NATIONAL NUTRITION GUIDELINES FOR MALAWI

MINSTRY OF HEALTH
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FOREWORD

In Malawi, under nutrition is among the major constraints to national development and progress. This is evidenced by data, which indicate that chronic and acute malnutrition, micronutrient deficiencies and infectious diseases such as diarrhoea, acute respiratory infections and malaria are highly prevalent among all population groups. Presently, almost half of under-five children are stunted; five percent are wasted ;(MDHS 2004) 60 percent of preschool children have sub-clinical vitamin A deficiency while 80 percent are anaemic,(micronutrient survey, 2002).

Among adults, nine percent of women of childbearing age are undernourished (BMI < 18.5) as reported by MDHS 2004; 57 percent have sub-clinical vitamin A deficiency while 27 percent are anaemic. Prevalence of anaemia among pregnant women is very high, ranging from 54 to 94 percent (MOHP, 1998) while MDHS 2004 showed that 45% of women are anaemic with 2% showing severe anaemia. On the other hand, 38 percent of men have sub-clinical vitamin A deficiency and 17 percent of them are anaemic as reported in the National Micronutrient survey, 2002. Prevalence of undernutrition is further worsened by the HIV/AIDS pandemic.

Overnutrition is also an emerging problem in the general population. About 14 percent of women of childbearing age are overweight while 2% have BMI of 30 or more MDHS 2004); while diet-related diseases such as gout, diabetes mellitus and hypertension are also on the increase as reported from health facilities.

The major contributing factors to these high levels of undernutrition are inadequate dietary intake of various nutrients required by the body, infection, or a combination of both. Inadequate dietary intake is mainly caused by low food availability, accessibility and poor feeding practices. On the other hand, diseases are caused by poor health services, poor hygiene and sanitation and poor caring practices. Severe malnutrition increases the incidence, duration and severity of infectious diseases. Frequent infections may result into low food intake as a result of reduced appetite, vomiting and poor nutrient utilization, which may lead to malnutrition. Malnutrition may have adverse and devastating effects on the immune system and other host defence mechanisms, which may accelerates progression of HIV towards AIDS. Therefore, all efforts to reduce malnutrition should aim at both reducing disease prevalence and increasing dietary intake.

On the other hand overnutrition is as a result of poor dietary habits and inadequate exercise among the majority of the population.

The Malawi Government recognizes the immediate and long-term social and economic consequences of malnutrition, especially in the context of the HIV/AIDS pandemic. This is why the government and collaborating partners have been implementing various interventions based on various government policies aimed at improving the nutritional status of all Malawians.

One of the most important policy documents for improving nutrition in the country is the explicit national policy on food security and nutrition that government put in place in 1990 to direct implementation of interventions for sustainable food security and improved nutrition. The Food security and nutrition policy set the stage for the development of the National Plan of Action for Nutrition (NPAN) in 2000. The NPAN contains a set of goals, objectives and activities that address the principal factors, which cause food insecurity and malnutrition. However its implementation was limited by inadequate resource allocation by implementing partners, lack of well defined coordination, monitoring and evaluation mechanisms and inadequate integration at implementation level. The NPAN does not give guidance to the general public to adopt appropriate behaviours for improving their nutritional status.

Another important document is the Poverty Reduction Strategy Paper (PRSP), which acknowledges that to reduce poverty, nutrition issues must be addressed. However the PRSP does not provide clear guidance to the programme planners, managers and extension workers on what to include in nutrition programmes. In both the NPAN and PRSP, the emphasis is on the vulnerable groups such as under five children, pregnant and lactating women while living out other categories among which vulnerability is also increasingly emerging in various forms. The recently developed Nutrition Policy, strategic plan and National Nutrition Programme by the Department of Nutrition, HIV and AIDS, are multisectoral with well defined roles, responsibilities, targets and budget for specific stakeholders. The new policy is expected to provide more comprehensive but focussed direction in as far as provision of nutrition services is concerned.

However, inspite of the efforts that have been made to improve nutrition status among the vulnerable groups in the country, there appears to be no appreciable change in the nutritional status since 1992. Malnutrition has been among the major contributing factors to poor health and to death among the various population groups. This lack of significant change in nutrition status is attributed mostly to lack of standardised and comprehensive package of essential nutrition actions and guidelines that would facilitate effective delivery of nutrition information and services by various stakeholders and lack of information to the general public and vulnerable populations for sustainable adoption of appropriate nutrition behaviours and healthy life styles. So far, the implementation of nutrition interventions by various stakeholders has largely been vertical and without well defined essential actions or guidelines for promoting adoption of recommended behaviours to achieve sustainable adequate nutrition for various categories of the

population.
These guidelines have therefore been developed to guide service providers and individuals to adopt practices that would facilitate nutrition improvement among various population groups. The intention is to guide and standardise delivery of nutrition services as service providers will be able to deliver standardised information to their clients and to facilitate individuals to adopt essential actions for improving their own nutrition status, that of their children and other family members.

The Ministry is, therefore, calling upon all nutrition service providers, nutrition programme managers, coordinators, implementers and counsellors and individuals to use these guidelines in their programmes and daily meal planning. The Ministry further appeals to the development partners and non - governmental organisations to support effective implementation of the guidelines as it will require various types and quantities of resources at different levels.

MINISTRY OF HEALTH

INTRODUCTION

These guidelines have been developed through a comprehensive consultative process in response to the need for standardised information and guidance in delivery of nutrition information and services by various stakeholders and for adoption of appropriate nutrition behaviours and healthy life styles among various population groups in the country. They contain specific essential actions or recommended practices for improving nutrition among the general public, various population groups throughout the life cycle and for managing specific nutrition related diseases and conditions.

PURPOSE OF NUTRITION GUIDELINES

The National Nutrition Guidelines will be used to standardise and improve the quality of delivery of nutrition services within all sectors. They are intended to facilitate the provision of adequate and comprehensive nutrition care and support for both the healthy and the vulnerable groups in the population, including people living with HIV and AIDS. The guidelines are also intended to promote sustainable adoption of healthy lifestyles and dietary habits among people in the various categories.

TARGET AUDIENCE

The guidelines will be used by various service providers such as:

- Nutrition programme planners & managers
- Agriculture development officers
- Government extension workers in food & nutrition programmes
- Health personnel such as doctors, nurses and HSAs
- Community Based Organisations
- Educational institutions (primary, secondary, tertiary)
- Officers planning Food Aid programmes (Supplementary feeding, food distribution, etc.)
- All other institutions dealing with nutrition issues

The guidelines will also be used by the general public as a simple reference material to guide them in adopting essential actions for improving their nutrition well being.

They should be used in line with other existing policies and guidelines such as

- Nutrition policy, Strategic Plan and the National Nutrition Programme
- Infant and young child nutrition policy
- PMTCT policy and guidelines
- National code of marketing infant and young child foods

ORGANISATION OF THE GUIDELINES

The guidelines have been divided into various sections according to the categories of populations . They include Nutrition for the general public, Nutrition in the life cycle and for specific diseases or conditions.

NUTRITION FOR THE GENERAL PUBLIC

NUTRIENTS NEEDED BY THE BODY, THEIR MAJOR FUNCTIONS AND SOURCES

Good nutrition is important for good health. The body needs different nutrients for its normal functions such as growth, maintenance of body tissues, protection from diseases and to keep alive. The nutrients are grouped into 6 major categories, namely proteins, carbohydrates, fats, vitamins, minerals, and water.

Proteins are mainly required by the body for growth, building body structures such as muscles, skin, hair, bones, for repair and replacement of worn-out tissues. Proteins provide protection to the body by making antibodies that kill germs. In addition, proteins can be used to provide energy.
Proteins are found in many foods; however, the major sources are foods of animal sources such as eggs, fish, meat from all edible animals, insects) and legumes (such as soybeans, beans, groundnuts, pigeon peas). Whole grains like maize, rice, sorghum, and millet are also good sources although their quantities and quality are much less than in animal sources.

Carbohydrates are used to provide energy for living, working, playing, thinking, and other activities of the body. The main sources of carbohydrates are starchy roots and tubers such as cassava and potatoes; cereal grains such as sorghum, millet, maize and rice; some fruits such as banana; and other foods such as sugarcane.

Fats also provide the body with energy, but they give more energy (twice as much) than carbohydrates. They are also used as source of stored energy when there is inadequate dietary supply of energy. When carbohydrates and fats are taken in excess amounts, the body converts them to stored fat for later use. Fats are necessary for proper utilization of fat-soluble vitamins, which are vitamin A, D, E and K. Main sources of fats are oil seeds such as nuts, soybeans, cooking oil, margarine, fatty meat, avocado pear and dried coconut.

Minerals: although required by the body in small amounts, minerals are essential for running many processes in the body; building various tissues e.g. bones and teeth, as well as protection from diseases. There are many minerals that the body needs some of which are calcium, iron, iodine, zinc, selenium, magnesium,

phosphorus, potassium, sodium, copper, and chloride.
Minerals are found in almost all foods although the amounts vary widely from one food to another. Generally, animal foods, legumes, whole grain cereals, fruits and vegetables are rich sources of various minerals.

Vitamins: like minerals, vitamins are required by the body in small amounts, but they are important for protecting the body from diseases. They facilitate functioning of various body systems and processes. Vitamins are classified into two groups namely water-soluble vitamins (vitamin B-complex and vitamin C), and fat-soluble vitamins A, D, E and K. Different foods provide different vitamins in different amounts. Whole grain and other unprocessed foods provide more vitamins than highly refined foods.

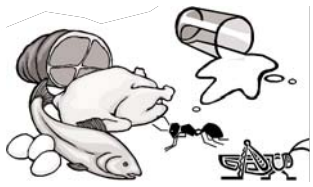
Water: is necessary for all body processes and for removing waste products out of the body. Apart from drinking water, almost all foods provide water, but fresh foods contain larger amounts than dried foods.

When one or more nutrients are inadequate or lacking in the diet, body processes are disturbed and the person becomes sick. Diversified diets made from the six food groups are vital in providing the body with various nutrients. The six food groups include:

THE SIX FOOD GROUPS:

1. **Vegetables** include green leaf and yellow vegetables such as bononGwe, chisoso, khwanya, mnkhwani, kholowa, rape mpiru, kamganje, carrot, egg plants, pumpkin, tomato and others such as mushroom. They provide mostly vitamins, minerals, and water. Vegetables also contain fibre that is necessary for proper digestion.
2. **Fruits** include citrus fruits (oranges, lemons, tangerines), bananas, pine apple, pawpaw, mangoes, masau, bwemba, malambe, masuku, peaches, apples, guava, water melon and many others. Fruits provide mostly carbohydrates, vitamins & water.

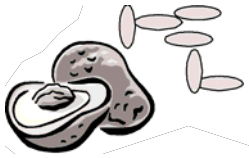
3. **Legumes & Nuts** include ground-nuts, soyabeans, beans, peas, cowpeas, ground beans (nzama), pigeon peas. They provide mainly protein and carbohydrate. Soybeans and nuts also contain a lot of fat in addition to protein and carbohydrate.

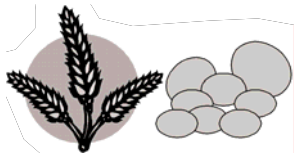


4. **Animal Foods-**All of the foods in this group are of anima origin such as meat, eggs, milk products, fish, and insects. They provide protein, fats, vitamins and minerals.
5. **Fats** includes oil seeds (soybeans, groundnuts), avocado pear, cooking oil, milk and milk products such as butter, margarine, yourghut, meat, fish, and poultry.

They mainly provide fat.

6. **Staples** in this include cereal grains such as sorghum, millet, maize, starchy roots (cassava, potato) and starchy fruits (banana). They mostly provide carbohydrates. They also provide many other nutrients such as proteins and minerals depending on how they are processed.





All these foods are very important and should be eaten in combination in order for them to compliment each other in increasing dietary intake and utilisation of the various nutrients by the body. The practices below should be followed to facilitate adoption of healthy eating habits that facilitate adequate intake and utilisation of various nutrients in the body among the general population.

ESSENTIAL ACTIONS FOR HEALTHY EATING

- Identify foods that are available and in season
- Eat a variety of foods from the six food groups prepared either in one pot or different dishes eaten together every day for a diversified diet.
- Eat whole grains and seeds (mgaiwa, whole wheat brown bread, unpolished rice) rather than highly refined foods such as white flour, white bread.
- Eat locally available or indigenous and fresh foods rather than exotic or highly processed foods.
- Use processes that improve nutritional value of the food such as germinating maize (chimera) or beans, fermented products, for example sour milk (chambiko), yorghurt.
- Eat a fruit after every meal.
- Add oil rich foods such as groundnuts or soya flour or cooking oil to green or yellow vegetables to enhance Vitamin A absorption in the body.
- Eat green leaf vegetables with Vitamin C rich foods such as citrus fruits, tomato, malambe, bwemba, masau to facilitate iron abrsoption from vegetables.
- Always use iodised salt.
- Use little sugar and less sugary foods.
- Drink at least two litres of water every day.
- Do exercises regularly every day such as walking and jogging.

NUTRITION IN THE LIFE CYCLE

Nutritional requirements of an individual change throughout the life cycle. The nutritional needs are influenced by age, sex, physiological status and level of activity throughout the life cycle (from conception to death).

NUTRITION DURING PREGNANCY

- When a woman is pregnant, her nutritional needs are greater than any other times in her adult life. The woman needs extra foods for provision of the additional energy and nutrients for herself and the growing baby throughout the pregnancy. Micronutrients such as Vitamin A, iron and iodine are very important. Vitamin A helps the body to fight infections and for proper eye sight especially in dim light. Iron is necessary for prevention of anaemia and proper mental and physical growth. Iodine is necessary to facilitate mental development which improves one's intellectual ability, improving pregnancy outcomes as it helps to reduces occurrence of still birth, miscarriage and prenatal death. Iodine is also vital in the functions of the thyroid glad; hence it helps to prevent goitre.

- The Woman needs to gain extra weight of 11-15 kg on average in order to ensure normal birth weight for the baby and increased chances of survival for the baby.
- In addition, the woman needs extra food for her uterus, placenta, breasts and blood, all of which increase in size or amount during the first half of pregnancy.
- During the second half of pregnancy the woman needs extra nutrients, mainly for the rapidly growing foetus that is storing nutrients of vitamin A, iron, other micronutrients, and energy stores in form of fat. Most pregnant women remain active even during their last few months of pregnancy and they need to store fat, vitamin A and other nutrients for breast milk.

Therefore good nutrition during pregnancy is important as it improves pregnancy outcomes. It reduces the likelihood of abortions, miscarriage, still birth and low birth weight. Normal birth weight babies have a higher chance of survival, normal growth and development. On the other hand, poor nutrition during pregnancy may result into low birth weight babies, a condition that may influence later nutritional status. Adequate nutrition also helps to sustain physical capacity of women to work and care for their families and increases their chance of survival during pregnancy, labour, delivery and after birth. The following practices should be followed to improve nutritional status during pregnancy:

ESSENTIAL ACTIONS FOR IMPROVING MATERNAL NUTRITION DURING PREGNANCY

- Eat a variety of foods from the six food groups such as meat, milk, eggs, fruits, vegetables, legumes, avocado pear in addition to the staple food (nsima, rice, cassava, and sweet potatoes every day.
- Eat at least three meals a day with one additional meal containing a variety of foods from the six food groups every day to meet the increased nutritional needs.
- Eat nutritious snacks such as chikonda moyo, thobwa, yellow sweet potato, fresh fruit juice, fruits, and pumpkins in between meals.
- Eat foods rich in Vitamin A, such as meat, yellow fruits (mango, pawpaw), and vegetables (bonongwe, chisoso, mnkhwani, Khwanya, kholowa, carrots, pumpkins, spinach), fish such as chambo, utaka, Matemba and Usipa, and yellow sweet potato
- Eat the fruits rich in Vitamin A with a meal. Also eat vegetables rich in Vitamin A such as carrots, green leafy vegetables with food rich in fat or add cooking oil or ground nut, soya and pumpkin seed flour to facilitate proper absorption of Vitamin A in the body.
- Receive Vitamin A supplementation soon after the birth of the baby or before discharge from the hospital, during postnatal check-up visit, from underfive clinics or from the Health Surveillance Assistant in the community at least within eight weeks after the birth of the child.
- If the delivery is performed by a Traditional Birth Attendant, go back to the health facility or out reach clinic for vitamin A supplementation before 8 weeks elapse.
- Eat foods rich in Vitamin C such as raw tomatoes, masuku, masau, malambe with a meal to help the body to use iron properly. Vitamin C is also vital for protection against infections.
- Eat foods rich in iron such as liver, red meat, and green leafy vegetables (bonongwe, chisoso, mnkhwani, Khwanya, kholowa, carrots, pumpkins, spinach)
- Take iron/folate tablets (60 mg iron and 0.5 mg folic acid once per day) every day for the entire period of pregnancy and up to 6 months after delivery for your good health and for proper physical and mental development of the child throughout pregnancy. Get the iron/folate tablets from the antenatal or outreach clinic or from the Health Surveillance Assistant in the community.
- Always use iodised salt for proper physical and mental development of the child.
- Store the iodised salt in covered containers and keep in a dry place away from direct light and heat.
- Drink a lot of fluids such as milk, water, natural fruit juices and thobwa
- Start antenatal clinic from the first trimester for early identification of possible complications and nutrition problems.

- Have at least four antenatal visits during pregnancy for thorough check up and integrated care.
- Receive routine screening for nutrition related danger signs such as anaemia, excessive or low weight gain and blood pressure at every contact with a Health Worker from the nearest health facility and outreach clinic.
- Take malarial medications during pregnancy, once in the second trimester and another dose in the third trimester.
- Always sleep under insecticide treated bednets for prevention of malaria.
- Retreat the bednet every six months.

NUTRITION DURING LACTATION

In Malawi most women breastfeed their babies through out the first 18 months or more. The MDHS, 2000 showed that 95 % of children were still receiving breast milk at the age of 16-17 months, while at 22-23 months of age two-thirds of children were still receiving breast milk. This means lactating women are subjected to a longer period of nutritional stress for as long as the child continues to breastfeed. Therefore the lactating woman needs extra energy and nutrients to adequately recover from pregnancy, for making breast milk and for sustaining her physical capacity. She needs 500 kcal/day above non lactating levels and extra 16g/day of additional protein for the first six months but 12g/day between 6-12 months.

ESSENTIAL ACTIONS FOR IMPROVING MATERNAL NUTRITION DURING LACTATION

Follow the recommendations for nutrition during pregnancy in addition, the following recommendations should be followed:

- Take a variety of foods from the six food groups with two extra meals every day to meet the increased nutritional requirements.
- Receive Vitamin A supplementation (vitamin A supplement of 200,000 IU) soon after the birth of the baby or before discharge from the hospital, during postnatal check-up visit, from underfive clinics or from the Health Surveillance Assistant in the community at least within eight weeks after the birth of the child. Vitamin A supplementation helps to increase the amount of Vitamin A in breast milk.
- If delivery is performed by a Traditional Birth Attendant, go back to the health clinic for vitamin A supplementation before elapse of eight weeks.
- Eat additional foods rich in vitamin A to increase amount of Vitamin A in breast milk.
- Drink additional fluids such as water, thobwa and fruit juice.

INFANT AND YOUNG CHILD NUTRITION

The first three years of life are very critical for child survival, growth and development. The child is supposed to double its birth weight at six months and triple it at about 12 months. The child goes through various developmental milestones such as sitting, crawling, walking and running. At the same time, the child is also prone to various infections partly due to poor hygiene and sanitation within their surroundings. As such, the infant's and young child's nutritional needs are high and appropriate feeding practices are vital to ensure adequate nutrition and health for the infant and young child. If the child is malnourished during the first 2 years of life, the effects may not be corrected even when the nutritional status improves in the later years.

NUTRITION DURING THE FIRST 6 MONTHS OF LIFE

Breast milk is the best food for the baby in the first six months of life because it has several benefits to both the baby and the mother.

BENEFITS OF BREASTFEEDING TO THE BABY

- Breast milk contains all the nutrients and water in the right amount and proportion for proper growth and development of the baby during the first 6 months of life.
- It protects the baby from diseases due to various ant-infective factors that breast milk contains. Colostrum is very rich in antibodies and other protective factors for protection against diseases
- Breast milk is clean (not contaminated) and safe unless medically indicated otherwise. Hence, exclusively breast fed babies have less frequent and less severe episodes of infections such as diarrhoea, respitory infections than babies who are given other foods and fluids in addition to breast milk or those fed on infant formula only.
- If a child falls sick, breast milk helps the baby to recover fast from illness.
- Breast milk is easily digested, hence prevents constipation.
- Breastfeeding promotes emotional bonding between baby and mother that provides the baby with a sense of security and trust.

BENEFITS OF BREASTFEEDING TO THE MOTHER

- The oxytocin, the milk ejecting hormone, makes the uterus to contract, hence it helps the woman's womb to return to normal and stop bleeding after delivery. This helps to reduce loss of blood that may lead to anaemia after delivery.
- The prolactin, hormone responsible for milk production, suppresses ovulation,

hence, Exclusive breastfeeding during the first six months delays return of fertility; hence it is a method of family planning as long as menses have not returned, the child is less than six months and is exclusively breastfed.

- It is cheap since it is a natural food and does not require preparation and it is always available as long as the child breast feeds.

ESSENTIAL NUTRITION ACTIONS FOR FEEDING INFANTS FOR THE FIRST SIX MONTHS OF LIFE

- Exclusive breast feeding (EBF) for the first six months with early cessation, but if at six months replacement feeding is still not Affordable, Feasible, Acceptable, Sustainable and Safe (AFASS),the mother should continue to breast feed while giving other foods and fluids until replacement feeding becomes AFFASS or until the child is able to eat family foods
- Give no other foods or fluids not even water to the baby during the first six months, unless otherwise advised by a Health Professional.
- Initiate breastfeeding within 30 minutes after the birth of the child (even before the placenta is expelled) to stimulate milk production, ensure early establishment of breastfeeding, help expel the placenta and to reduce post-partum bleeding.
- Ensure the child gets the first milk that comes from the breast soon after delivery (colostrums) as it is especially made for the new born to protect it from illness and to help to expel baby's first dark stool.
- Mother and baby should stay together for at least one hour after delivery, unless medically indicated, to facilitate early initiation and establishment of breast feeding.
- Breastfeed on demand day and night (at least 8 -12 times in 24 hours) to facilitate more milk production.
- Sit or lie comfortably when breastfeeding.
- During a breastfeed, let the baby breastfeed on the breast long enough or till it is empty for the baby to get both foremilk, which quenches the baby and hind milk (more nutritious and energy dense) and for effective removal of breast milk for more to be produced.
- Express breast milk for the baby to feed in case of separation longer than one hour. Keep the milk in clean covered containers (enough per feed) and give it to the child within 8 hours if it is kept at room temperature or 72 hours if refrigerated.
- Bath every morning and wear clean clothes to keep the breast clean all the time.
- In case of problems with breastfeeding (not enough milk, swelling of the breasts, pain in the breast) seek assistance from health workers from the Hospital, clinic, outreach, Health Surveillance Assistant or breastfeeding community support groups if available.
- The husband, other family and community members should support the mother emotionally and with household chores in order to give her more time for breastfeeding.

- Breast feed using correct positioning and attachment for effective feeding as follows:
  - The baby's head and body should be straight
  - The baby should face the mother's breast, with the nose opposite the nipple.
  - The baby's body should be close to the mother's body.
  - The mother should support the baby's whole body, not just the neck and shoulders.
  - Baby's mouth should be wide open, with lower lip curling outwards and covering most of the areola.
- Take a sick baby who is failing to suckle to the nearest health facility.
- If a mother is sick and unable to breastfeed, she should express her breast milk and feed her baby using a cup.
- Seek medical advice immediately if the baby shows signs of illness such as vomiting every time it feeds, diarrhoea, sleepiness, jaundice (yellow colour), convulsions and fast or difficult breathing.
- During illness, continue breast feeding and increase the frequency of breastfeeding for fast recovery.
- Increase the frequency of breastfeeding for the baby after each illness to regain health and weight.
- If the baby is too small or weak to suckle effectively e.g. preterm babies, express breast milk and feed it to the child using a cup until he can suckle more effectively. Give small amounts but more frequent.
- If the baby has a cold with blocked nose, clean the nose until the mucus is dry before each feed.

FEEDING INFANTS WHOSE MOTHERS ARE HIV POSITIVE

Mothers that are HIV positive have some risk of transmitting the virus to their babies both during pregnancy, labour and delivery and during breastfeeding. At the time of writing these guidelines, the risk of transmission through breastfeeding was 10-20%.

As such mothers that are HIV positive should be counselled on infant feeding options for them to make an informed choice of the feeding option that is feasible, acceptable, sustainable, safe and affordable to them.

The options include

Breastfeeding options

- Exclusive breastfeeding (EBF) for the first six months with early cessation
- Heat treated expressed breast milk
- Wet nursing

Replacement feeding options:

- Modified cow's or goat's milk
- Full-cream milk powder
- Commercial infant formula

Recommended practices for Exclusive Breastfeeding option:

Exclusive breast feeding with early ceasation at 6 months, reduces but does not eliminate the risk of mother to child transmission of HIV, therefore the following recommendations should be followed:

- Follow recommendations under infant feeding for the first 6 months of life as indicated above
- Avoid giving the baby other foods or fluids before 6 months. Mixed feeding may cause gut inflammation that could increase the risk of HIV acquisition by the baby.
- Use safe sex such as using condoms during the entire breast feeding period to avoid new infection that increases the risk of HIV transmission.
- From 4 months the mother should express breast milk and feed the child using a cup in order to prepare the child for cup feeding when replacement feeding is introduced after 6 months.
- By 5 months the baby should feed the breast milk more from the cup than the breast .Prepare the mother for replacement feeding if AFASS.
- At 6 months if replacement feeding is AFASS, stop breast feeding and introduce replacement feeding, otherwise if the mother does not have any option that means the AFASS criteria, she should continue to breast feed while giving other foods and fluids until when replacement feeding is AFASS or until the child is able to eat family foods.
- Where replacement feeding is Affordable, Feasible,Acceptable, Sustainable and Safe, and abrupt mother should express and heat treat the breast milk before feeding the child during the transition period is difficult, the mother should express and heat the breast milk before feeding the child during the transition period
- The mother should get help from a Health professional on how to deal with emotional stress for herself and her baby caused by abrupt ceasation of breast feeding as well as how to manage the breast after ceasation.
- The mother should get follow up care either from the health facility or during out reach clinic or home visits whichever is applicable.

Recommended practices for Heat Treated Expressed Breast milk.

- The mother must be taught the appropriate techniques for expressing of breast milk
- Express the breast frequently, 8 or more times in a 24 hour period to keep up milk supply.
- Pour the expressed milk in small covered containers enough per feed.
- Using a pot big enough to accommodate the small containers, emerse the containers in water and heat the expressed breast milk to boil and cool immediately.
- Store the boiled milk in a cool place and use within 8 to 12 hours if stored at room temperature or 72 hours if refrigerated.
- Feed the child using a clean cup at least 8 to 12 times day and night per day
- If refrigerated, warm the breast milk to room temperature by immersing the container that contains the milk in warm water.
- Warm enough milk per feed and discard any left over milk to avoid contamination. Do not keep and feed the child left over milk as it could be contaminated and cause diarrhoea and other diseases to the child.
- Always use first in and first out principle when using the milk.

Recommended Practices for Wet Nursing:

Another woman may be requested, or volunteer to breastfeed another woman's baby. Inform the wet nurse of the risk of acquiring HIV from an infected baby. This option should include the following considerations:

- Obtain consent from parent/principle guardian
- The wet nurse should be counseled and test HIV negative
- The wet nurse should practice safe sex e.g. using a condom every time she has sex throughout breastfeeding period.
- The wet nurse should be available to breastfeed the infant frequently and for as long as the child wants.

Recommended Practices for Replacement Feeding:

Whenever replacement feeding is used,

- The infant should be fed exclusively on the chosen form of replacement feeding.
- The baby should be fed using a cup because bottle-feeding increases the chance of infections that can cause diarrhoea.
- If formula is to be given by the health facility, it should not be displayed and it should be treated as medicine kept within the pharmacy and should be given on prescription to avoid spill over.
- If any donations of formula are given, they should be given without publicity

and should be enough per child until the child is at least six months of age.

These options should be chosen by an HIV positive mother only when:

- The family has reliable access to a sufficient supply of commercial or home prepared infant formula for at least six months.
- The family has sufficient resources for safe and clean water, good sanitary facilities, fuel, utensils and the necessary preparation knowledge and skills.
- Assess every mother's situation according to the following criteria:
  - **Acceptability**
    How acceptable is the option considering social and cultural values and limitations especially considering that breastfeeding is a traditional norm. Find out the kind of support that the mother will get from the spouse, other family members and the community.
  - **Feasibility**
    Is it feasible considering the skills and resources required? How easy is it to prepare the feeding option day and night and during other situations?
  - **Affordability**
    Does the family have enough resources to buy milk, other supplies and utensils considering their income level and cash flow?
  - **Sustainability**
    The family should be able to procure enough milk; other supplies and utensils for the required period of 6 months after which the baby can be given other foods and fluids. The source and supply of the supplies should be reliable to avoid stock outs.
  - **Safety**
    Is it safe for consumption? The milk should be free from contamination and should have right types, amounts and proportion of nutrients needed by the baby. Safety should also be assessed in the context of available water and sanitary facilities.

Assess if the mother can meet the AFASS criteria during pregnancy, at birth and at 6 months . Support the mother for what ever feeding option she chooses. However if the child is already HIV positive at birth confirmed by an HIV test, then the baby should be breast fed to benefit from the variety of nutrients and protective factors against disease present in breast milk.

Modified Cow's or Goat's Milk (Full Cream):

Cow's milk has more protein and a greater concentration of sodium, phosphorous and other salts than human breast milk, hence it should be modified. Prepare the milk in the following proportions according to the age and weight of the baby:

150ml/kg body weight per day	Dilution 100ml milk + 50ml clean water + 10g sugar = 150ml milk			Total volume / day	Number of feeds (24 hour)
Average wt	milk	water	Sugar		
3 kg	160 ml	160 ml	32 g	480 ml	8 x 60 ml
4 kg	210 ml	210 ml	42 g	630 ml	7 x 90 ml
5 kg	240 ml	240 ml	48 g	720 ml	6 x 120 ml
6 kg	600 ml	300 ml	60 g	900 ml	6 x 150 ml
7 kg	700 ml	350 ml	70 g	1050 ml	6 x 175 ml

Table: Baby' Minimum Requirements Using Modified Animal Milk

On average the baby requires about 92 litres of milk and 9 kg of sugar for the first 6 months of life

Full Cream Milk Powder

Reconstitute and modify full cream powdered milk using the formula below:

- 80 ml safe and clean water + 10 g powdered milk = 80ml full strength milk
- To the 80 ml of full strength milk, add 40 ml of clean water =120 ml of infant feed and 8g of sugar.
- Feed the child the mixture at least 8 times in 24 hours
- The volume needs to be adjusted to the weight of the baby at 150ml/kg/day

Modified animal milk and full cream milk powder require appropriate knowledge and skills to modify it correctly to the right strength without over-diluting it, which may lead to malnutrition or under-diluting it, which may cause diarrhea and overloading of kidneys, hence it should be discouraged among mothers who are not able to read and follow instructions correctly.

Commercial Infant Formula:

- Follow the preparation guidelines as indicated on the label of formula taking extra care not to over concentrate or dilute the formula.

- Follow other guidelines indicated above about replacement feeding too.

NUTRITION DURING 6-24 MONTHS OR BEYOND

From six months of age, breast milk or other forms of milk used for replacement feeding alone are not enough to meet the child's energy and nutrient requirements due to rapid growth and development. During this time, the child experiences rapid physical and motor development becomes more active and prone to various infections that increase nutritional needs.
As such children growth should be given other energy and nutrient-rich foods and fluids in addition to breast milk from 6 months of life. The following feeding practices should be followed in order to ensure adequate nutrition during 6-24 months of age or beyond.

ESSENTIAL ACTIONS FOR FEDDING CHILDREN 6-24 MONTHS

- Continue breastfeeding on demand up to two years or longer.
- Give the child other foods such as Likuni Phala, porridge enriched with a variety of foods such as groundnut or Soya flour, cooking oil, milk, beans, eggs, margarine, mashed fruit and vegetable or enriched mashed potato at least three times a day.
- Give the child a variety of fruits, and yellow or green leafy vegetables every day.
- Breastfeed the child first before giving complementary foods, because breast milk is still an important source of energy and nutrients for the baby and continues to provide some protection to the child from infections.
- Introduce new food in small amounts at a time until the child gets used to it.
- Give the baby soft, smooth food that is easy to digest.
- As the child grows, give more solid and family foods and gradually increase the amount and frequency of feeding to 5 times a day from 2 years of age.
- Follow the standard food hygiene rules such as washing hands before feeding the child.
- Use a clean cup to feed the child.
- Feed the child in a calm, clean environment to avoid distractions and food contamination respectively.
- Feed the child from his/her own plate because he/she will not be able to compete with older siblings.
- Give priority to children when giving foods because they are growing and their nutritional needs are high.
- Caregivers, including men should take part in feeding the children in order to encourage the child to eat more.
- The child should receive vitamin A supplementation every 6 months from underfive clinic, outreach clinic, child health days, National immunisation campaigns, outpatient or even when they come for treatment when sick or

from Health Surveillance Assistant in the community until the child is about five years.

CHILDREN WHO REFUSE TO EAT OR HAVE NO APPETITE TO EAT

Sometimes children may refuse to eat either due to loss of appetite as a result of illness, monotonous food or stress. Encourage such children to eat by doing the following:

- Offer the child a variety of foods, in small amounts at a time but more often.
- Offer more food if the child shows interest.
- Offer the child foods that he/she likes more.
- Give foods of a suitable consistency- not too thick or dry.
- Give physical assistance e.g. sitting with the child and helping her to hold the cup to his/her mouth or putting the food within his/her reach.
- Offer verbal encouragement or praise when the child eats something.

NUTRITION FOR PRESCHOOL AGE (2-5 YEARS)

Preschool age children are more active and still growing up fast; hence they need to be fed well. At this age, the child is ready to feed on family foods. Therefore the following recommendations should be followed to ensure good nutrition during the preschool age period

- Give the child a variety of family foods from the six food groups at least 3 meals a day, with nutritious snacks such as fruit, chikondamoyo, chambiko, boiled yellow sweet potato or cassava, fresh fruit juice, twice a day in between meals.
- Follow the recommendations for 6-24 months old children for hygiene and feeding practices.
- The child should continue receiving vitamin A supplementation every 6 months until he/she is 59 months of age at the underfive clinic, outreach clinic, child health days, National immunisation campaigns, outpatient and when they come for treatment when sick.
- Deworm the child every 6 months.

NUTRITION DURING ADOLESCENCE (13-18 YEARS)

Adolescence covers the period from puberty to maturity that mostly occurs between 13 -18 years. It is characterised by abrupt increase in physical growth, physiological changes and physical activity. These changes lead to significant increase in the nutritional demands. However, during this time there are also some emotional and social changes taking place that influence dietary habits among adolescents. Peer influence, body image and mass media may influence their dietary patterns.

Good nutrition during adolescence is vital to meet the increased nutritional needs and to prepare the female body for adult pregnancy and positive birth outcomes.

The recommendations below will help to ensure good nutritional status during the adolescent period.

ESSENTIAL NUTRITION ACTION FOR THE ADOLESCENT CHILD

- Eat 3 nutritious meals made from a variety of foods from the six food groups every day with nutritious snacks in between meals.
- Boys need extra servings of foods rich in energy while girls need extra servings of iron, folate and vitamin C rich foods.
- Distribute food equitably among family members according to their needs.
- The workload should be equitably allocated between girls and boys to avoid undue exhaustion and depletion of energy and nutrient reserves in adolescent girls.

NUTRITION FOR THE ELDERLY (60 YEARS PLUS)

In most countries people aged 60 or 65 years are considered to be elderly but in developing countries due to malnutrition, disease exposure, physical work patterns and harsh life conditions, the onset of biological ageing may occur earlier. However, the rate at which the ageing process occurs varies widely as such the nutritional requirements and capabilities among the aged may differ widely.

Older people like all other people need a good diet that provides all their nutrient needs. Their nutrient needs are the same as in adulthood. However due to reduce physical activity their energy requirement is lower than that of younger adults.

ESSENTIAL ACTIONS FOR IMPROVING NUTRITION FOR THE ELDERLY

1. If chewing is a problem, eat foods that are soft and easy to swallow like soft nsima, thick soup, and enriched porridge and fruit juices. Some foods can be crushed or cut into smaller pieces for easy chewing and digestion.
2. Eat a variety of foods to obtain the required nutrients.
3. Eat lots of fruits, vegetables and legumes for fibre to aid digestion and to prevent constipation, which is common among the elderly.
4. Meats and legumes are also important for protein and other nutrients.
5. Drink lots of water (or juices) at least 2 litres a day even when you don't feel thirsty, since the thirst drive is greatly reduced in old age. This will among other functions, prevent constipation.
6. Meals should be nourishing and appetizing since some senses may be lost, so such meals will encourage one to eat enough.
7. Cut down on fatty foods, which may lead to obesity.
8. Menopausal women should eat foods rich in calcium such as milk, green leaf vegetables, nuts, yorgurt, sweet potatoes, root vegetables
9. The community and family should provide psychosocial support to the

elderly that are frail and lonely.

10. Religious organizations, schools and community based organizations (CBOs) within the communities should be mobilised to assist older people and also to interact with them for psycho-social support.
11. Remain physically and socially active for as long as possible since inactivity is associated with frequent illnesses and dependency.
12. Older people should have equal access to health facilities
13. They should be encouraged to reduce smoking and alcohol consumption.

NUTRITION FOR SPECIFIC DISEASES

The relationship between diseases and nutrition is complex. Disease contributes to poor nutrition due to increased nutritional demands, reduced food intake caused by loss of appetite, sores in the mouth and vomiting, and poor utilisation of food by the body for example due to diarrhoea.

On the other hand, poor nutritional status leads to reduced ability of the body to resist or fight infections. This results into frequent infections that further deteriorate one's nutritional status. Good nutrition promotes good health, facilitates response to treatment and recovery from illness.

This section focuses on recommendations for treating nutrition related diseases such as under and over nutrition, obesity and other chronic diseases that require nutritional management.

UNDER NUTRITION

Undernutriton is a consequence of low dietary intake of various nutrients and diseases. Undernutrition may result in under weight (low weight or too light for age) or wasting (low weight or too thin for height) and stunting or chronic malnutrition (too short for age).

ESSENTIAL ACTIONS FOR PREVENTING AND TREATING UNDERNUTRITION

- Follow the recommended nutrition practices throughout the life cycle as stipulated for each age group above.
- Take children for growth monitoring and promotion every month till they are 59 months.
- Seek early treatment for diseases from health facilities.
- Take the child immediately to a health facility when the child shows any of the following:
- Failure to gain weight for 3 consecutive visits
- Loss of weight for 3 consecutive visits
- Presence of oedema (generalised or bilateral on lower limbs)

- Silky weak pale hair
- Sunken eyes
- Irritable or hungry child that is wasted with buggy pants
- Health workers should refer to the National Guidelines for management of moderate and severe acute malnutrition for proper management.

NUTRITION DURING ILLNESS

Most children suffer from different types of diseases such as malaria, pneumonia, diarrhoea and anaemia that may influence their nutritional status. When a child is sick, it uses more energy and nutrients than normal to fight and recover from the infection and to repair or replace worn out tissues. Therefore the nutritional needs increase, but during infections the body often gets less energy and nutrients than it uses because:

- A child who is ill often eat less than usual.
- Of poor nutrient absorption.

If the body does not get enough food it breaks down its own fat and muscle to supply the nutrients that it needs. This often causes loss of weight during illness. Children may stop growing.

Therefore children of all ages need food when they are ill. Well-nourished children can fight infections better than undernourished children. Sick children who eat some food can fight infections better and recover faster than sick children who refuse to eat.

Therefore management of sick children should include assessment and counselling on feeding as follows:

- Find out how the child is feeding and identify any feeding problems that the mother may have with the child. Counsel the mother accordingly.
- Encourage her to continue feeding the child according to recommendations given for specific age group.
- If child is still breastfeeding, give more frequent, longer breastfeeds, day and night.
- If the child is more than six months:
- Give the child more fluids than before in addition to breast milk
- Feed the child more often than usual and on food that the child likes or that he/she can eat easily.
- If the child is receiving other foods or fluids, breastfeed more, reducing other foods or fluids.
- If not breastfeeding at all, seek advice from health worker for counselling and possible relactation.
- If thrush, treat thrush at home by rinsing it with warm water with salt or soda and seek medical care if necessary.
- If child has diarrhoea, continue breast feeding and giving nutritious foods

with increased intake of food based fluids such as chambiko, soup, thobwa, rice water, yorghurt, fruit juice if over six months of age.

- Give the child more boiled than fried foods for easy digestion.
- Give less spicy foods.
- If taking other forms of milk:
  - Replace with increased breastfeeding unless medically indicated or
  - Replace with fermented milk products, such as chambiko.
  - Encourage him/her to eat, even if he/she does not want to.
- Give food with enough energy and nutrients- not watery, diluted foods.
- As soon as a child starts to recover from an illness and his/her appetite improves, give him/her extra food to facilitate recovery process.
- It is important to watch the child's growth line as he recovers. He/she should grow faster than usual at this time. He/she needs extra food until he weighs more than before he/she was sick.
- Take the child early to a health facility for proper management according to existing guidelines if child shows any of the following danger signs:
  - difficult breathing
  - fast breathing
  - vomiting most of the food
  - persistent loss of appetite
  - fever
  - sunken eyes
  - sunken fontanelle
  - unconscious
  - skin pinch goes back slowly
  - restlessness and irritability

- Take child to the health facility for follow up of feeding problem within 3 days and for weight check within 14 days.
- If a child is taken to the health facility, the health worker should assess and treat the child according to IMCI and other existing protocols.
- A child 2 months old and above with severe malnutrition should be given Vitamin A supplement and referred accordingly
- Assess every child with growth faultering or very low weight for feeding practices and counsel the mother according to the feeding recommendations for age.
- Follow up a child with very low weight for age within 14 days
- If no feeding problem, advise mother to give home care for the young infant.
- Assess every sick child for anaemia and refer or treat accordingly as follows:
- For severe anaemia, refer urgently to the hospital with a blood donor and give first dose of intramuscular quinine.
- For moderate anaemia, give iron supplements and SP. If the child is two years or more old, give albendazole, if there has been no dose in the previous six months. Follow up in 14 days.
- Give Vitamin A supplement every six months from six months of age up to

five years.

- For treatment of measles, severe malnutrition and xeropthalmia, give three doses of Vitamin A:
  - Give first dose in clinic
  - Give mother one dose to give at home the next day and the mother to return after two weeks for third dose.

If the child is not being fed as described in the above recommendations, counsel the mother accordingly. In addition:

- If the mother reports difficulty with breastfeeding, assess breastfeeding techniques and lactation management.
- Show the mother correct positioning and attachment for effective breast feeding where necessary.
- If the child is less than 6 months old and is taking other forms of milk or foods without any medical contraindication for breast feeding:
  - Build mother's confidence that she can produce all the breast milk that the child needs.
  - Suggest giving more frequent, longer breastfeeds day and night.
- If other forms of milk need to be continued, counsel the mother to:
  - Breastfeed as much as possible, including at night.
  - Make sure that the other form of milk is a locally appropriate breast milk substitute that is acceptable, affordable, sustainable, safe and feasible and the mother is HIV negative to avoid increased risk of mother to child transmission of HIV due to mixed feeding
  - Make sure that the milk is correctly and hygienically prepared and given in adequate amounts according to guidelines from the manufacturer or in the National PMTCT and Infant and young child Nutrition guidelines.
- If the mother is using a bottle to feed the child:
  - Recommend substituting a cup for bottle.
  - Show the mother how to feed the child with a cup.
- If the child is not being fed actively, counsel the mother to:
  - Sit with the child and encourage the child to eat.
  - Give the child an adequate serving in a separate plate or bowl.
- If the child is not feeding well during illness, counsel the mother to:
  - Breastfeed more frequently and for longer if possible.
  - Use soft, varied, appetizing, favourite foods to encourage the child to eat as much as possible, and offer frequent small feedings.
- Clear a blocked nose if it interferes with feeding.
- Encourage the child to eat but do not force him/her. Forcing food into a child's mouth may cause vomiting or the food may go down the trachea and choke the child.
- Appetite will improve as child gets better, hence offer more food as the child gets better.
- Follow-up any feeding problems in 5 days.

FEEDING ADULTS WHO ARE SICK

People of all ages need food when they are sick but, like children, they usually do not want to eat much. Some of the ways to help sick people to eat enough are to:

- Offer foods, which the person likes and can easily eat.
- Give small meals more often than usual
- Make sure that people who are ill have a variety of foods from the six food groups at every meal.
- Give more fruits and vegetables
- Offer foods rich in iron, folate, Vitamin C and A (see Annex for food groups)
- Encourage to take more water and food based fluids such as fresh fruit juice, thobwa, chambiko and fresh soup.

NUTRITION FOR CHILD WITH DIARRHOEA AND DEHYDRATION

When a child passes a watery stool three or more times a day, they have diarrhoea. Diarrhoea is caused by many factors. Bacteria, parasites, viruses, allergies, changes to the lining of the gut, medications, stress unclean drinking water or contamination of food because of food hygiene problems. The biggest immediate problem with diarrhoea is loss of water or dehydration and in the long run, it causes weight loss because food does not stay long in the digestive tract to be absorbed.

ASSOCIATION OF DIARRHOEA AND MALNUTRITION

Diarrhoea may affect nutritional status due to:

1. Decreased intake of food caused by loss of appetite.
2. Loss of nutrients in the feaces.
3. Decreased gut enzymatic activity which leads to poor digestion of food.
4. Increased nutritional needs in response to infection

Good nutrition is very important for quick recovery from diarrhoea. Food based fluids are very important for replacing lost water and solutes. Therefore the following recommendations should be followed in case of diarrhoea and dehydration:

- Follow standard rules for hygiene and sanitation
- Continue feeding the child more often than usual and treat any underlying cause if known until the diarrhoea ceases.
- Drink more than 8 cups (1.5litres) of water per day to rehydrate body.

- Take food based fluids to replace the salts, energy and vitamins that have been lost such as fruit juices from mango, pawpaw, watermelon, guava, pine apple, apple, pear, peach, banana and malambe, gruel, rice porridge, soups from foods such as potatoes, pumpkin, squash, meat and dairy products or oral dehydration solution (ORS).
- Eat a lot of fruits such as bananas, mangoes, papaya, watermelon, pumpkins.
- Drink liquids between meals than with meals.
- Eat refined starchy foods (soluble fibres) such as white rice, maize meals, white bread, noodles and potatoes but eat them with other more nutrious foods.
- Peeled, cooked vegetables and cooked fruits are easily digested, absorbed and can be better tolerated.
- Eat small frequent meals every few hours rather than two or three heavy meals.
- Eat warm food rather than very hot or very cold.
- Sour or fermented dairy products are often better tolerated. These include yoghurt and other sour milk products like chambiko and buttermilk.
- Seek advice from a health worker if:
  - diarrhoea lasts for more than three days
  - if fever develops
  - blood appears in stool
  - person becomes very weak and if:

Any two of the following signs is present

- Lethargic or Unconscious
- Sunken eyes
- Skin pinch goes back very slowly
- Restlessness
- Irritable

If a child or person goes to the health facility with diarrhoea and dehydration, manage according to IMCI protocols for children and other existing guidelines for adults.

OVER NUTRITION - OBESITY

Obesity is a condition that is associated with being too fat resulting from excessive accumulation of body fat. People who have a tendency of eating more than what their body requires are likely to become overweight or obese. Obesity is caused by prolonged imbalance between energy intake and energy expenditure, i.e. more energy is taken in than what is lost in physical exercise, work and basal metabolism. Fatty diets have been implicated with obesity much more than carbohydrate diets. Other underlying causes such as genetic factors may contribute to obesity. It can affect both children and adults.

Obesity is measured by relating one's weight to height from which the Body Mass Index (BMI) is calculated. BMI is used to assess obesity in adults with the calculation: BMI = weight (kg) / height (m2) and it is interpreted as follows:

BMI	Status
18.5 - 24.9	Normal
25.0 - 29.9	Overweight Grade I
30.0 - 39.9	Obesity Grade II
40 +	Obesity Grade III

Among children, weight for height of 120% of the reference median is an indicator of obesity.

It should be noted that some people may be classified as being obese but may be overweight due to growth of muscles. This only applies to a few individuals who are very active such as weight lifters and boxers. Oedema (excess water causing swelling in the body) will also add weight to the body and needs to be considered.

Being obese is a risk factor for the following diseases:

- Coronary heart disease
- Stroke
- High blood pressure
- Adult onset diabetes
- Gallstones and other digestive disorders
- Backche problems
- Arthritis of the knees and hips joint
- Gout

These disorders may result in premature deaths or disability. Overweight children may become overweight adults.

ESSENTIAL ACTIONS FOR PREVENTION OF OVERNUTRITION AND OBESITY

Treatment of obesity is difficult and often fails hence prevention is the best

remedy. Follow the Nutrition recommendations for the general public in section 2.0. In addition:

- Eat meals with plenty of fruits and vegetables which contain lots of fibre
- Eat snacks that are low in energy for instance fruits, maize
- Avoid high energy foods such as sodas, chips, crisps, sweets and cakes
- Avoid excess consumption of alcohol
- Take regular vigorous exercises e.g. walking briskly or uphill, digging, jogging, playing games such as squash, volleyball, and tennis.
- energy expenditure should exceed energy intake, hence the following recommendations should be followed:
- Reduce the size of servings at each meal to reduce energy intake
- Reduce fat intake, which has the most calories per gram
- Increase intake of fruits and vegetables to reduce calorie intake

DIABETES MELLITUS

Diabetes mellitus is a chronic metabolic disorder in which blood glucose levels are derated due to deficiency or diminished effectiveness of insulin. Insulin is a hormone, which controls the movement of glucose from blood into the body cells. In absence of insulin, glucose regulation falters and diabetes may set in since sugar collects in the blood. High glucose levels in urine evidence diabetes but other tests are carried out to confirm its existence.

Diabetes is classified into two categories:

Type I

Insulin-dependent/juvenile-onset diabetes:
This starts early in life commonly from 8-14 years. With this type of diabetes, the pancreas fails to produce insulin and hence glucose levels remain high in the blood. In order to clear the glucose, insulin is injected into the blood since it cannot be taken orally because as a protein, it may therefore be digested by the gastric enzymes.

Type II

Non-insulin dependent/adult-onset diabetes:
This is the most prevalent type of diabetes that usually occurs later in life. With this type, the activity of insulin is affected as cells become resistant to insulin a situation that worsens with increase in body fat.
Anyone can become diabetic but the risk is higher if:

- One's family has history of diabetes
- Overweight
- Over 40 years of age
- If female.

Diabetes is related to obesity, cardiovascular disease and to alcoholism. It may

also be associated with other complications such as cataracts in the eyes, renal problems, impotence in men, poor wound healing and other neurological abnormalities. The Person loses weight since he/she tries to obtain nutrients by using up its muscles and fats.

At the same time, the person may become weak and tired since the body is not getting adequate energy from the food.

People can become severely dehydrated, produce excessive urine and therefore may experience excessive thirst.

There is production of ketone bodies since the body is breaking down fatty acids for energy and this may lead to acidosis which if severe enough may lead to fatal coma. Too much sugar in the blood may also result into a different type of coma.

ESSENTIAL ACTIONS FOR CONTROL AND PREVENTION OF DIABETES

The following recommendations are very important for control and prevention of diabetes:

- Follow the 3Ds:Disciplined lifestyle, Diet and Drugs as follows:
  - Have a well defined, timely and regular pattern for eating, working, recreation, exercise and sleep.
  - Have a regular diet with well defined time table.
  - Where the diet is failing, then administer drugs to treat and prevent complications of diabetes.

- Reduce obesity by reducing body weight because obesity induces resistance to the action of insulin. Follow recommendations for reducing weight as given in the section for obesity.
- Eat lots of fibre (unrefined food products) from foods such as whole grain cereals, legumes, root crops, fruits and vegetables. These slow down the digestion and absorption of sugars and the body is able to control sugar if it goes into the blood
- Eat more of boiled or roasted foods other than fried foods.
- Use less gravy and fats since these contribute to obesity, which is a risk factor for diabetes.
- Eat regularly, in modest amounts but more frequently, avoid either eating too much in one meal or going for longer periods without eating.
- Alcohol should be taken in moderation.
- Go to the hospital regularly for check up

CARDIOVASCULAR DISEASES: hypertension, stroke and coronary heart disease.

HYPERTENSION

In adults normal blood pressure is around 120/80 mmHg and the upper limit for normal blood pressure is 140/90 mmHg. Blood pressure beyond this is considered hypertensive. High blood pressure stresses the heart since it has to pump extra hard to push the blood against resistant arteries. High blood pressure is associated with high salt intake, obesity and excessive alcohol consumption. However, hypertension may also occur due to other diseases or infections.
For certain people, genetic factors may predispose them to high blood pressure.

The increased incidence of stroke and coronary heart disease is greatly associated with hypertension. Symptoms of hypertension include headaches, tiredness and dizziness (however, these may occur due to other diseases).

ESSENTIAL ACTIONS FOR PREVENTION AND CONTROL OF HYPERTENSION

- Reduce salt intake
- Reduce body weight by increasing exercise and reducing portion size of food during meal times.
- If these measures do not work, seek medical assistance.

STROKE

Stroke occurs when an artery in the brain is blocked which means that the blood flow to the brain is actually insufficient. As a result, a person may be paralysed down on one side of the body.

Manage a person with stroke according to existing guidelines at the health facility.

CORONARY HEART DISEASE (CHD)

Coronary Heart disease occurs when an artery in the heart is blocked.

Risk factors for CHD and stroke include:
- Smoking
- Obesity
- High serum cholesterol
- High blood pressure
- Lack of exercise
- Diabetes
- Excessive alcohol intake
- Stress

- Undernutrition in early childhood
- Genetic predisposition

ESSENTIAL ACTIONS FOR PREVENTION AND CONTROL OF STROKE AND CORONARY HEART DISEASE

- Reduce fat intake by cutting down on fatty foods.
- Take less salt (less than 10 mg/day).
- Stop smoking.
- Exercise regularly to maintain energy balance and to stay healthy
- Reduce weight.
- Treat or control diabetes if present.
- Sought treatment to lower blood pressure if it is high.
- Eat lots of fruits, vegetables, legumes, and grains for vitamin C and Beta Carotene which reduce the risk of CHD.
- Go to the hospital for regular check up.

GOUT

Gout is a metabolic hereditary disorder, which leads to inflammation of the joints as a result of accumulation of uric acid crystals. Gout occurs due genetic defect common among males after the age of 35 and occasionally in postmenopausal women. Thus, gout occurs when the body has difficulties in excreting excess uric acid due to kidney problems or when there is excessive production of uric acid beyond normal levels. The genetic defect leads to improper metabolism of purines (nucleoproteins), which leads to production of uric acid, which accumulate in the blood and later form crystals that are deposited in the joints, particularly the big toe and cause gout. It can affect other joints such as knee, ankle, wrist, foot and small joints of the hands. High levels of uric acid is also associated with the formation of uric acid stones in the urinary tract, which can lead to renal failure.

Foods that are rich in purines predispose individuals to gout. Purines are normally present in protein rich foods for instance bacon, turkey, pigeon, liver, pulses, smoked meat and other offals (organ meats).

Gout is strongly associated with obesity, excessive alcohol intake, hypertension and certain drugs, which interfere with kidney's ability to clear uric acid from the blood and cause kidney malfunction. Examples of such medication include pyrazinamide and ethambutol both of which are TB drugs.

ESSENTIAL ACTIONS FOR PREVENTION AND CONTROL OF GOUT

- Avoid purine rich foods indicated above to reduce purine load of the body.
- Reduce alcohol intake
- Overweight gouty patients should reduce their weight gradually (not by starvation).
- Drink lots of fluid especially water up to 3 litres per day to dissolve and wash away the uric acid crystals.

- Use bicarbonate of soda to increase the solubility of uric acid in urine in order to prevent precipitation of urate crystals.
- Seek medical treatment for prescription of drugs, which either reduce synthesis of uric acid or increase excretion of urinary uric acid

NUTRITION FOR PEOPLE LIVING WITH HIV AND AIDS

HIV infection is characterised by progressive destruction of the immune system, hence it predisposes people to various opportunistic infections that lead to increased nutrient demand and loss of nutrients caused by the infection and viral replication. As a result, people with HIV and AIDS have increased energy needs in response to HIV infection and acute phase of opportunistic infections. Energy requirements are likely to increase by 10% to maintain body weight and physical activity in asymptomatic HIV-infected adults, and growth in asymptomatic children. However during symptomatic HIV and subsequently during AIDS, energy requirements increase by approximately 20% to 30% to maintain adult body weight and by 50-100% in children. Therefore, energy intakes need to be increased by 50% to 100% over normal requirements in children infected with HIV and experiencing weight loss.

RELATIONSHIP BETWEEN NUTRITION, HIV AND AIDS

A direct link exists between good nutrition, HIV and AIDS. Nutritional status may affect the progression of HIV and related infections and the survival of HIV infected people. A well-nourished person or child has strong immune system that helps to fight diseases. When a person or child has HIV and AIDS, the ability to fight diseases is weakened or reduced. If such a person or child is not well fed, the body gets weaker and the person is more likely to get sick more often and develop AIDS faster.

The HIV and related diseases or conditions that the person may suffer from, increase demand for nutrients and a variety of foods are necessary in order to recover from illness. However the diseases and related conditions may affect food intake and utilisation of the various food nutrients by the body. This relationship results in a vicious cycle of malnutrition and diseases.

Diseases and related conditions that a person or child with HIV and AIDS suffers from may lead to poor nutritional status due to:

1. Inadequate intake of food nutrients if the person is not able to eat enough and a variety of foods to meet their nutritional requirement due to loss of appetite as a result of:

   - **Depression**

     The person may experience some depression from dealing with a disease that has no cure, fear of death and also because of possible stigma from spouse, family members and community. In some cases depression reduces one's appetite to eat.

   - **Diseases**

     The person may suffer from more frequent episodes of illness such as malaria and fever that may make them not to want to eat. Some conditions like sores in the mouth and throat may make chewing and swallowing difficult.

   - **Drugs**

     Drugs taken by people with HIV and AIDS for treating diseases and antiretroviral (ARVs) may cause nausea and loss of appetite as side effects, hence they eat less.

2. Poor absorption of food since the HIV infection and some of the HIV related infections may interfere with the body's ability to digest, absorb and utilise food properly. Poor absorption of carbohydrates and fats for example, can occur at any stage of HIV infection in both adults and children and may result in excess nutrient loss. Poor absorption may be due to HIV infection of the intestinal cells that may damage the gut or increased incidence of HIV related infection such as diarrhoea. When one has diarrhoea food taken does not stay in the intestine. The person may lose a lot of water together with the dissolved nutrients thereby reducing the amount of nutrients that body can get from the food. If this continues for a long time, the person experience

excess weight loss. Poor fat absorption may also reduce absorption and use of fat soluble vitamins such as Vitamin A and E.

Some drugs may interfere with digestion absorption and utilisation of food by the body.

3. Shortage of nutritious food at home due to long illness since the person is not able to work and produce enough food for the family, they may spend more money and other resources on medical care and they may not have enough money to buy nutritious foods for themselves and the family.If it is a child, a sick mother may not provide adequate care to the child. This may put the child at risk of developing malnutrition or diseases.

   Therefore a person with HIV/AIDS needs additional amounts of nutrients to help fight the burden of the virus and related infections, maintain weight, prevent weight loss and loss of muscle mass. As such, they need to eat appropriate foods that will give them more total nutrients in the right amount and proportion in order to maintain their nutrition and health status. Besides drugs, eighty percent (80%) of the recovery of the body comes from adequate nutrition (15% medication and 5% from psychological, social and spiritual support). However it is important to note that food and drug interactions also exist which may reduce drug efficacy, food intake andabsorption.

The following recommended practices will help people living with HIV/AIDS to maintain high quality of health and to manage nutrition related conditions as they occur

ESSENTIAL ACTIONS FOR IMPROVING NUTRITIONAL STATUS FOR PLWHAS

- Eat a variety of foods from the six food groups everyday.
- Eat foods that are not highly refined for example; eat whole wheat brown bread rather than white bread, mgaiwa other than white maize flour.
- Eat fermented foods such as chambiko, yoghurt, thobwa.
- Eat small but frequent diversified meals throughout the day (at least 6 times a day).
- Eat a lot of fruits and vegetables every day.
- Eat boiled or steamed or roasted foods other than fried foods (they are more easily digested).
- Observe all the hygiene rules to avoid germs that may cause diseases e.g. Prepare food in a clean environment, ensure that fruits and vegetables are washed well.

- Drink at least **2** litres of clean safe water every day.
- Do regular exercise everyday to keep fit.
- Get treatment for any illness as soon as possible as each infection decreases your immune system.
- Eat food with less sugar added. Sugar encourages the growth of yeast (e.g. thrush / candidiasis).
- Reduce the intake of coffee and tea as they deplete water and reduce absorption of certain nutrients e.g. iron.
- Avoid alcohol and tobacco as they suppress the immune system.
- Include foods that are rich in: selenium, vitamin A, zinc, vitamin B complex, vitamin C, folic acid, magnesium, iron, calcium, vitamin E, iodine.
- Eat micronutrient rich foods such as whole grains, roots, fruits, vegetables, legumes and nuts.
- If digesting milk is a problem, avoid it.

Nutritional management of common HIV related conditions

Some of the diseases and related conditions that a person with HIV and AIDS may suffer from need special nutritional management as follows:

Anorexia (loss of appetite)

- Drink sips of (but frequent) high-energy and high-protein fluids such as soured milk (chambiko), thobwa and fruit juices. Natural fruit juices are better than processed ones.
- Eat small but frequent portions of soft foods with pleasing aroma and texture.(5 or more times a day)
- Serve the food in an attractive way.
- Eat nutritious snacks like boiled pasteurized and soured milks, nuts, bean patties(chipere), bananas, pineapples, boiled cassava and sweet potatoes.
- Eat favourite food
- Eat foods without strong aroma if it affects you negatively
- Drink liquids often (at least 2 litres per day).

Fever

- Eat foods rich in energy and other nutrients such as soups made from a mixture of a variety of foods such as potatoes, carrots, maize, mashed vegetables.
- Eat small frequent meals that contain a variety of foods
- Drink plenty of fluids beyond thirst especially clean boiled water to prevent dehydration.
- Sponging or take cool bath
- Rest.
- Go to Health facility if:

- Persistent fever for several days
- Loss of consciousness
- Severe body pain
- Yellow eyes
- Convulsions

Change or loss of taste

- Use flavour enhancers e.g. salt, lemon and spices
- Chew food well and move it around in the mouth to stimulate receptors
- Clean mouth every day

Sore mouth and throat

- Avoid sugary, fried and spicy foods
- Chew raw garlic
- Eat soft foods e.g. porridge, mashed potato, yoghurt, soups
- Rinse the mouth with warm, salt water or baking soda at least 4 times

Nausea and vomiting

- Eat small quantities of food at frequent intervals. Avoid an empty stomach
- Eat boiled rather than fried foods
- Drink diluted fruit juices and clean and safe water
- Drink after meals and limit fluid intake with meals
- Reduce amount of salt if it makes you feel like vomiting
- Eat more of dry foods (roasted, grilled, boiled) to calm the stomach.
- Eat fresh soups made from a mixture of foods.
- Eat crackers (non-sweet biscuits) where possible
- Eat foods which do not have strong aroma. Avoid spicy foods.
- Rest between meals but avoid lying down immediately after eating (wait at least 20 minutes) to avoid vomiting.

Loose stools or diarrhoea

- Drink a lot of fluids (soups or diluted fruit juices, boiled water or ORS) to avoid dehydration
- Avoid strong citrus fruits such as oranges, lemons as they may irritate the stomach.
- Continue eating during and after illness to facilitate recovery and weight gain and nutrient recovery
- Eat foods rich in soluble fibre such as bananas, peas mashed fruits, soft rice

or millet porridge that provide energy and help to retain fluids.

- Eat soft and easy to digest foods such as cooked mashed green bananas, carrots or potatoes, millet, rice or maize porridge, sweet potatoes
- Eat smaller meals more often.
- Eat foods which contain less fat.
- Reduce dairy products except those that are fermented e.g. chambiko.
- Reduce gas forming foods such as carbonated drinks or sodas, cabbage, onions
- Eat boiled or steamed foods other than fried.
- Eat fermented foods such as chambiko, yorghut.
- Observe all standard hygiene rules.
- Go to the health facility immediately If see any of the following: low or no urine output, fainting, dizziness, short breaths, bloody stools, vomiting most of the food or fluids taken, severe abdominal pain or persistent diarrhoea for more than 3 days as described under the section on diarrhoea.

Constipation

- Eat foods high in fibre e.g. mgaiwa, fruits with edible skin, whole-wheat bread, green leafy vegetables, beans.
- Avoid processed or refined foods
- Drink plenty of fluids (at least 2litres of clean safe water every day).
- Do not use enemas unless directed by a doctor.
- Take regular exercise daily.

Fat Malabsorption

- Eliminate oils, butter, margarine, and foods that contain/ or are prepared with them.
- Eat only lean meat, fruits and vegetables with other low fat foods
- Eat more of roasted, grilled or boiled foods other than fried foods

Weight Loss

- Eat a mixture or a variety of high energy foods such as bananas, avocado pear, nuts, butter, cheese, enriched mashed or boiled potatoes, fatty fish, beans, enriched porridge, high energy and protein drinks such as chambiko, milk shakes, enriched likuni phala with vegetable oil, milk and sugar
- Go to hospital for nutrition assessment and further client specific advice

Muscle wasting

- Increase amount of food and eating frequency.
- Eat a variety of foods from the six food groups.
- Eat more foods that are rich in protein such as fish, meat and those with a lot of energy such as starchy foods (cereals, potatoes, green bananas, rice).
- If can't eat more at once, eat small but more frequent meals.
- Do regular exercise to build muscles

Flatulence (gas)

- Avoid gas forming foods like beans, cabbage, and cauliflower.
- Eat small frequent meals.
- Drink plenty of fluids

Anaemia

- Eat foods rich in iron such as meats, dark green leafy vegetables
- Eat more raw tomato and more fruits like oranges, lemons, bwemba, pine apple with a meal to facilitate iron absorption from plant sources
- Get treatment for parasites such as malaria, hook worms
- Reduce intake of tea, coffee immediately after meal as they contain substances that inhibit iron absorption
- Take iron supplements with advice from medical doctor

Oral Trush

- Eat soft mashed foods such as mashed potatoes, bananas, carrots or scrambled eggs, fresh soups from a mixture of foods, enriched porridge.
- Eat cold or room temperature foods. Avoid hot foods.
- Avoid strong citrus fruits and juices, spicy, salty or sticky foods as these may irritate the mouth sores.
- Avoid sugary foods, they encourage yeast to grow.
- Rinse mouth with boiled warm salty water after eating to reduce irritation and to keep infected areas clean so that yeast does not grow.
- Drink plenty of fluids.
- Avoid alcohol.
- Seek medical treatment.

NUTRITION FOR HIV POSITIVE PREGNANT WOMEN:

Pregnant women who are malnourished and HIV positive can detoriate fast as their immunity is already weak and nutrional needs already high. As such the woman may experience rapid increase in viral load and have an increased risk of transmission of HIV from the infected mother to child. Therefore pregnant women should maintain good nutrition to strengthen their immunity and reduce the viral multiplication. This will help to reduce the risk of transmission to the infant. In addition, pregnant women who are HIV positive are at greater risk for depletion of critical vitamins and minerals, particularly vitamin A and iron which may affect pregnant outcomes.

In addition to recommendations given under the section on Nutrition during pregnancy, the recommendations below should be followed to maintain good nutritional status among pregnant women who are HIV positive.

ESSENTIAL ACTIONS FOR IMPROVING NUTRITION FOR PREGNANT WOMEN WHO ARE HIV POSITIVE

- Eat iron rich foods such as green leafy vegetables and other foods from the six food groups.

- To meet increased energy needs, increase intake of easily digestible vegetable fats such as that from avocado pears, vegetable oils, nuts.
- Although there is increased risk of infection with artificial iron supplementation, women who are HIV positive should continue to get iron supplements in addition to consumption of iron rich foods such as green leafy vegetables, meat, fish, milk and other foods.
- Take two malaria prophylaxis (in the second and third trimester) and a multivitamin supplement daily where possible. Ideally the multivitamin should contain selenium.
- Seek advice from the health worker on infant feeding options
- Support the woman to implement the infant feeding option that they choose.

Herbal Treatments

At the time of writing these guidelines, there was no cure for HIV. However, certain traditional medicines are believed to help prevent and treat symptoms of HIV related infections. Herbs and spices can improve digestion and stimulate appetite. Some of these medicines are helpful and others can be dangerous as they cause adverse side effects. Some of the herbs and spices that are beneficial to PLWHAs are listed in the Annex. The following recommendations when using the herbal treatment.

- Continue to eat a variety of foods from the six food groups.
- Avoid treatments that require fasting, reducing food intake or avoiding a whole food group.
- Discuss herbal treatments with a doctor, nutritionist or health care worker before starting treatment.
- Continue going to the hospital for regular check up.
- Return to the hospital immediately your condition worsens or if it does not improve.

NUTRITION FOR ART

Good nutrition compliments ARV action. ARV reduces viral multiplication; hence reduce progression to reduced immunity and frequent infections that may compromise nutritional status. However, ARVs may have side effects that may reduce food intake, absorption and increased nutrient requirements. This may lead to poor nutrition status and could reduce adherence to ARVs. Some foods

may reduce drug effectiveness and worsen the side effects when taken with ARVs.

Therefore the following recommendations are important for effective treatment with ARVs and for maintaining good nutrition status:

ESSENTIAL NUTRITION ACTIONS FOR MANAGING FOOD-DRUG INTERACTIONS FOR PEOPLE ON ART

- Select foods carefully and plan meals well as per doctor's prescription or advice from a nutritionist or health worker.
- Generally all drugs require drinking a lot of clean safe water at least 8 glasses or 1.5 to 2litres per day
- Avoid alcohol as it reduces drug effectiveness and may cause other dangerous side effects
- Avoid too much coffee and tea as they increase fluid loss and interfere with absorption of certain nutrients
- Avoid under cooked meats and eggs, expired food products as they may cause food borne diseases
- Tell your doctor about drug side effects to eliminate other causes e.g. Opportunistic infections.

SIDE EFFECTS AND DIETARY REQUIREMENTS OF FIRSTLINE ARVs

Many of the antibiotics and anti-retrovirals used to treat HIV and opportunistic infections cause side effects. Some of the side-effects include: vomiting, nausea, diarrhoea, decreased appetite that may lead to decreased food intake and eventual weight loss and muscle wasting or increased appetite that may cause undesirable weight gain. Some clients may experience the side effects while others may not. Side effects usually disappear after about 6 weeks when body gets used.

It is important to know that food and drug interactions also occur that may affect drug efficacy and nutrient absorption in the body. The interactions may occur as follows:

- Food can affect drug efficacy
- Medications can have an effect on nutrient absorption and metabolism
- Side effects of medication can affect food intake and nutrient absorption
- Medications and foods can interact to cause unhealthy side effects

Some of the interactions under these categories include:

- Vitamin B6 deficiency with the TB medicine (Ionized)
- Rafampin can increase Vitamin D metabolism and supplements may need to be taken
- Prolonged treatment with the ARV Zidovudine (AZT) can adversely affect the absorption of vitamin B12 and folate.
- When taking TB treatment, many patients experience increased appetite.

Therefore, patients should be offered food on demand and the tablets should be taken together with food.

FOOD REQUIREMENTS FOR COMMON ARVS

- All drugs come with specific directions for consumption, some need to be taken with food and others need to be taken before or after meals. If you have specific dietary requirements these should be taken into consideration and discussed with your doctor before deciding to start treatment. Please check

Type of ARV	Food requirements	Side effects
Zidovudine	Best taken on empty stomach, eg 30 to 60 minutes before breakfast or dinner. In case of stomach irritation, can take it with food but not with high fat meal, hence should limit amount of fat/oil in the meal	Loss of appetite, nausea, vomiting, fatigue, constipation, fever, headache, change of taste, weight gain, anaemia
Nevirapine	No dietary restrictions. Taken with or without food	Nausea, vomiting, fever, weight loss
Lamivudine	Take with or without food	Nausea, vomiting, diarrhoea, anaemia, tiredness, abdominal pain, loss of appetite
Efavirenz	Take with or without food but not fat meal if taken with food	High blood fat levels, loss of appetite, nausea, vomiting, diarrhoea, flatulence, dizziness
Stavudine	With or without food	Nausea, vomiting, diarrhoea, fever, loss of appetite, abdominal pain

with your doctor or pharmacist on the specific recommendations for the drugs you are taking.

Herb or Spice	Benefits derived	How to use or prepare
Aloe	Relieves constipation	• Use extract of leaves • Soak in water boil and drink the water
Basil	Relieves nausea, aids digestion, antiseptic properties for mouth sores	• Add to foods for nausea and digestion • Use as a gargle for mouth sores
Calendula	Flower heads have antiseptic, anti-inflammatory properties. Helps with infections of the upper GI tract	• Use as compress to treat infected wounds • Prepare as tea to aid digestion
Cardamom	Helps with digestive problems, pain, diarrhoea, nausea, vomiting and loss of appetite	• Add to food during cooking or add to cup of tea
Cayenne	Stimulates appetite, helps fights infection, heals ulcer, raises body temperature for warmth	• Add a pinch to cooked or raw foods. For an energizing drink add to fruit juice, milk or water.
Camomile	Helps digestion and provides relief for nausea	• Prepare tea from leaves and flowers, drink throughout the day
Cinnamon	Good for colds and flu. Increases body temperature, stimulates appetite and digestive juices encouraging bowel movements	• Either adds to meals or in tea, particularly ginger cinnamon. Tea is used for chesty colds or TB

- Clients who are going through VCT should be counselled on nutrition during the post-test sessions.
- Draw a food-drug time table with the help of health worker based on the food

Herb or Spice	Benefits derived	How to use or prepare
Coriander	Increases appetite and reduce flatulence (gas) controls bacteria and fungi	• Add herb to food while cooking
Eucaplyptus	Antibacterial function, particularly for lungs (TB, Bronchitis) Eucalyptus oil increases blood flow and reduces inflammation	• Prepare tea from leaves or the extract
Fennel	Increases appetite, combat flatulence and expel gas	• Add as spice to foods or prepare tea from seeds • Use in limited amounts
Garlic	Antibacterial, antiviral, antifungal functions, particularly in the intestines, lungs, and vagina. Helps digestion and feeling of weakness, good for thrush, throat infections, herpes, diarrhoea	• Prepare as tea or energy drink, eat raw or use in food
Ginger	Improves digestion, energizes, relieves diarrhoea and stimulates appetite Use for treating colds, flu, nausea	• Use as a spice in meals, or prepare a ginger tea
Lemon	Antibacterial and aids in digestion, increases the alkalinity of the blood to decrease viral replication, reduces swollen lymph nodes	• Suck on lemon slices, use in clean water or make juice, energy drink

requirements of the drug that you are taking.

- Manage the side effects as indicated above.

Table showing common herbs with medicinal effects

Herb or Spice	Benefits derived	How to use or prepare
Lemongrass	Calming effect in relieving stress, aids digestion	• Prepare as a tea
Mint	Anti-inflammatory effect and aids digestion	• Use in tea or gargle for mouth sores, chew mint leaves to aid digestion
Neem	Reduces fever	• Cut fresh twig, remove leaves and boil the bark in water, drink as tea • Bark can also be chewed
Thyme	Antiseptic and antifungal properties, relaxes coughing and increasing mucosal circulation (TB) Stimulates digestions and encourages the growth of normal flora in the gut	• Use as a gargle or mouthwash or vaginal douche • Prepare as a tea
Tumeric / Yellow Root	Digestive aid and anti-septic, anti-oxidant	• Use powdered in rice and cereals in curries and sauces

This table is adapted from Living Well with HIV/AIDS: A Manual on Nutritional Care and Support for People for HIV/AIDS pp. 63-64.