do not lie down immediately after eating; wait 1-2 hours ● Avoid greasy, or fried foods ● Avoid taking fluids with meals rather taken them between meals. ● Avoid coffee and alcohol

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			<ul style="list-style-type: none"> ● Suck on a lemon the sour taste can help to reduce nausea or squeeze lemon into the water you are drinking. ● Avoid foods with strong or unpleasant smell. ● If vomiting, drink plenty of fluids to replace lost fluids and prevent dehydration
<p>Fatigue (lethargy)</p>	<p>Poor performance loss of concentration, general malaise.</p>	<ul style="list-style-type: none"> ● Illness ● Stress ● Depression 	<ul style="list-style-type: none"> ● Have someone else to prepare food for the patient. This will help the patient conserve energy ● Eat smaller more frequent meals and snacks throughout the day ● Eat foods that are easy to prepare and easy to chew. ● Drink high protein, high energy liquids e.g. High Energy Milk (egg flip), <i>maheu</i>, <i>chibwantu</i>, etc. ● Try to eat at the same time each day ● Exercise as able to increase energy

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Muscle Wasting	Loss of subcutaneous fat Weight loss	<ul style="list-style-type: none"> ● Infections ● Poor quality and /or inadequate diet 	<ul style="list-style-type: none"> ● Eat balanced meals regularly and include a source of protein with each meal. ● Eat high protein snacks between meals e.g. roasted peanuts, boiled eggs, ● Exercise regularly to increase lean body mass and appetite. ● Increase nutrient density of foods without visibly increasing the volume of the meal by adding peanut butter, skimmed milk powder, or eggs in soups or porridge. ● Use and/or add fat and oil to food and in cooking if tolerated.
Fever	High temperatures, fast breathing, dry mouth, looking ill, feeling lethargic.	<ul style="list-style-type: none"> ● Infection 	<ul style="list-style-type: none"> ● Eat high energy, high protein meals ● Drink plenty of fluids e.g. milk, soups, sour milk, <i>maheu</i>, <i>chibwantu</i>, <i>munkoyo</i>. ● Add snacks between meals ● Eat small frequent meals as tolerated

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Heartburn/Bloatedness or fullness	Feeling of fullness, discomfort or pain, after eating.	<ul style="list-style-type: none"> ● Indigestion ● Antibiotics ● Some anti-inflammatory drugs ● Some gas forming or cold foods. ● Constipation ● Very spicy foods ● Very fatty foods 	<ul style="list-style-type: none"> ● Eat small frequent meals. ● Eat slowly and try not to talk while chewing. ● Drink fluids an hour before or after a meal. ● Avoid lying down immediately after eating wait 1-2 hours ● Eat long before you plan to go to sleep. ● Exercise ● Avoid gas-forming foods that are associated with cramping and bloating such as beans, cabbage, eggplant, onions, green peppers ● Avoid carbonated drinks ● Avoid greasy, deep-fried, and/or spicy foods.
Candida/thrush/mouth sores	<p>Candida manifests as white patches in the mouth and/or throat. Difficulty chewing and swallowing. Pain chewing and swallowing</p> <p>NB: Candida can also affect the vagina.</p>	<ul style="list-style-type: none"> ● Infection ● Weakened immune system ● Antibiotic therapy 	<ul style="list-style-type: none"> ● Eat soft, pureed, or moist foods such as scrambled eggs, custard, mashed potatoes, mashed carrots, pureed pumpkin, paw-paws, or porridge. ● Eat fermented food like maheu, Munkoyo, lacto (mabisi), yoghurt that help to relieve oral thrush. ● Suck a lump of ice or have an ice cold drink before a meal.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			<ul style="list-style-type: none"> ● Practice good oral hygiene. Rinse mouth daily to prevent thrush with 1-teaspoon baking soda mixed in a glass (250ml) of warm water. Do not swallow the mixture. ● Drink liquids with a straw to ease swallowing. ● Avoid sticky or dry foods such as peanut butter. ● Avoid sweet or sugary food and drinks ● Avoid hot foods; eat foods at room temperature cold food can be soothing. ● Avoid acidic food e.g. citrus fruit, vinegar and spicy, and very salty foods. ● Avoid alcohol
Cold, flu and Coughs.	sneezing, coughing, runny or blocked nose, sore throat	<ul style="list-style-type: none"> ● Infection ● Allergies ● Tuberculosis 	<ul style="list-style-type: none"> ● Take high protein, high-energy fluids e.g. <i>maheu</i>, <i>chibwantu</i>, milk and egg flip. ● Eat smaller more frequent meals ● Eat fruit and/or drink fruit juices. ● Cut an onion into small pieces and keep it by the bedside. The onions stimulate secretions and will keep the airway moist thus soothing them.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
			<ul style="list-style-type: none"> ● Sprinkle sugar onto an onion that has been cut into pieces and let it soak in to make syrup. Drink it slowly. This helps to soothe the throat. ● Drink ginger and cinnamon tea or make hot ginger compresses for the chest. ● Avoid very cold foods and drinks
Anorexia (loss of appetite)	No desire to eat food Weight loss malnutrition	<ul style="list-style-type: none"> ● Chronic infection ● Side effects of medications ● Malnutrition ● Monotonous meals ● Stress, anxiety and depression ● Noxious smell and odours 	<ul style="list-style-type: none"> ● Eat small frequent meals, throughout the day ● Eat nutritious snacks between meals. ● Take walks before meals the fresh air helps to stimulate appetite ● Avoid smoking. It reduces appetite. ● Avoid preparing meals or staying in the kitchen while food is being prepared. The smell can bring on a sense of satiety. Have family or friends assist with food preparation

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Anaemia	<ul style="list-style-type: none"> ● Feeling tired and weak ● Paleness in the eyes, tongue, palms and nail beds. 	<ul style="list-style-type: none"> ● Lack of iron in diet ● Infections such as malaria and hookworms ● Blood loss due to an injury or monthly periods /menses 	<ul style="list-style-type: none"> ● Eat more iron-rich foods, such as animal products (eggs, fish, meat and liver), green leafy vegetables (rape, chibwabwa, katapa, lbondwe, kalebwe bean leaves and spinach and fortified cereals e.g. National milling maize meal etc. ● Take Iron supplements, if recommended by the doctor. Best if taken with a source of vitamin C such as tomatoes, oranges or orange juice or any other fruits to help absorb iron. ● Avoid drinking tea or coffee with meals.
Tuberculosis	<ul style="list-style-type: none"> ● Cough lasting more than three weeks ● Feeling feverish and sweating at night. ● Spitting blood. 	Caused by the bacteria <i>mycobacterium avium</i> that infects the lungs	<ul style="list-style-type: none"> ● Eat small frequent meals ● Consume foods high in protein, energy, iron and Vitamins. ● Consult medical personnel about taking food with medications. ● If taking Isoniazid for treatment, take Vitamin B6 supplement to avoid deficiency of this micronutrient.

ANNEX 4:

Food Related Problems	Signs and Symptoms	Causes	Dietary Management
Constipation	Irregular passage of stool. Passing of very hard and small stool.	<ul style="list-style-type: none"> ● Eating highly processed/ refined foods. ● Inadequate intake of foods high in fibre. ● Side effect of some medications. 	<ul style="list-style-type: none"> ● Eat more foods that are high in fibre content such as fresh maize, roller meal, whole meal bread, vegetables and fruits. ● Avoid processed or refined foods. ● Avoid using cleansing practices such as enemas and laxatives. ● Drink plenty of fluids including boiled water. ● Exercise as much as possible

ANNEX 5: HINTS FOR POSITIVE LIVING FOR PLWHA

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

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

ANNEX 6: FOOD AND NUTRITION IMPLICATIONS OF ARVS

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

ANNEX 6:

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

ANNEX 6:

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

ANNEX 6:

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

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

ANNEX 7: COMMONLY USED HERBS AND SPICES

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

ANNEX 7:

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

ANNEX 7:

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

ANNEX 7:

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

ANNEX 7:

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

ANNEX 7:

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

ANNEX 7:

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

ANNEX 7:

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

ANNEX 7:

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

ANNEX 7:

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

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

Component	Objective	Indicators	Proposed data collection method
Dissemination	To assess the effectiveness of the dissemination strategies.	<ul style="list-style-type: none"> ● Percentage / proportion of the target groups / organizations with access to the copies of the guidelines. ● Percentage / proportion of target group(s) who are aware of the existence of the guidelines. ● Number of strategies used to disseminate the guideline and recommendation. ● Number of additional guideline support materials developed and distributed. 	Review of records and community based sample survey.
Implementation	To incorporate and put in practice the guideline recommendation in the on-going programs and services.	<ul style="list-style-type: none"> ● Number of health programs and service points implementing nutrition care services for PLWHA. ● Number of staff charged for nutritional care services. 	Review of records and community based sample survey.

ANNEX 8:

Component	Objective	Indicators	Proposed data collection method
		<ul style="list-style-type: none"> ● Number of training institutions with nutritional care sessions incorporated in their training program. ● Number of training sessions organized for service providers at different levels. ● Number of service providers trained on nutritional care services for PLWHA. ● Range of implementation strategy done to facilitate uptake of the guidelines. ● Number of PLWHA receiving nutritional care services 	
<p>Behaviour change among Provider and patients/ clients/ families</p>	<p>To assess the acceptance of the guidelines by the providers and clients.</p>	<ul style="list-style-type: none"> ● Proportion of providers expressing willing to adopt or continue implementing guideline recommendations. 	<p>Sample survey and observation.</p>

ANNEX 8:

Component	Objective	Indicators	Proposed data collection method
		<ul style="list-style-type: none"> ● Proportion of providers and patient awareness of nutrition guidelines ● Level of attitude by provider and clients towards nutritional care guidelines. ● Proportion of PLWHA practicing nutritional care guidelines 	
<p>Health outcome of PLWHA</p>	<p>To monitor the health effects of nutritional care and support guidelines</p>	<ul style="list-style-type: none"> ● Proportion of PLWHA receiving nutritional care services who have maintained weight and or gained weight ● Rate of opportunistic infections among PLWHA on Nutritional Care services. 	<p>Longitudinal Sample survey and observation.</p>

Nutrition Guidelines for Care and support of people living with HIV/ AIDS



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