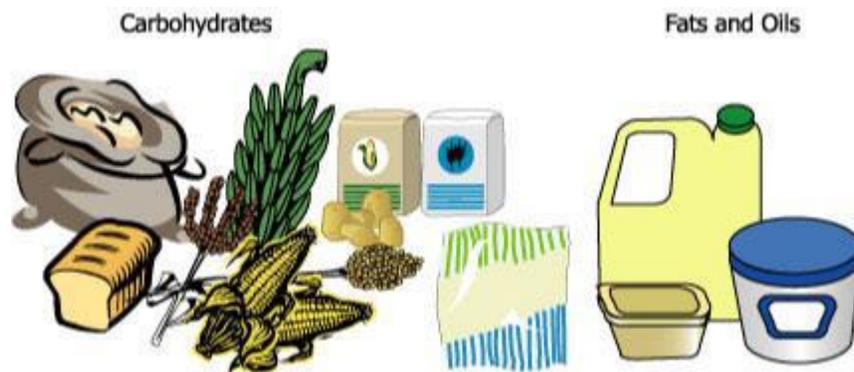
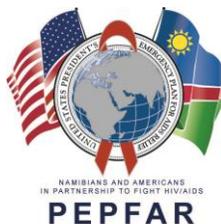


# Nutrition Curriculum for Kitchen Corner Activities

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## **Chapter I: Introduction**

### **Session objectives:**

- Define common nutrition terms
- Understand the importance of balanced diet in HIV patients

### **1. Background of Kitchen corner Activities**

As in many sub Saharan countries, Namibia bears a large burden of HIV and currently 80% of patients in need of Highly Active Antiretroviral Therapy are on treatment, of which 64% are women and 16% are children (National Guidelines for Antiretroviral Therapy, 2010). Since the beginning of the epidemic, the number of people who died due to HIV/AIDS is estimated at more than 120,000 and by the end of the financial year 2011/2012 alone, an estimated 5, 000 adults and children died as a result of HIV/AIDS (Estimates and Projections of the Impact of HIV and AIDS in Namibia, 2012). According to the 2012 National Sentinel survey, the Namibian HIV prevalence rate is 18.2% and Oshikuku is above the national prevalence rate which is 24.7% (National Sentinel Survey, 2012). At the same time, the national poverty rate is 28.7% with seven regions including oshikoto (44.2%), having poverty rate above the national rate and Omusati is having a poverty rate of 19.1%. The poverty rate for children is 24.5% and 8% in Oshikoto and Omusati respectively (Child Poverty in Namibia, 2012). HIV and nutrition are intimately linked HIV infection can lead to malnutrition, while unbalanced diet can in turn speed the HIV progression.

A balanced diet is therefore essential to inhibit HIV progression in people infected with the HIV virus. Hence, since 2009, IntraHealth initiated kitchen corner activities in Oshikuku and Onandjokwe for lactating mothers and parents/guardians of HIV infected children. Rehoboth joined the two facilities in 2012. The package of kitchen corner activities include education on locally available balanced diet, demonstrations of food preparations and encouraging caregivers/mothers of HIV infected children and lactating mothers to have home vegetable garden to meet also the need of a balanced diet

## **2. Why Nutrition is so important in HIV infected individuals**

The risk of mortality in patients on Highly Active antiretroviral therapy (HAART) increases with low body mass index (BMI). Hence improving the patients' BMI through provision of food supplements such as the ready-to-use fortified spreads and fortified-blended foods are paramount. (World Food Programme, 2010)

According to Unicef (2012), the weight loss and low micronutrient levels in adults living with HIV are associated with increased progression towards AIDS. A balanced diet with appropriate micronutrients is a key to prevent progression of HIV to AIDS.

The Ahoua et al's (2013) study conducted among malnourished HIV Positive adults (BMI < 17kg/m<sup>2</sup>) aged 15 years or older and 18 years or older in Kenya and Uganda respectively revealed that of the 1106 patients who received four sachets of RUTF per day and assessed 2 weeks or one month before renewal (follow-up for 4 months), 47.4% patients were considered cured (BMI ≥ 18kg/m<sup>2</sup>). Nutrition prevents progression of HIV to AIDS for almost 50 % of severely malnourished HIV patients.

In addition to the above, Mahlungulu, Grobler, Visser & Volmink (2013) reviewed 8 trials on Nutritional interventions to reduce morbidity and mortality in patients living with HIV. The review revealed that macronutrient supplementation (with or without counseling) significantly improved calories and protein intake. Thus, nutritional supplementation improves nutrition of HIV patients and is therefore encouraged.

A balanced diet and well-nourished PLHIV will improve their BMI, by doing so the progression of HIV will be prevented. This will therefore improve the quality of life of people living with HIV/AIDS.

### 3. Definition of terms

- **Food:** Is anything edible that provides the body with nutrients to function properly
- **Nutrition:** How the body takes in, absorbs and uses food to grow, work, play, keep health and prevent infections
- **Poor nutrition:** Having too little or too much nutrients
- **Good nutrition:** Eating a variety of foods in right amounts
- **Balanced diet:** Eating at least 3 meals and 2 snacks in a day from each food group
- **Malnutrition:** Nutritional disorder from an unbalanced, insufficient, or excessive diet or from impaired, absorption, or use of foods
- **Under-nutrition:** Malnutrition caused by an inadequate food supply or an inability to use the nutrients in food
- **Over-nutrition:** More energy and nutrients than the body needs over time
- **Obesity:** Abnormal increase in the proportion of body fat

## **Chapter II: Balanced Diet**

### **Session Objectives**

- List foods from each food group, and at least one nutrient that each food contains
- Identify locally available foods from each food group
- Identify important vitamins, minerals and their function

A balanced diet consists of calories, proteins, fats and vitamins/micronutrients. It is also called healthy diet that promotes healthy lifestyle and gives energy to the body in order to prevent weight loss.

### **1. Calories**

A calorie represents a unit of energy that comes from the foods one eats. Calories are of paramount importance in a person diet because they determine whether one gains weight, loses weight or maintains weight. In addition, both the total number of calories that a person consumes can impact on health. Calories provide the energy that fuels a person cells.

The overall health of a person is determined by the caloric balance. Most people are in constant metabolism and physical activities, which need calories. When the number of calories that a person takes, matches the number of calories burnt through metabolism and physical activity, he/she is in caloric balance. When a person consumes more calories than used, he/she is in caloric excess that could lead to weight gain. In contrast if a person burns more calories that consumed, he/she is in caloric deficit that can lead to weight lost.

The carbohydrates, proteins and fats are sources of calories or energy. The amount of energy produce when one gram of proteins, carbohydrates and fats is burnt is known as its calorific value. The calorific value of each of these food elements is as follow: (1) carbohydrates = 4 calories, (2) Protein = 4 calories, (3) Fat = 9 calories.

The carbohydrates are the main source of energy for the human body. They form an essential source of energy (Glucose) when broken down. The glucose is not only essential source of energy, but also maintains tissue protein. The brain and central nervous system depend solely on the glucose for their energy requirements.

The carbohydrates are found in the following foods among others: whole-grain cereals (maize, millet, sorghum, rice and wheat) or starchy roots (potatoes and sweet potatoes). Other forms of carbohydrates include breads, pasta, corn, beans, potatoes, fruits, vegetables, milk products. These foods constitute 50% of the calorie requirements of the human body. It is recommended that carbohydrates should contribute 60-70 % of the total calories in a day's diet.

Carbohydrates are the main source of calories, therefore, people living with HIV, should increase the consumption in these foods in order to provide the body with the extra energy it needs to fight infections and prevent weight loss. Carbohydrates should be mainly eaten in the form of staple foods, legumes, fruits and vegetables, and less often in the form of simple sugars.

## **2. Proteins**

Proteins or complex nitrogen-containing compounds are absorbed through food. Once absorbed, they build and repair body tissues of the body. They also form antibodies, hemoglobin, enzymes and hormones. In absence of fats and carbohydrates, proteins can be used to provide the body with energy.

Proteins are made up of amino acids of which most these amino acids are not synthesized by the body, but must be obtained from food. The proteins can come from animal, which is of highest quality and plant foods. Animal sources include meat, fish, seafood, poultry, eggs, dairy, and dairy products. Plant sources include dried beans, lentils, peas, nuts, seeds, soy-products, and some grains. The plant proteins are rich in iron and fiber; however they should be combined with other vegetarian sources of food in a meal to ensure that the various proteins complement each other to provide complete proteins (For example cereals).

The body's daily requirement of protein is between ten to fifteen per cent of the daily calorie requirement. It is important to meet the daily requirements for growth and infection prevention. A deficiency in the intake of protein can retard growth and development and inhibit the body's ability to fight infection. An excess of protein puts an additional burden on the kidneys to eliminate the excessive waste products, and should also be avoided.

The body's protein requirement varies with factors such as age, physiology, and stress. Pregnancy and infection greatly increase the protein requirement of the body. These additional requirements should be met by the intake of protein supplements.

Current research does not substantiate an increase in protein needs for an asymptomatic HIV patient; however foods high in protein are vital for maintaining a strong immune system and should be consumed in adequate amounts. The onset of an opportunistic infection (OI) or HIV Wasting Syndrome in the symptomatic phases of HIV/AIDS may require an increased need for protein intake if infection is left untreated. During times of co-infection or weight loss, higher protein intake must be accompanied by a higher overall calorie intake, mainly from carbohydrates.

### **3. Fats**

Fats are important as the most concentrated source of energy in our diet. They play important roles such as absorption of fat –soluble vitamins (Vitamin A, D,E and K), provision of essential fatty acids, which are important for the structure and function of cells and cushion vital organs as well as protection of the body from extremes of cold and heat.

There are two types of fats in the food, including visible and invisible fats. The visible fats are found in groundnut, coconut, mustard, butter, cold-liver oil. The invisible fats are found in cereals, vegetables, spices, fruit, milk products and meat. Apart from visible and invisible, fats can also be classified into three categories including saturated fats and unsaturated fats. The unsaturated fats are also subdivided into monounsaturated fats and polyunsaturated fats. Saturated fats can be found in eggs, dairy products, and meat, while unsaturated fats can be obtained from vegetable oils, nuts, olives and avocados. A high intake of saturated fats is unhealthy. Saturated fats contain cholesterol which is used to build cell membranes, protect nerve fibers, and produce vitamin D.

Cholesterol is produced by the liver and small intestine to satisfy this requirement; hence the body does not require cholesterol from foods. Foods with saturated fats increase the level of cholesterol carrying substance called lipoprotein in the blood stream. This low density lipoproteins leave a coating of cholesterol in the artery walls and slowly clog the arteries.

The body requires approximately forty grams of fat in a day. Half of this requirement is met by invisible fats. Therefore, we need to consume only twenty grams of visible fat in a day.

Vegetable oils which can help the body complete its fat requirement include soybean oil and mustard oil with groundnut or sesame oil. It may also be obtained by eating hundred to two hundred grams of fish twice a week.

Furthermore, while carbohydrates are the main source of energy, fat may be necessary in small amounts to help in weight gain. Careful considerations should be taken, as some medications or side effects, such as diarrhea, may require a decrease in high fat foods.

#### **4. Vitamins and minerals**

Vitamins and minerals are considered essential nutrients because they perform hundreds of roles in the body. They help shore up bones, heal wounds, and bolster the immune system. They also convert food into energy, and repair cellular damage. There are at least 17 vitamins and minerals that are needed by the body for various uses. The body cannot function properly if anyone is missing or if they are not available in adequate amounts.

The sources of vitamins and minerals include vegetables and fruits mainly. However, cereals, meat and milk products are also good sources of vitamins and nutrients. Hence it is paramount to eat a variety of fruits and vegetables, as well as other foods.

A variety of fruits and vegetables are available in Namibia; they can be grown in the garden, collected in the field. A few examples are tomatoes, beetroot, pumpkin, carrots, wild spinach, potatoes, sweet potatoes, onions.

## **5. Roles of balanced diet in HIV/AIDS patients**

An optimal nutrition is necessary in HIV/AIDS patients in order to:

1. Prevent malnutrition and wasting
2. Enhance the body's ability to fight opportunistic infections
3. Delay the progression of HIV/AIDS
4. Achieve and maintain optimal body weight and strength
5. Relieve HIV related conditions, such as chronic diarrhea, nausea, vomiting, and thrush
6. Improve the effectiveness and tolerance of medications
7. Improve quality of life and productivity
8. Encourage maintenance of good overall health

During the HIV progression (different stages), the immune system concurrently weakens and fails to fight off infections. This leads to complications known as opportunistic infections (OI), eventually resulting in the body's total inability to control the disease and related co-infections. The appropriate nutrition will help delay the progress of the HIV to advanced stages. Nutrition has a very important role in each stage of HIV.

## **6. Groups of Foods.**

**There are currently four groups of foods including** (1)Cereals, (2) Fruits and vegetables, (3) meat, fish, beans and milk products and (4) fats and sugar group

### **a. Cereals**

The cereals contain foods that are rich in carbohydrates such as maize, mahangu, wheat, sorghum, bread, rice, pasta (macaroni, noodles), or breakfast cereals.

### **b. Fruits and Vegetables**

Fruits and vegetables are an excellent source of foods rich in vitamins and minerals. Foods in this group also contain carbohydrates in the form of fibre, which help with digestion. Each meal should have either fruits and/or vegetables. These are Grapes, mangoes, mandarin, oranges, spinach, small tomatoes and pumpkin.

**c. Beans, Meat, fish and Milk products group**

Beans, meat, fish and milk products are foods rich in protein. Animal products contain the highest amount of protein and come from foods such as beef, chicken, fish, nuts, eggs, milk and milk products like yoghurt, omaere and oshikandela. The main plant sources of protein are beans, peas, lentils, groundnuts, seeds, nuts, soybeans, and soya products.

**d. Fats and Sugars group**

The fats mainly are mainly found in butter, margarine and cooking oil, while the sugars are found in honey, jams and the sugars. Fats are mainly found in avocado, nuts, butternuts, cheese, yoghurt etc.

## **Chapter III: Nutrition per Categories**

### **Session objectives:**

- Explain the importance of nutrition for pregnant or lactating women
- Explain the importance of nutrition for Infants and Young Children infected with HIV/AIDS
- Explain the infant feeding recommendations for all mothers (HIV-negative or positive)

### **1. Nutrition in Pregnant and Lactating Mothers**

#### **Nutritional needs during pregnancy**

Pregnancy increases the maternal requirements for protein, folate, Zinc, Iron and Iodine up to 30-50%. The mother's nutrients during the first trimester are mainly used by the foetus for rapid growth. During pregnancy, the requirements for many nutrients such as energy, vitamins (A, C, B12 and E), and minerals (iodine, selenium and zinc) are high. In general, concentrations of water-soluble vitamin are lower during pregnancy whereas concentrations of fat-soluble vitamins are unchanged or slightly higher.

The foods must be carefully cooked; grilling, steaming and stir-frying are preferable to roasting, boiling and frying. It is also advisable to cook lightly to preserve nutrient value. Frequent small meals are preferable than larger meals and will make a pregnant woman comfortable.

a pregnant woman should eat a wide variety of foods, use normal amount of iodized salt, drink at least eight glasses of water per day. A pregnant woman is encouraged to take foods containing vitamin C as vitamin C helps absorb iron. Ideally build up the iron supply before pregnancy(Gail, D., 2010)

**A pregnant woman is advised to eat as follow:**

Foods	Frequency
Bread, cereal, rice, pasta	4 or more servings
Vegetables	3 to 5 servings
Fruit	2 to 4 servings
Milk, Yoghurt, Cheese, Oshikandela	2 to 3 servings
Meat, poultry, fish, legumes	2 to 3 servings
Fats, oil, sugars	Sparingly

**Nutritional needs during lactation**

Requirements for many nutrients such as energy, vitamins A, C, B12 and E, riboflavin, and minerals iodine, selenium and zinc are considerably higher during lactation than during pregnancy and are proportional to the intensity and duration of breastfeeding. Ideally, some of the nutrients stored during pregnancy, including energy stored as fat, will be available during lactation.

Due to the increase demand in nutrients during lactation, it is important to support the mother and infant during the first 6 months of lactation, breastfeeding mothers need to consume approximately 500 kcal/day in addition to usual energy intake before pregnancy.

As with pregnancy, several Pregnancy and Lactation metabolic adaptations meet the metabolic needs of lactation. These include increased appetite and food intake, mobilization of tissue stores and reduced physical activity. Little is known about the effect of lactation on maternal micronutrient status. The mammary gland exerts metabolic priority for many vitamins, even at the expense of maternal stores

During lactation the maternal requirements for protein, vitamins A, B6, and C, riboflavin, pantothenic acid, zinc and iodine are 40–90% higher than before pregnancy depending on the nutrient whereas the requirements for thiamin, niacin, folate, vitamin E and selenium are about 25% higher. There is a decrease in the maternal requirement for iron and no change in the need for calcium, magnesium and phosphorus.

In general, inadequate maternal intake of water-soluble vitamins (B & C) affects breast-milk concentration whereas the breast-milk is affected to a lesser extent by maternal intake of fat-soluble vitamins (A, D, E, K) or minerals.

It is of paramount importance to ensure an adequate intake of group nutrients as top priorities because maternal deficiencies of these results in lower concentration in breast milk and documented adverse effects in infants. The concentrations of these nutrients in breast milk can be improved with maternal intake, and breast milk is the primary source of most of these nutrients for infants.

## **2. Nutrition for Infants and Young Children infected with HIV/AIDS**

The children need to grow properly and fight diseases/infection by boosting the immune system. For them to do so, an appropriate nutrition is paramount. The nutrition depends upon the age of the child, hence we shall consider the two first years. From two years to 5 years, the infant eats the three family meals, however there is need to provide snacks in between meals at 10:00 AM and 03: PM.

### **a. Nutrition for infants from birth to 2 years**

The best way to feed a child from birth up to 6 months is to Breastfeed exclusively. This means that the child takes only breast milk and no additional food, water or other fluids, with exception of medicines and vitamins if needed. After six months, complementary foods become very important.

## 1. Breast milk

The breast milk has many advantages including:

- The BM is free (do not need money),
- Available all times, except in some cases of women not producing enough milk or not at all,
- Create mother-child bond,
- Maintains newborn's immunity against some diseases and a protective role preventing type I diabetes, inflammatory bowel disease, asthma and other allergic diseases
- Exclusive breastfeeding in the first six months of life protect against infectious diseases, especially from gastrointestinal infection
- Breast milk has a laxative effect, which encourages the passage of first bowel movements, preventing newborn jaundice
- Hygienic conditions addressed
- Complete : contains all nutrients for the child development (protein, fat, carbohydrates, electrolytes, etc...), which are well absorbed from BM
- The Breast milk is sufficient child nutrition up to six months
- The Breast milk contains exactly the nutrients needed by an infant (Protein, fat, lactose (milk sugar), Vitamin A and C and iron
  - High carbohydrate content
  - Contains Bifidus factor - beneficial bacteria to help with the baby's immune system.
  - Bifidus factor discourages the growth of pathogenic organisms
  - Breast milk in the first few days contains colostrum, which contains all the necessary immune factors, plus growth factors and a variety of vitamins and minerals.
  - Colostrum can fight and remove bacterial invaders in the intestinal tract and is good for the lungs, throat and intestines.

Additional foods during the first six months, offer disadvantages which are listed below:

- Other food or fluid will reduce the amount of BM taken and may contain germs from water or on feeding bottles or utensils that can cause infection
- Other foods and fluids may be too dilute, so that the infant becomes malnourished
- Other food and fluid may not contain vitamin A
- Iron is poorly absorbed from cow's and goat's milk
- The infant may develop allergies and have difficulty digesting animal milk, so that the milk causes diarrhea, rashes, or other symptoms
- The diarrhea may become persistent

## **2.2. Healthy Complementary Foods**

The complementary feeding means that the child is given other foods additional to BM. This should start after the first six months of exclusive BM. These foods must be appropriate, nutritious, and safe and should be given in adequate amounts for child's growth. Feeding is more than just the provision of foods, this includes hygienic preparation, storage and feeding the child. The healthy complementary food choices are energy-rich, nutrient-rich, and protein-rich. A child needs a well-balanced diet of all three. Hence, the mother should feed the child more than three kinds of foods per day. *These foods should also be locally available.* Below are the examples of energy-rich, nutrient-rich and protein-rich

The examples of energy-rich include potatoes, porridge, maize meal and mahangu meal. The examples of nutrient-rich , fruits and vegetables including grapes, mangoes, mandarin, oranges, spinach (or other dark leafy greens), small tomatoes and pumpkin. The protein-rich includes the following examples; fish, animal meats, nuts, nut butters (like peanut butters), eggs, beans, milk products (omaere, milk, yoghurt and cheese). There are also foods rich in fats/lipids that are equally important for the child; these include avocado, nuts, nut butters, and vegetables oils, milk products such as milk, yoghurt and cheese.

The other examples of foods to give include the following: locally available fruits, mashed banana with orange juice, mashed pumpkin with milk or butter/local fat, mashed potato or sweet potato with milk and margarine/local fat, porridge with milk and butter/local fat, porridge with fish and oil/local fat, porridge with mashed beans and oil/local fat, porridge with eggs, local available vegetables with mincemeat and oil/local fat, fermented porridge is good for diarrhea or other illness

## **2.3 Feeding Recommendations per age categories**

- From Birth to six months
- From six months to 12 months
- From 12 months to 24 months

### **2.3.1. From Birth to six months for HIV uninfected/Unknown (UK) mothers**

- Exclusive BF from birth until six months
- Start BF as soon as possible after delivery
- Colostrum is the first fluid coming out of the breast when breastfeeding. It is rich in protein and vitamin A and antibodies
- Breastfeed as long as the baby wants, day and night *at least 8 times* in 24 hours
- Empty one breast before switching to the other one for the baby to get the most nutritious hind milk
- When BF, make sure that the baby is correctly positioned and well attached, ensure express breast milk (EBM) to maintain lactation when you spend time away and leave EBM for baby when away
- During illness, offer BM more and EBM if the child cannot suck and use a cup and continue BF as long as the child can tolerate

When indicated, a replacement feeding can be considered, however always remember that BM remains the child's most important food, introduce appropriate complementary foods at six months and continue to breastfeed up to 24 months or beyond.

### **2.3.2. From Birth to Six months for HIV infected Mothers/Infants uninfected or UK status**

- **Exclusive BF from birth to six months with ARVs**
- Start BF as soon as possible after delivery
- Colostrum is the first fluid coming out of the breast when breastfeeding. It is rich in protein and vitamin A and antibodies
- Breastfeed as long as the baby wants, day and night *at least 8 times* in 24 hours
- Empty one breast before switching to the other one for the baby to get the most nutritious hind milk

When BF, make sure that the baby is correctly positioned and well attached, ensure express breast milk (EBM) to maintain lactation when you spend time away and leave EBM for baby when away

During illness, offer BM more and EBM if the child cannot suck and use a cup and continue BF as long as the child can tolerate when indicated, a replacement feeding can be considered, including:

- Remember that BM remains the child's most important food, introduce appropriate complementary foods at six months and continue to breastfeed up to 24 months or beyond.

### **2.3.3. From six months to 12 months irrespective of HIV status**

Breastfeed as often as the child wants, and then introduce appropriate complementary foods after six months. For HIV infected mothers, continue to BF up to 12 months, with ARVs up to 4 weeks after all BF has stopped. The children already on replacement feeding can continue with breastfeeding, then introduce solid foods gradually *at least 5 times* a day if the child not BF or 3 times a day if the child is breastfeeding

The foods should be mashed for easy chewing and swallowing. It is important to give thick maize or millet porridge enriched with milk, sour milk, egg, mashed beans or peanut butter. Adding animal fat, vegetable oil and sugar for taste or thick maize, millet porridge, papa, rice or potatoes mixed with mashed, cooked meat, fish, beans, groundnuts.

Also you can add animal fat/lard and pumpkins or green leafy vegetables. Between the meals, give a nutritious snack such as yoghurt, milk, available fruit, fruit juice, bread and peanut butter. Feed about three quarter cup(150-180 mls) of food per meal. It is important to actively feed the child. Active feeding means encouraging the child to eat. The child should have his own serving and not to compete with older brothers and sisters for food from a common plate. Until the child can feed himself, the caretaker or another caretaker (such as an older sibling, father, or grand caretaker) should sit with the child during meals and help get the spoon into his mouth. An adequate serving means that the child does not want any more food after active feeding. When the child is ill, it is important to, give frequent meals. Avoid forcing the child to eat, feed slowly.

#### **2.3.4. From 12 months to 24 months irrespective HIV status**

BF as soon as the child wants. For HIV exposed babies breastfeeding should only stop once a nutritionally adequate and safe diet without Breast milk can be provided. By the age of 12 months, variety of healthy complementary foods is the main source of energy. Children replacement feeding can continue if this is an affordable and feasible option.

Give stiff maize, millet porridge, pap, rice or potatoes mixed with relish cooked from meat, fish, beans and/or groundnuts. Add vegetables for vitamins and minerals in the meal. Mahangu, omboga, oonyandi, oondunga, omauni, pumpkin, squash, dark leafy greens or other local vegetables are nourishing choices. Add a small amount of animal fat, fish oil or vegetable oil to the porridge or maize to make sure the child receives enough fats and lipids in the diet. Add in extra fat or oil is usually not necessary if the food already has meat or nuts in it as these foods are already high in fat content

*Between the meals, give snacks such as thick enriched maize or millet porridge, where possible yoghurt, milk, mango, guava, oranges, grapes, fruit juice, biltong, maize cob, and round nuts.*

*Feed at least five times a day (main meals of the family plus snacks)*

*The variety and quantity of food should be*

Family foods should become an important part of the child's diet

Family foods should be also chopped so that they are easy for the child to eat

During illness:

If the child is ill, give smaller meals more frequently throughout the day

Fermented porridge is good for diarrhea and other illness and other illness

At this age the child already taking a variety of family foods in 3 meals per day, give 3-4 times family foods per day. Give any milk as desired (cow, goat, breastfeeding etc.).

Give thick maize, millet porridge, pap, rice or potatoes mixed with relish cooked from meat, fish, beans, and/or groundnuts. You can add vegetables for vitamins and minerals in the meal.

Mahangu, omboga, oombe, oonyandi, oondunga, omauni pumpkin, squash, dark leafy greens or other local vegetables are nourishing choices to make sure the child is receiving adequate vitamins or minerals in his or her diet.

You can also add a small amount of animal fat, fish oil or vegetable oil to the porridge or maize to make sure the child receives enough fats and lipids in the diet.

Adding extra fat or oil is usually not necessary if the food already has meat or nuts in it as these foods are already high in fat content. Between the meals, give snacks such as thick enriched maize or millet porridge. Also if possible; give snacks such as yoghurt, milk, mango, guava, oranges, grapes, fruit juice, biltong, maize cob, and round nuts.

Feed a toddler at least five times a day (3 times main meals of the family plus 2 times snacks)

During illness: If the child is ill, give smaller meals more frequently throughout the day and fermented porridge is good for diarrhoea and other illness.

### **2.3.5. Recommendations from ages 12 to 24 months irrespective of HIV status**

For HIV exposed babies breastfeeding should only stop once a nutritionally adequate and safe diet without Breast milk can be provided. By the age of 12 months, variety of healthy complementary foods is the main source of energy. Children replacement feeding can continue if this is an affordable and feasible option

Give stiff maize, millet porridge, pap, rice or potatoes mixed with relish cooked from meat, fish, beans and/or groundnuts. Add vegetables for vitamins and minerals in the meal. Mahangu, omboga, oonyandi, oondunga, omauni, pumpkin, squash, dark leafy greens or other local vegetables are nourishing choices. Add a small amount of animal fat, fish oil or vegetable oil to the porridge or maize to make sure the child receives enough fats and lipids in the diet. Add in extra fat or oil is usually not necessary if the food already has meat or nuts in it as these foods are already high in fat content.

*Between the meals, give snacks such as thick enriched maize or millet porridge, where possible yoghurt, milk, mango, guava, oranges, grapes, fruit juice, biltong, maize cob, and round nuts. Feed at least five times a day (main meals of the family plus snacks). Family foods should become an important part of the child's diet. Family foods should be also chopped so that they are easy for the child to eat*

During illness, If the child is ill, give smaller meals more frequently throughout the day and fermented porridge is good for diarrhea and other illness and other illness

At this age the child already taking a variety of family foods in 3 meals per day, give 3-4 times family foods per day. Give any milk as desired (cow, goat, breastfeeding etc.). In addition you can give thick maize, millet porridge, pap, rice or potatoes mixed with relish cooked from meat, fish, beans, and/or groundnuts. Add vegetables for vitamins and minerals in the meal. Mahangu, omboga, oombe, oonyandi, oondunga, omauni pumpkin, squash, dark leafy greens or other local vegetables are nourishing choices to make sure the child is receiving adequate vitamins or minerals in his or her diet.

Add a small amount of animal fat, fish oil or vegetable oil to the porridge or maize to make sure the child receives enough fats and lipids in the diet. Adding extra fat or oil is usually not necessary if the food already has meat or nuts in it as these foods are already high in fat content. Between the meals, give snacks such as thick enriched maize or millet porridge. Also if possible, give snacks such as yoghurt, milk, mango, guava, oranges, grapes, fruit juice, biltong, maize cob, and round nuts. Feed a toddler at least five times a day (3 times main meals of the family plus 2 times snacks)

During illness, If the child is ill, give smaller meals more frequently throughout the day and fermented porridge is good for diarrhea and other illness.

### **2.3.6. Feeding a Baby with a Cup**

A cup is better than a bottle. A cup is easier to keep clean and does not interfere with breastfeeding. To feed a baby by cup:

Hold the baby sitting upright or semi-upright on your lap.

Hold a small cup to the baby's lips, Tip the cup so the liquid just reaches the baby's lips.

The cup should rest lightly on the infants' lower lip and the edges of the cup should touch the outer part of the infants' upper lip. Tip the cup so that the milk just reaches the infant's lips.

The infant becomes alert and opens his or her mouth and eyes.

A low-birth weight baby takes the milk takes the milk into his mouth with the tongue.

A full-term or older baby sucks the milk, spilling some of it

Do not pour the milk into the baby's mouth. Just hold the cup to his lips and let him take himself.

When the baby has had enough, he closes his mouth and will not take more, measure intake over 24 hours-not just at each feed. Talk to the baby and look his eyes to show love and care

The infant becomes alert and opens his or her mouth and eyes.

A low-birth weight baby takes the milk takes the milk into his mouth with the tongue.

A full-term or older baby sucks the milk, spilling some of it

Do not pour the milk into the baby's mouth. Just hold the cup to his lips and let him take himself. When the baby has had enough, he closes his mouth and will not take more. It is paramount to measure intake over 24 hours-not just at each feed. Talk to the baby and look his eyes to show love and care. It is important to breastfeed more frequently and for longer period. Use soft, varied, appetizing and favorite food to encourage the child to eat as much as possible, Clear the blocked nose that interferes with feeding, and expect that the appetite will improve as child gets better

## **Chap IV: Food Preparation Demonstration and Kitchen Gardening**

After the group education/information on the health diet/nutrition, the KC team will demonstrate the cooking process. This will give opportunity to all participants to improve and learn other ways of cooking. The KC tem will use the locally available foods for demonstration. The Gardening is of paramount importance to enable participants to understand the need for the back yard gardening. The back yard gardening will help participants to have access to the vegetables at any time at home.

The garden can also help as part of income generating activities: a support group or Mother2Mother group could locate a space within hospital environment or outside to ensure that an appropriate space is used to produce vegetables that can be sold to the public. The support group or Mother2Mother will have the responsibility to elect a committee that will take the direction of the Kitchen Garden. The Kitchen gardening committee will liaise with the Ministry of Agriculture to learn/improve the gardening skills

### **Examples of locally available preparation**

#### **Ingredients**

- 1 handful of rice
- 2 cups of clean water
- 1 egg
- 1/3 cup of milk
- 2 teaspoons of sugar

#### **Preparation**

- Add water to the rice and stir while cooking until it is creamy.
- Beat the egg into the milk and set aside.
- add the milk and egg mixture to the cooked rice and bring to a boil.
- Add sugar to sweeten.
- Serve warm.

## **Recipe: Bean, Pea, and Mushroom Soup**

### **Ingredients**

- 1 handful of dry beans
- 1 handful of dry peas
- 1/3 cup of milk (if you don't have diarrhea or lactose intolerance)
- ½ handfuls of dry mushrooms
- 1 onion
- Salt to taste
- Spices of your choice

### **Preparation**

- Wash the beans and peas well and soak in plenty of clean water overnight.
- Throw away the soaking water.
- Add clean water to the beans and peas.
- Add salt and spices to taste.
- Cook until well done.
- Mash the bean/pea mixture
- Wash the dry mushrooms thoroughly and soak for 1 hour. Then chop into small pieces
- Chop the onion into small pieces
- Boil or simmer the onion and mushrooms in very little water until cooked. Add salt to taste.
- Add the onion and mushroom to the mashed bean/peas mixture.
- Add water or milk to make a soup and continue to cook for a few minutes.
- Serve alone or with bread.

## **Recipe: Maize or Millet Porridge**

### **Ingredients**

- 1 handful of maize or millet flour
- 1/3 cup of milk (or water if you have diarrhea or lactose intolerance)
- 2 teaspoons sugar or honey

### **Preparation**

- Boil 1 cup of water.
- Mix the flour in a little clean cold water and add to the boiling water.
- Cook for 30 minutes, stirring occasionally.
- Add milk (if tolerated)
- Add sugar or honey.
- Serve while still warm. If available serve with bread. Soak bread in the porridge to soften.

## Reference

World Food Programme (2010). *Role of nutrition in HIV infection: review of evidence for more effective programming in resource-limited settings*. National Center for Biotechnology Information, U.S national Library of Medicine  
8600 Rockville Pike, Bethesda MD, 20894 USA

UNICEF (2012). *Nutrition and HIV/AIDS*. [Online], Available:  
[www.unicef.org/nutrition/index\\_HIV.html](http://www.unicef.org/nutrition/index_HIV.html) [Downloaded: 14/05/2013: 10:21 AM]

Ahoua, L.; Umutoni, C.; Huerga, H.; Minetti, A.; Szumilin, E. Balkan, S.; Olson, D. M.;  
Nicholas, S. & Rodriguez, M.P. (2013). *Nutrition outcomes of HIV-infected malnourished adults treated with ready-to-use therapeutic food in sub-Saharan Africa: a longitudinal study*.  
[Online], Available: [www.jisociety.org/content/14/1/2](http://www.jisociety.org/content/14/1/2) [Downloaded: 14/05/2013: 1:48 PM]

Gail, D. (2010). *Life begins. Parent's handbook*. Nestle. South Africa

Mahlungulu, S.; Grobler, L.A.; Visser, M.E. & Volmink, J. (2013). *Nutrition Interventions for Reducing Morbidity and Mortality in People with HIV*. *Cochrane Database Syst Rev* 2007, (3): CD004536. PubMedAbstractIPublisherFullText

Namibia Statistics Agency (2012). *Child Poverty in Namibia. A Child-centered analysis of the Namibia Household Income and Expenditure Survey 2009/10*

MOHSS (Ministry of Health and Social Services), Government of Namibia. (2012). *Report of the 2011 National HIV Sentinel Survey*. Ministry of Health and Social Services, Windhoek (Namibia).

MOHSS, Government of Namibia. (2010). *Guidelines on Antiretroviral therapy*. Ministry of Health and Social Services, Windhoek (Namibia).

MOHSS., Government of Namibia. (2008). *Demographic and Health Survey 2006-07*. Windhoek (Namibia).

MOHSS, Government of Namibia. (2007). *Nutrition Management for People Living with HIV/AIDS. A resource guidelines for clinical health workers*.

Papathakis P. & Rollins N. (2005). *HIV and nutrition: Pregnant and Lactating Women*. Durban, South Africa.