General Health

Underlying causes of malnutrition
Why health workers should feel concerned by nutritional issues? By Health Messenger Magazine

Disconceptions Concerning Nutrition: Voices of Community Health Educators and TBAs along the Thai-Burmese Border Health Messenger Magazine in collaboration with NHEC/BMA and ARC

Micronutrients: The Hidden Hunger By Andrea Menefee, TBBC

Iron Deficiency Anaemia By Dr Elisabetta Leonardi Nield, Mae Tao Clinic

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From the Field

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The present issue of Health Messenger Magazine in your hands is dedicated to nutrition, a major source of concern both in the camps and in Burma, where many people have a restricted access to a variety of foods, due to poverty and displacement.

Improving people’s nutritional status is a difficult task, as it necessitates to undertake actions at each stage of the food chain: from the agricultural system to people’s livelihoods. And on these aspects, health and social workers can bring little input. However, health and social workers have a major role to play in preventing malnutrition and detecting its first clinical signs. This issue of Health Messenger will therefore provide them with essential health education tools on this topic and with general guidelines for early recognition and management of malnutrition. In addition, a detachable poster with growth charts for boys and for girls has been included at the end of the magazine.

We also took the opportunity of its tenth birthday to redesign the Health Messenger Magazine. With its new format and graphic chart, Health Messenger should be easier to read and more attractive. Do not hesitate to send us your feedback on this, together with your answers to the annual quiz!

Enjoy your reading,

Dr Than
Medical Editor
This article is an overview of the most important nutritional problems encountered in the camps and presents the underlying causes of malnutrition.

Some recent nutrition surveys conducted in the camps have highlighted the importance of chronic malnutrition among children. In all the camps located along the Thai-Burmese border, rates of chronic malnutrition reach 35.7 % as compared to an overall rate of 16 % in Thailand and 37 % reported for Burma. The poor nutritional status of children living in the camps is partly due to micronutrients deficiencies in the food provided in the General Food Basket, to the marginal ability of most refugees to complement the ration but also to the lack of early recognition of malnourished children.

**The Underlying Causes of Malnutrition**

There are a lot of reasons why people become malnourished, and we group these reasons into three categories, called “Underlying causes”. These underlying causes include:

“Food insecurity” (not being able to access available or/and adequate food).

“Poor health environment” (limited access to health services and water/sanitation).

“Poor social and caring practices” (including some habits for feeding infants and young children, or taking care of mothers).

**Food security**

People’s displacement and their living in a limited space, with restricted possibilities to move in and out of the camp mean that a lot of the ways that people produced and accessed food through the markets have been disrupted. In this particular context, food accessibility has been maintained through the monthly distribution of dry rations (but does not include the addition of fresh foods for many people).

The General Food Basket (rations) distributed monthly to refugees is composed of 16 kg of rice, 1.5 kg of split yellow hulled mung beans, 1 liter of soybean oil, 1 kg of fish paste, 330 gm of iodized salt, and 125 g of dried chil...
Growth monitoring

ies, averaging 2,250 kcal per person per day (79% carbohydrates, 8% protein and 13% fat). Children under five years of age receive one-half the amount of rice, beans and oil. Ration foods constitute the main source of foods for many households, while non-rations food is only marginally accessible (Food and Nutrition Bulletin, 360-366, vol. 24, no. 4, 2003). In 2004, the TBBC (Thailand Burma Border Consortium) began the introduction of fortified blended food in the GFB, in order to compensate for micronutrients deficiencies and to provide an easy to use first food for young children. Because of the inclusion of a new ration item, TBBC reduced the rice provided by 1 kg to 15 kg/person/month. Thus far, 7 of the 9 camps have been implemented with this new ration.

It is hoped that the inclusion of blended food will partly address the problem of chronic malnutrition in addition to micronutrient deficiencies. However, Vitamin B1 deficiency persists and Vitamin A must be supplemented to vulnerable groups. Iron deficiency anemia is very common in the population (The American Society for Nutritional Sciences J. Nutr. 133:4143-4149, December 2003). Chronic malnutrition is a considerable problem often underestimated by health workers.

Because the blended food will only partly address the problem, some other solutions should be found in the future, like growing fruit trees, developing kitchen gardens and distribution of vitamin A, Vitamin B1 (low dose) and iron.

Health and the Health Environment

Most of the camps’ residents have an easy access to water and sanitation and to health care services. However, the efficiency of the feeding programs together with growth monitoring activities implemented at Health Center level remain low in many ways.

Growth monitoring

(see growth charts)

In all camps, children are called to the clinic each month to check weight and height, until 12 months. The recommendation is to call them until they are 36 months. In addition, malnourished children should be followed up at home by home visitors to monitor their growth. In some camps, home-visitors detect and follow-up on malnourished children using Middle Upper Arm Circumference (MUAC), and refer them to the clinic. Those children who are below the cutoff are referred to the clinic for a further check of weight and height. One improvement that SHOULD be made is to use z-scores instead of % median to detect those children who are either acutely or chronically malnourished - z-scores provide a more accurate measure and health workers can then conduct better surveillance.

Growth monitoring is an important component of child survival and health programs in order to catch and treat those children who may be becoming acutely malnourished before it becomes severe.
Sources:


- Evaluation of ECHO-Funded Nutrition and Food Aid Activities for Burmese Refugees in Thailand, ECHO, April 2004

Social and Care Practices

Supplementary Feeding Program (SFP)

SFP for all pregnant and lactating women has been implemented in the camps since years. The program consists in provision of food commodities complementing the rations and vitamin B1 supplements for pregnant women and for lactating women for an average period of 9 months. However, the impact of the SFP has not been routinely measured. In addition, many women are still not checked and treated for malnutrition before entering the program. Finally, the systematic implementation of SFP for pregnant and lactating women is not a long-term solution to address the problem.

It is to be mentioned that acute malnutrition rates remain low. Nevertheless, in some health facilities the rates are higher, and health workers may not systematically monitor the growth of children between 12 and 36 months. Therefore, the rate of acute malnutrition might have been underestimated.

Social and Care Practices

There are several ways that people feed infants and young children, according to traditional and social practices, that can contribute to children becoming malnourished. Surveys led in the camps have pointed out that:

- Only 30% of infants are exclusively breast-fed until the age of 6 months.
- 34% already receive solid food before they are 4 months old.
- Two third of the children have less than 3 meals a day.
- Only 4% consume 4 meals as recommended.

Women do not always have access to enough of the right kinds of food to keep them healthy, to prepare their bodies for being pregnant, or to give the energy to their children when breastfeeding. One result is that the intergenerational cycle of malnutrition is continued between malnourished mother and malnourished child.

Conclusion

Health workers have a major role to play in the early detection and treatment of malnourished children and in the fight against misconceptions and malpractices. Chronic malnutrition in the camps has gone unnoticed for a long time, while it is an important threat to the healthy development of the child. Assessing knowledge, attitudes and practices of the people will be a first step in the detection of inappropriate feeding practices. The systematic monitoring of children's growth (see article p...) will help to address this by better surveillance. Health education and awareness raising campaigns should solve the problem of bad feeding practices in a longer term. Preventive and curative activities should complement each other in order to tackle the vicious circle of malnutrition and offer a healthier future to our children.
"Some mothers believe that colostrum may give diarrhoea to their newborn, while this first milk is the richest they can give to their baby," says Clarinet.
This article is based on the information collected during interviews with Community Health Educators from American Refugee Committee International, in Nu Poh and Umpiem Camp and with TBAs supervised by NHEC. They shared their experience on malnutrition, misconceptions and unhealthy food practices observed within their community. They also provide suggestions to prevent malnutrition.

**Unhealthy feeding practices**

Unhealthy feeding practices are a common cause of malnutrition. They may include some foods’ restrictions, some misuse of foods according to the condition (pregnancy) or age of the person or the over-consumption of unhealthy food. For instance, some habits of not eating enough quantity or diversity of foods are often observed. An example is the problems of the addictive habit of beetle nut chewing, smoking cigars and drinking alcohol, which can have bad effects on people’s nutritional status.

“Most of the people don’t know what is a balanced diet and eat everyday the same thing, just because it is what they like or what they are used to eat”, explains Aye Aye Maw, who has been working as a CHE for more than 8 years in Nu Po camp.

**Misconceptions concerning breastfeeding**

Misconceptions can also lead to inappropriate breastfeeding practices. For example, breastfeeding can be interrupted during the episode of diarrhoea as many mothers believe that a child having diarrhoea should drink less. On the contrary, diarrhoea can cause severe dehydration and therefore the child needs to drink more than usual.

Many mothers in developing countries consider colostrum (the first yellow milk produced by mothers just after delivery) as bad milk. It is still common among young lactating mothers to squeeze out the colostrum before starting breastfeeding their newborn.

“Some mothers believe that colostrum may give diarrhoea to their newborn, while this first milk is the richest they can give to their baby”, says Clarinet.

**Misconceptions concerning nutrition of pregnant women**

Pregnant women may face many food restrictions due to misconceptions, while pregnancy should be the moment when women eat an increased quantity and variety of food. For instance, some pregnant women are sometimes advised by the elderly to avoid some types of foods during the puerperium (45 days after delivery). Fishes, red and green peppers, prawns, are believed to give allergies, while eggs are thought to lead to difficult delivery.

In the same way, TBAs frequently hear that:
Misconceptions concerning nutrition of young children

**NOT TRUE**

- If pregnant women eat Rakhine banana, the child inside her womb will grow bigger than normal and the pregnant woman will face difficult labour.

- If she eats taro, she may suffer from difficult labour.

- Sour fruits (Zebyuthee, Phangarthee) and figs cause less gas in the guts (gas is considered as a healthy phenomenon). These fruits should therefore be avoided.

- Different types of brinjal will cause thickening of membrane covering the foetus.

- Pregnant mothers cannot eat the rice stuck to the bottom of a cooking pan because it may provoke placenta retention after delivery. This problem can also be faced after eating sticky rice.

- Coconut water may cause abortion and smaller head of the newborn baby.

- Cat tongue fruit is bitter and should not be given to pregnant women. It can cause childhood diseases after delivery characterised by blue coloration of the baby’s skin 10 days after birth.

- Eggs can cause shaking of knees just before delivery.

- Chili can cause hair loss of the newborn.

Reluctance to take iron and vitamin tablets is also observed among pregnant women. Some of them believe that the medicines may lead to larger baby leading to difficult labour.

“There are so many nutritional taboos, and these are so strongly anchored in people’s mind, that it is difficult to convince them that all these ideas are wrong and can even be dangerous”, says Isabella, CHE supervisor in Nu Po camp.

**Misconceptions concerning nutrition of young children**

Children are also suffering from food restrictions, due to mis-belief. For instance, some families don’t give meat to children 2 to 3 years of age, thinking it will decrease the risks of worms’ manifestation.

“Banana may cause indigestion and eggs may cause stomach pain are some commonly heard ideas in the camps” says Shelder, CHE working in Umpiem camp.

**Other Food Taboos**

In general, certain types of foods are believed to have some negative properties and are therefore avoided. These ideas might lead to privation of easily available and cheap foods that would bring healthy nutrients to people’s diet.

On the contrary, some unhealthy practices are supported by misbelieve providing to certain types of habits (such as bettle nut chewing or smoking cigarettes) particularly interesting advantages.

Finally, traditional food is not necessarily bad: People should eat green leaves, such as pumpkin leaves, as they are very rich in iron.
NOT TRUE

“Chili can cause hair loss of the newborn.”

NOT TRUE

“Alcohol, betel nut and cigars can be used as appetizers.”

Conclusion:

Movements' restrictions outside of the camps and people's living on limited space are already enough important reasons for food limitations. Health workers and Community Health Educators have therefore a major role to play in the fight against misconceptions leading to food restrictions or misuses. Incorrect feeding practices should also be tackled in order to give all children the chances to grow strong and healthy.
Micronutrient deficiencies are important signs of malnutrition. This article explains how to prevent and detect them.

All people and animals need food to live, grow and be healthy. Food contains different types of nutrients. Food contains certain nutrients called macronutrients:
- Fat
- Carbohydrate
- Protein

Food also contains nutrients called micronutrients:
- Vitamins
- Minerals

A good diet is made up of foods that contain all these types of nutrients - macronutrients and micronutrients. For people to be healthy and productive they need a certain amount of nutrients. This is called their nutritional requirement.

There are many micronutrients, and they include vitamins A, B vitamins, vitamin C, D, E, and K, iron, calcium, zinc, iodine, and many others.

The most common deficiencies or risk of deficiencies in this region (Thailand, Burma) that we know about are from vitamin A, iodine and iron, and vitamins B1 and B2. We will focus on the main functions of these nutrients.

Micronutrient malnutrition can occur even if the person is getting enough energy foods and they are not thin. It is usually caused by a deficiency in...
Diseases due to micronutrients deficiencies

Diseases such as anaemia, goitre, and blindness are caused by deficiencies in micronutrients. They can be very serious and people can die as a result. **You cannot catch these diseases from being near someone who is affected and you will only get them if your nutrient intake is not sufficient.**

We are going to look at the following diseases that are caused by nutritional deficiencies. For each disease we will look at how people get it, how it affects them, how we can recognise it, and what can be done about it.

**Iron**

Iron is a mineral found in small amounts in foods. It is important for healthy blood and oxygen transport to the cells. Cells need this oxygen to stay alive.

The body uses iron to:
- Make hemoglobin for red blood cells - hemoglobin carries oxygen in the blood to all the cells in the body
- Help other cells to function
- Replace worn out or lost red cells
- Build new tissue

Iron-deficiency anemia is the most common nutritional disorder in the world. Pre-school children and pregnant and lactating women are most susceptible to iron deficiency, since their needs for iron are highest.

Iron is a difficult nutrient to get from foods, since most foods only contain a small amount, and the body only absorbs part of the iron in foods - most of it goes out in the faeces.

Iron in animal foods, like meat and eggs, is more easily used by the body; iron in plant foods, like beans and vegetables, is harder for the body to absorb. If people do not eat much meat, they are more at risk for iron deficiency.

Foods that are rich in iron include:
- Meat
- dark green, leafy vegetables, such as morning glory, kale, and other greens
- Fortified flour and Blended foods
- Cashew nuts
- Lentils

Some foods help the body to absorb iron - these are high vitamin C foods, like lime, roselle, guava, pumpkin, tomato, etc. These foods should be eaten with iron foods.

Some foods interfere with iron absorption - these are coffee and tea. They

<table>
<thead>
<tr>
<th>Disease</th>
<th>Deficient Nutrient</th>
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</thead>
<tbody>
<tr>
<td>Anaemia</td>
<td>Iron</td>
</tr>
<tr>
<td>Xerophthalmia</td>
<td>vitamin A</td>
</tr>
<tr>
<td>Thyroid Disorders</td>
<td>Iodine</td>
</tr>
<tr>
<td>Beriberi</td>
<td>Thiamine</td>
</tr>
<tr>
<td>Ariboflavinosis</td>
<td>Riboflavin</td>
</tr>
</tbody>
</table>

Micronutrients are the nutrients that are essential for our bodies (we must have them) but we need only in tiny amounts.
Signs and Symptoms of Anaemia

should be avoided at mealtimes

Signs and Symptoms of Anaemia

• weakness
• fatigue (tiredness)
• pale palms, conjunctiva, tounge
• low hemoglobin or hematocrit from blood testing

Preventing Iron-Deficiency Anaemia

• eat foods with iron in them
• eat vitamin C foods at the same time as iron foods (e.g. eat fruits, like orange, lime, or vegetables, like tomatoes, peppers, pumpkin)
• do not drink tea or coffee during meals - wait for several hours at least
• Regularly de-worming the whole population, supplementing preventive dose of iron tablets to the population, especially children and women of childbearing age.

Vitamin A

The body needs vitamin A:
1. to prevent infections
2. to keep the eyes healthy
3. to help children grow properly

Vitamin A helps to keep cells on the surface of the body healthy, such as the skin; the surface of the eye; inside the mouth; the lining of the gut and respiratory tract.

• Vitamin A helps strengthen the immune system against infections.
• Vitamin A helps to keep the eyes wet, the surface strong and clear. It also helps us to see in dim (dusk time or candlelight) light
• Vitamin A helps to keep cells on the surface of the body healthy so that bacteria and viruses cannot enter the body and make us sick
• Vitamin A helps children grow - without it, they do not grow to their full potential.
• Vitamin A helps the body to use iron to make haemoglobin

Vitamin A is present in food in two forms: as pre-formed vitamin A in foods from animals, and as pro-vitamin A in some plant foods. Good sources of vitamin A include liver and some fish, dark orange and yellow fruits and vegetables, such as pumpkin, papaya, mango, and some is also found in yellow corn. Fortified blended foods also contain vitamin A.

Signs and Symptoms of Vitamin A Deficiency

Young children are most susceptible to vitamin A deficiency. If a child does not get enough vitamin A, they can go blind. Vitamin A deficiency also increases risk and duration of infection, and children who are vitamin A deficient are more likely to die from measles.

The first sign of vitamin A deficiency is night blindness - difficulty seeing in dim light.
Vitamin A helps children grow—without it, they do not grow to their full potential.

- Children need vitamin A for healthy eyes.
- Vitamin A helps a child's body to get stronger and fight infections.
- A vitamin A-rich diet can help nursery and primary school children grow taller.
- Vitamin A helps children to develop faster and learn better.
- Children who get vitamin A grow better, are healthier, and have better health outcomes.
- A vitamin A-rich diet can improve children's physical and mental development.
- Children who get enough vitamin A have better immune systems and are less likely to get sick.
- Vitamin A is important for a child's vision and health.
light. A child with this sign will be afraid to walk around and play during dusk time or in candlelight.

When the deficiency gets worse, the child may have wrinkled, foamy or brown spots on the white part of their eyes (Bitot Spots). Later, they may get an ulcer on the cornea (the brown part of their eye). Careful examination and identification is essential. At this point, it is very easy for them to go blind.

Preventing Vitamin A Deficiency

- Eat plenty of foods that contain vitamin A (and be sure to feed to children)
- Give vitamin A capsules every 6 months.
- breast-feed children

Pregnant women also need vitamin A for the growing foetus. It is advised to supplement pregnant women with regular SMALL weekly doses of Vitamin A. Lactating women also need it so that the breastfed baby will receive it in the milk

Vitamin A supplements are often given to children in capsules every six months.

Supplementation with vitamin A capsules can reduce the number of children who die by 23%.

To help the body absorb vitamin A in foods, cook and eat vitamin A foods with a little bit of oil. Don’t overcook foods until burnt or crisp, since this makes the vitamin A disappear.

Iodine

Iodine is a chemical that is found in small amounts in soil and food, and in seafood and foods grown near the sea. Iodine is used by the thyroid gland to regulate some body functions.

When there is not enough iodine in the diet people get Iodine Deficiency Disorders (IDD). Iodine deficiency can result in a number of health problems. These include:
- Goitre
- Cretinism
- Reduced mental and physical development
- Increased perinatal and neonatal mortality

Signs and Symptoms of Iodine Deficiency

To find out if someone is deficient in iodine we can:
- Look at their neck to see if they have goitre
- Measure how much iodine is in their urine
- Measure levels of thyroid hormones in their blood

When looking for goitre we classify what we see as:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No Goitre</td>
</tr>
<tr>
<td>1</td>
<td>Palpable Goitre</td>
</tr>
<tr>
<td>2</td>
<td>Visible Goitre</td>
</tr>
</tbody>
</table>

Grade 1 goitre cannot be seen but it can
Pregnant women also need vitamin A for the growing foetus.
be felt.
Grade 2 goitre can be seen without feeling the neck.

Preventing Iodine deficiency

Use iodized salt - Salt can have iodine added to it. If this is done properly and people use it, they will have a sufficient supply of iodine through their diet. In severe cases, oil containing iodine can also be given in a capsule or injected.

Vitamins B1 and B2

There are many kinds of B vitamins. The B vitamins are important to help the body use the energy foods (carbohydrates) that we eat. The more carbohydrates we eat, the more B vitamins we need. So, in a culture that eats large amounts of rice, B vitamins are very important.

Vitamin B1, or thiamine, is important for our nervous system function. Rice contains vitamin B1, but unfortunately, the vitamin is mostly on the hull of the rice. When the rice is milled and machine-polished, then most of the vitamin gets lost. If the rice is polished by hand, more B1 is retained. People who eat polished rice are more at risk for vitamin B1 deficiency. Good sources of thiamine include nuts, beans, pork, un-milled rice, and blended food.

Like vitamin B1, vitamin B2 or Riboflavin, is important in metabolism of energy. Riboflavin is found in many foods - good sources include pulses, eggs and liver.

Signs of deficiency of B vitamins can happen after 2 - 3 months of a deficient diet. More often, people will have symptoms of mild B1 deficiency, including
• loss of appetite
• weakness or aching in the legs
• burning sensation, tingling or numbness in hands and feet

The symptoms of mild B1 deficiency can be vague and there is NO easy test to be sure. But, it is important to know that symptoms will improve with administration of vitamin B1.

More severe B1 deficiency, called beri-beri, will have more dangerous signs and symptoms, including
• very weak muscles, wasting of muscles, loss of sensation in feet, poor reflexes (‘dry’ beri-beri)
• oedema, cardiac problems (‘wet’ beri-beri)

Beri-beri is especially common in pregnant and lactating women and their babies.

Vitamin B1 is destroyed by betel nut, fish paste, tea and coffee - so if you chew betel nut and drink tea and coffee, do it between meals, not during or just before or just after eating.

When people don’t have enough vitamin B2 they develop Ariboflavinosis. People with a diet deficient in vitamin B2 are most
ဒီဇိုင်းအားဖော်ပြသည်မှာ ပျစ်မှုများ၊ ကိုယ်ကို၀က်များ၊ အသံုးဝေးသော ရိုက်သောများ၊ သယဲကွေးများစွာကို အသုံးပြုနိုင်သည်။

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feeding practice;
• Education of the population about food processing and consumption may be very important in ensuring the best use of the available food;
• People should understand the importance of different nutrients, which foods contain them and how to prepare the foods to preserve, as far as possible, the nutritional value.

Good health is very important in maintaining good nutrition. Below are some examples of public health intervention that may be important:

• Vaccination against measles is important in control of xerophthalmia.
• Water, sanitation and hygiene promotion to control diarrhoea
• De-worming to control anaemia due to intestinal parasites such as hookworm or schistosomiasis
• Malaria control (e.g. bednets, vector control, etc.) to combat anaemia

Eating a variety of foods everyday is the BEST WAY to prevent nutrient deficiencies

• Try to eat a variety of foods everyday in addition to rice, including beans or nuts, fresh fruits, and vegetables, and meat and eggs if available.
• Children need plenty of protein foods and fresh fruits and vegetables to grow properly.
• All people should try to eat some dark green leafy vegetables, yellow and orange fruits and vegetables every day.
• All people should try to eat some meat or use lemon or other vitamin C foods when they eat green vegetables, so the body will get more iron.
• Betel nut coffee and tea destroy some vitamins and minerals - DO NOT TAKE THEM CLOSE TO MEALS.

Clinical signs of Vitamins B2 Deficiencies

vulnerable, and it is common in rice eating populations.

Clinical signs of Vitamins B2 Deficiencies
• Shiny and dry cracked lips (Cheilosis)
• Fissures on the corner of mouth (angular stomatitis)

Preventing Vitamins B1 and B2 Deficiencies

• eat foods with vitamin B1 and B2 (like unpolished rice)
• avoid chewing betel nut close to meal times, and drinking coffee and tea during meals
• only wash rice 1 or 2 times, and use the cooking water for drinking or cooking later
• do not store vegetables for a long time before eating, and cook vegetables very short time to preserve the vitamins
• pregnant and lactating women should take all supplements provided by MCH clinic.

How to prevent micronutrient deficiencies?

There are several possible approaches to tackling micronutrient deficiencies:
• Eating plenty of fresh foods, or growing vegetables and fruits in gardens;
• Eating fortified foods, like blended food;
• Health workers should give supplements like vitamin A, iron, folate, etc.
• Promotion of exclusive breastfeeding and appropriate complementary infant feeding practices;

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• only wash rice 1 or 2 times, and use the cooking water for drinking or cooking later
• do not store vegetables for a long time before eating, and cook vegetables very short time to preserve the vitamins
• pregnant and lactating women should take all supplements provided by MCH clinic.

How to prevent micronutrient deficiencies?

There are several possible approaches to tackling micronutrient deficiencies:
• Eating plenty of fresh foods, or growing vegetables and fruits in gardens;
• Eating fortified foods, like blended food;
• Health workers should give supplements like vitamin A, iron, folate, etc.
• Promotion of exclusive breastfeeding and appropriate complementary infant feeding practice;
• Education of the population about food processing and consumption may be very important in ensuring the best use of the available food;
• People should understand the importance of different nutrients, which foods contain them and how to prepare the foods to preserve, as far as possible, the nutritional value.

Good health is very important in maintaining good nutrition. Below are some examples of public health intervention that may be important:

• Vaccination against measles is important in control of xerophthalmia.
• Water, sanitation and hygiene promotion to control diarrhoea
• De-worming to control anaemia due to intestinal parasites such as hookworm or schistosomiasis
• Malaria control (e.g. bednets, vector control, etc.) to combat anaemia

Eating a variety of foods everyday is the BEST WAY to prevent nutrient deficiencies

• Try to eat a variety of foods everyday in addition to rice, including beans or nuts, fresh fruits, and vegetables, and meat and eggs if available.
• Children need plenty of protein foods and fresh fruits and vegetables to grow properly.
• All people should try to eat some dark green leafy vegetables, yellow and orange fruits and vegetables every day.
• All people should try to eat some meat or use lemon or other vitamin C foods when they eat green vegetables, so the body will get more iron.
• Betel nut coffee and tea destroy some vitamins and minerals - DO NOT TAKE THEM CLOSE TO MEALS.
Shiny and dry cracked lips (Cheilosis)

Vitamin A deficiency (Bitot's spot)

Children need plenty of protein foods and fresh fruits and vegetables to grow properly.
Whiteness of the lower eyelid in anaemia
အိမ်ပျိုးရေးကြီးစောင်ချင်း၏
လက်ခိုင်များ
Anaemia is caused by not enough red blood cells or not enough haemoglobin (Hb) inside the red blood cells.

Haemoglobin carries oxygen from the lungs to all cells in the body.

• Without oxygen we cannot survive. If we do not have enough haemoglobin to carry oxygen, we cannot survive.

• Haemoglobin is made of Iron (Haem-) and proteins (-globin).

• Without Iron our body cannot make Haemoglobin.

Our body cannot make Iron.
• Our body has to absorb iron from the food we eat.
• If we do not eat enough food with iron, we become iron deficient and then anaemic.

There are many causes of Anaemia.

Iron-Deficiency anaemia is the most common in the world.

• 75% of children under 5 years in Mae La Camp have been found to have Iron Deficiency Anaemia

• 75% of adult relatives of inpatients of the Mae Tao Clinic have been found to have microcytic hypochromic (small and pale red blood cells) anaemia, most likely due to iron deficiency.

Iron deficiency anaemia affects not only children and women (who are at higher risk), but everybody in the population.

Mild and Moderate Anaemia are responsible of many symptoms, but are not easy to detect clinically. Our clinical skills help us to detect anaemia only when it is severe (Hb < 6).

• The main cause of iron deficiency anaemia is poor nutrition

• Iron deficiency anaemia is the most common nutritional disorder in the world.

• Iron is found mostly in red meat and liver, but also in fish, green vegetables, eggs and beans.

• Adding Vitamin C containing food (lime, guava...) to vegetables, increase iron absorption.

Iron Deficiency Anaemia caused by lack of iron in the diet is often made worse by other factors:

• Other nutritional deficiencies (like Vitamin A deficiency)
• Malaria PF and PV (several attacks of PV cause anaemia)
• Worms In women:
  • Menstruation
  • Pregnancies
  • Breastfeeding

Iron deficiency anaemia is a serious problem:

• it lowers our immunity -- people get sick more often
• anaemic people are weak and not capable of working well and of looking after their children well
• anaemic children do not grow well
• anaemic children’s brains do not de-
anaemic children develop slowly
- anaemic children and teenagers do not do well at school
- anaemic people have poor concentration
- anaemic pregnant women have higher risk of death
- anaemic women have higher chance to deliver low-birth-weight babies
- if severe, iron deficiency anaemia can cause death

Prevention/Treatment is possible at low cost. A combination of different strategies is most effective:

1. Diet Education
2. Improving supplies of food with meat and vegetables
3. Iron supplementation (ferrous sulphate tablets) in Clinics and Schools especially to children and women, but if possible to everybody (Ferrous Sulphate is extremely cheap)
4. Food fortification (if possible)

Correction of anaemia will be more successful if Ferrous Sulphate is given combined with:

- Vitamin A (every six months, children and adults)
- Deworming (every six months, children and adults)
- Prompt treatment of Malaria PF and PV
- Treatment of PV relapses with Primaquine

If severe, iron deficiency anaemia can cause death

All our population is Anaemic. We need to take action!

Sources:
This article presents the interaction of malnutrition and infection and highlights the importance of treating both at the same time.

Malnutrition can be over-nutrition (obesity) as well as under-nutrition. In this case, malnutrition will be classified as under-nutrition or health problems caused by not eating enough of the foods that the body needs.

Infection is a sickness caused by bacteria or other germs. Infection may affect part of the body only (such as an infected finger or a nail-bed) or all part of the body (such as measles).

Malnutrition makes infections worse. It weakens the human body. So the harmful organisms can infect him or her more often and, more severely. Also, a malnourished person is more likely to get complications if infected recovers more slowly and is more likely to die. Measles, Diarrhoeal Diseases, Malaria, Acute Respiratory Tract Infections (ARI) and Tuberculosis are much more serious in malnourished persons.

Infection makes malnutrition worse. If a person is ill with an infection, he or she does not want to eat. If one has diarrhoea, he or she cannot absorb the food normally. If one has measles, his or her mouth is so painful that one does not want to eat. So he or she loses weight and becomes malnourished. Because malnutrition and infections make each other worse, they become a vicious circle.

This vicious circle explains why so many people have both malnutrition and infections, which is more characteristic in children. They more often come to the clinic because of their infections than because of their malnutrition. Health personnel will find that many of the children who have diarrhoea, malaria, measles, chest infections and tuberculosis are also malnourished. There is only one way to help the malnourished patients, and break this vicious circle. These patients should be treated for both their malnutrition and their infections.

**Measles and Malnutrition**

Nutritional emergencies are likely to be precipitated by conditions such as refugee camps, which bring people into close contact, opening the way to rapid transmission of the measles virus. Malnourished children are at particular high risk of complications and death following an attack of measles. The disease can trigger acute malnutrition (Kwashiorkor) and can worsen vitamin A deficiency in children whose nutritional status is already borderline.

There are no contraindications to measles immunization during emergencies: even if there is already a measles epidemic, immunization should continue. All children between 6 months and 5
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Measles is especially dangerous where many children are malnourished.

years should be immunized when they are first registered or screened. This will ensure the earliest and most complete coverage and will prevent new arrivals from becoming infected. When measles vaccines are given before the age of 9 months, the scheduled dose of vaccine should also be given as soon as possible after infants reach 9 months of age (but with no less than 4 weeks between the two doses).

The upper age limit for measles immunization depends on local circumstances. If the population comes from a situation with high measles transmission and low immunization coverage over the previous 3-5 years, it is probably reasonable to vaccinate only children between the ages of 6 months and 5 years.

However, if local health authorities cannot guarantee that the population has been recently exposed, or if the population originates from isolated and widely dispersed communities, the target group should be expanded to inclusion.
သင်ကြားခြင်းများနှင့် ကြက်စားကြီးဝင်မှု့များ

စာမေးခွန်ဖြစ်သော ကြက်စားကြီးဝင်မှု့များ

Infection နှင့် Malnutrition

ကြက်စားကြီးဝင်မှု့များ

အခြေခံသောအချက်အလက်များ

• အသက်ရှင်သောကြက်ကြီးများအတွက် မိုးပြောင်းမှု

• ကြက်စားကြီးဝင်မှု့များကို ပြန်လည်လွှဲရန် အသုံးပြုသော လေးမျိုးစားနှင့်

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Diarrhoeal Diseases and Malnutrition

Diarrhoea may be caused by various types of pathogens, most commonly by enteric viruses e.g. rotavirus but also by bacteria (such as Escherichia coli, and Shigella, Salmonella, Vibrio, and Campylobacter species), parasites such as Giardia and Cryptosporidium species. Malnourished populations are particularly vulnerable to these pathogens. Moreover, chronic or repeated diarrhoea can itself causes under-nutrition and eventually lead to impairment of the immune system and susceptibility to other infections. A vicious cycle of diarrhoea and malnutrition can become established and cause death in many cases.

In a great proportion of cases, episodes of diarrhoeal disease are caused by contaminated food and/or drinking-water. Of the 1500 million diarrhoeal episodes that occur each year, worldwide, in children under the age of 5 years (causing 3 million deaths), it is estimated that 70% are due to consumption of contaminated food - particularly weaning food. Contamination of food may have any of a number of causes, including contact with night-soil, polluted water, flies, pests, domestic animals, unclean cooking utensils, and unsanitary food handling. Raw foods themselves may

"Poorly nourished children are much more likely to get severe diarrhoea, and to die from it, than are children who are well nourished."
Malaria and Malnutrition

The risk of diarrhoea is significantly increased by two principal errors in food handling and preparation:
- preparation of food several hours in advance of its consumption, combined with storage at temperatures that favour growth of germs (pathogenic bacteria and/or growth of bacteria to disease-causing levels);
- cooking or re-heating food insufficiently to eliminate pathogens or reduce them to safe levels.

The approach to prevention of diarrhoea in developing countries is traditionally one of improving water supplies and sanitation. However, these measures alone are insufficient to solve the problem. The need for safe handling and preparation of food at household level should also be emphasized, and this calls for intensive education in food safety. It is valuable to analyze the hazards associated with local food preparation traditions and to identify practices that should be modified. (for example, domestic fermentation of vegetables)

The most important measures in the management of diarrhoeal diseases are:
- prevention and treatment of dehydration
- continued feeding (including breastfeeding) during the diarrhoeal episode
- monitoring of the condition of the patient.

(See Practical Guidelines for Diarrhoea in Health Messenger Magazine issue No. 24 page 25)

Malaria and Malnutrition

Like other infections, malaria readily causes malnutrition in both children and adults, especially when it is recurrent. Specifically, the break down of red blood cells (haemolysis) associated with acute malaria causes anaemia, which becomes chronic. Associated deficiency of iron and/or folate may also be detected.

Protection of pregnant women against malaria is particularly important because of the risks of anaemia. Infants born to malaria infected mothers are likely to be of low birth weight and may be anaemic.

Prevention of malaria is by vector control, but it is very difficult to implement. The measures may include:
- personal protection - bednets, window and door screens, all impregnated with long-acting insecticides if feasible;
- indoor residual spraying, which will
Vary in efficacy according to house structure and the type of surface spray; larval control and environmental management in areas where mosquito breeding sites are well defined.

Anyhow, personal protection is the first means of prevention.

Chemoprophylaxis can no longer be considered as one of the principal means of preventing malaria because of the spreading of drug resistance, although it is still desirable for non-immune visitors to endemic areas. Drug choice depends on the sensitivity of parasites in a particular location and should be based on national, rather than international, guidelines.

Repeated attacks of vivax malaria has been shown to lead to poor growth, anaemia and low birth weight. Therefore, prevention of relapse with primaquin is desirable (Dr Jonathan Nield). Iron after malaria attack has been demonstrated to improve the anemic status of patients.

**Acute Respiratory Tract Infections (ARI) and Malnutrition**

Malnutrition is an important risk factor for the development of ARI. Malnourished children and adults with cough are more likely to develop pneumonia and the case-fatality rate in pneumonia is higher among malnourished individuals. In addition, the anorexia, breathing difficulties, and fever that may accompany ARI often result in weight loss during and immediately after each episode.

Supportive home care, in addition to treatment with antimicrobials, is important, and should follow the guidelines of national ARI programme, which normally recommends: continued feeding; adequate fluid intake; use of safe and appropriate cough/cold remedies; prompt referral in the event of deterioration; avoid chilling in young infants.

**Tuberculosis and Malnutrition**

The global problem of tuberculosis is growing with increasing poverty, overcrowding, multiple-drug resistance, and the spread of HIV infection. All these factors are liable to be operating together with poor nutritional status. The consequent weakening of the immune system, combined with malnutrition, directly affects the outcome of tuberculosis, leading to death within 5 years in 50% of cases. Inadequately treated tuberculosis itself can cause moderate or severe malnutrition in both adults and children.

WHO has developed and adopted a new strategy for effective tuberculosis control known as DOTS (Directly Observed Treatment, Short course) and based on implementation of the following measures through primary health care:

- case-finding among tuberculosis suspects by sputum smear microscopy in general health services;
- continued feeding;
- adequate fluid intake;
- use of safe and appropriate cough/cold remedies;
- prompt referral in the event of deterioration;
- avoid chilling in young infants.

**Even minor problems like the common cold are usually worse, last longer, or lead to pneumonia more often in persons who are poorly nourished**

Dietary deficiencies are responsible for "a substantial proportion" of malaria-related sickness and death among children, according to researchers at the Johns Hopkins Bloomberg School of Public Health. (Source: *SciDev.Net* 15 September 2004)
“Tuberculosis is more common and gets worse more rapidly in those who are malnourished”

Prevention of Tuberculosis

- standardized short-course (6 months) chemotherapy in at least all smear-positive cases;
- directly observed treatment of the initial phase (first 60 doses) of chemotherapy;
- regular and uninterrupted supply of essential anti-tuberculosis drugs;
- monitoring system for programme supervision and evaluation.

In emergency situations, case management can usefully include food supplements, which will hasten recovery and provide needed support to affected families. In children, especially those who are malnourished, susceptibility both to infection and to progression of infection to disease is enhanced. Malnourished children of all ages are therefore considered to be at risk of developing severe active tuberculosis.

Prevention of Tuberculosis

- early diagnosis and effective cure of infectious cases of tuberculosis;
- BCG vaccination, usually newborns; vaccination is also strongly recommended for children up to 5 years who have never been vaccinated and who are not suffering from other disease (e.g. AIDS), but revaccination is not recommended.

Pneumonia, diarrhoea, malaria, measles, and malnutrition are responsible for more than 70% of the deaths of children under five years of age in developing countries and in emergency situations. Health workers must bear in mind the relationships that exist between different disorders, for example recurrent diarrhoea and nutrition.

Source:
- The management of Nutrition in Major Emergencies, WHO/2000
- Primary Child Care by Maurice King, Felicity King and Soebagyo Martodipoero/1991
- Child Health (Second edition) edited by Paget Stanfield together with Bo Baldin and Zier Versluys/1999
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ပြပြောင်းသတ်: စိတ်ကြည်းစေရန် ထိပ်ပြောင်းမှုကြောင်း စိတ်ကြည်းစေရန် ထိပ်ပြောင်းမှုကြောင်း
Growth failure is seen when a child is noticeably shorter than the normal height for its age.
Different types of malnutrition necessitate different treatments. This article will help health workers in identifying and recognizing the different cases of malnutrition they may encounter in their daily work.

Recognising different types of malnutrition

Children and adolescents who are healthy and well nourished can be expected to grow to their full height and weight. Once fully grown, a good diet will maintain weight at that level, but any disruption to normal food intake will caused it to change. Some cases of malnutrition are causes by lack of appetite, or the body’s difficulty to digest and use food properly because of illness.

1) Growth failure

Little is known about the causes of growth failure, although it is assumed that both nutrition and illness are factors involved. More generally, growth failure may be regarded as an indication of poverty. It usually occurs in children aged between 6 and 18 months. Growth failure is seen when a child is noticeably shorter than the normal height for its age. It is difficult to evaluate this in cases where the child’s exact age is not known.

2) Thinness or wasting

An individual whose weight is too low for his or her height, is said to be wasted. This condition is almost certainly due to a decrease in energy intake, combined with an imbalance in carbohydrate, fat and protein intake, and vitamin and mineral deficiencies. Marasmus is a term frequently used for this form of malnutrition.

A child with severe malnutrition may have diarrhoea or other complication.

Old man’s face

Body thin

Hungry

Worried and irritable

Much loss of weight

“A Child with marasmus”
• ကြက်ကလေးသောက်ပစ္စည်း
• ကလေးသောက်ပစ္စည်း
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The term was first used in Ghana, to describe cases of oedema associated with malnutrition (Williams, 1933).

The presence of nutritional oedema is characteristic of Kwashiorkor. For a long time, the cause of Kwashiorkor was thought to be lack of protein. However, this idea has been disproved. Other causes suggested include the free radical theory or aflatoxins (Hendrickse, 1984). None of these ideas has been confirmed and the cause of Kwashiorkor oedema is still uncertain.

Vitamin and mineral deficiency

The consequences of vitamin and mineral deficiencies vary according to the types of micronutrients involved. A vitamin and mineral deficiency of type I micronutrients has no direct effect on body measurements, whereas weight loss or growth failure can be seen from a deficiency of type II micronutrients.

Vitamin and mineral deficiency is often marginal, and produces no apparent clinical symptoms. It can only be detected by biological assay but this is usually not possible in the field. In cases of extreme type I micronutrient deficiency, one may face deficiencies of epidemic proportion.

Definitions of different types of malnutrition

Two different types of malnutrition are currently recognised:

• Acute malnutrition, which develops very quickly. Marasmus (wasting) and Kwashiorkor (oedema) are in this group;

• Chronic malnutrition (so called because it takes much longer to develop) or growth failure. While these terms are clear, they are only a rough guide and do not offer a
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<th>CLASSIFICATION</th>
<th>SEVERE</th>
<th>MODERATE</th>
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<tr>
<td>Acute malnutrition</td>
<td>&lt;75% Weight / Height or &lt; minus 3 SD on Z-score</td>
<td>≥ 20% and &lt; 30% Weight / Height or ≥ minus 3 SD and &lt; minus 2 SD on Z-score</td>
</tr>
<tr>
<td>Chronic malnutrition</td>
<td>&lt; 80% Height / Age or &lt; minus 3 SD on Z-score</td>
<td>≥ 20% and &lt; 30% Height / Age or ≥ minus 3 SD and &lt; minus 2 SD on Z-score</td>
</tr>
</tbody>
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* And/or presence of bilateral nutritional edema.

[Image: Mid-upper arm circumference]
Assessing nutritional status

true picture of the development of malnutrition. Use of the generic terms “wasting” and “growth failure” is preferable.

Assessing nutritional status

Body measurement (Anthropometric measurements)

Nutritional status can be evaluated using clinical, anthropometric or biological measurements. In field conditions anthropometric measurements are generally used.

The anthropometric measurements most commonly used are:

- Weight
- Height
- Mid-upper arm circumference (MUAC).

Weight and height on their own reveal little about the nutritional status. They must be used together or with reference to age. The presence of bilateral oedema is considered to be characteristic of kwashiorkor.

Evaluating the nutritional status of a child

Weight or height alone tell us little about the nutritional status of a child or an adolescent since, in children, weight and height increase with age. They are linked by the use of indices:

- Weight with height = weight-for-height index (wasting)
- Height with age = height-for-age index (stunting)
- Weight with age = weight-for-age index.

In order to estimate the nutritional status of a child it is necessary to compare it with measurements from a population of healthy children. References have been set up by the National Center of Health Statistics (NCHS, 19977), based on a population of healthy American children. They serve to show how much a child of a given height should weight, how tall a child of given age should be, and how much a child of a given age should weight.

- Malnutrition categories

The different degrees of malnutrition are classified according to thresholds that, although arbitrary, are internationally recognised.

- Using MUAC

(see detachable MUAC bracelet)

There is no internationally recognised threshold for the classification of malnutrition using MUAC. Action contre la Faim uses the following thresholds, for children aged from 12 to 59 months.
Metabolic components of type I and type II nutrients and the effects of deficiencies

(Briend, Golden, 1997)

### Type I Nutrients
- Selenium, Iodine, Iron, Copper, Calcium, Manganese, Thiamine (vit B1), Riboflavin (vit B2), Niacin (vit B3), Pantothenic acid (B5), Biotin, Pyridoxine (vit B6), Folic acid, Folic acid, Ascorbic acid (vit C), Retinol (vit A), Tocopherol (vit E), Calciiferol (vit D).

### Type II Nutrients

<table>
<thead>
<tr>
<th>METABOLISM</th>
<th>DEFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Utilised in specific metabolic pathways.</td>
<td>- Decrease in tissue concentration.</td>
</tr>
<tr>
<td>- Nutrients working independently of each other.</td>
<td>- Characteristic clinical symptoms.</td>
</tr>
<tr>
<td>- Variable tissue concentration.</td>
<td>- Deficiencies appearing after a certain length of time.</td>
</tr>
<tr>
<td>- Weak control over excretion.</td>
<td>- No specific clinical symptoms.</td>
</tr>
<tr>
<td>- Reserves in the body.</td>
<td>- Deficiencies depend on daily intake.</td>
</tr>
</tbody>
</table>

3 Absent with strong negative powers, known as hormones (attach the cellular membrane and signal the electrolyte exchange, leading to the formation of osmosis) (Golden, 1997).

4 Absent or lacking, which are removed by heat and usually present in food.
Assessing nutritional status in adults

Few studies have been made of adult malnutrition in humanitarian emergency situations and there is no international agreement on the indicators that should be used for the evaluation of nutritional status in adults. Many more studies are needed to improve the targeting of malnourished adults.

- **Body mass index**
  This index is the result of dividing weight (in kg) by height squared (in m). This index was largely used to detect obesity, as it gives a clear indication of the individual’s fat mass. It is now used to assess chronic emergency deficiency.

<table>
<thead>
<tr>
<th>Body Mass Index</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 18.5</td>
<td>Normal</td>
</tr>
<tr>
<td>17-18.4</td>
<td>Marginal energy deficiency</td>
</tr>
<tr>
<td>16-17</td>
<td>Moderate energy deficiency</td>
</tr>
<tr>
<td>&lt;16</td>
<td>Severe energy deficiency</td>
</tr>
</tbody>
</table>

- **MUAC in adults.**

Various thresholds have been proposed but there is no consensus for their application. Thresholds of 220 mm for women and 230 mm for men were proposed as a definition of energy deficiency (James et al, 1994).

In North Rakhine State, Action contre la Faim leads a nutrition program. Since October 2003, 4 mobile teams have managed 16 SFC divided in 3 areas (Maungdaw area, Maungdaw North area and Buthidaung South). The beneficiaries are children between 6 months to 59 months with malnutrition (severe and moderate), pregnant and lactating women with a MUAC less than 22 cm and women severely malnourished with BMI less than 15. The beneficiaries receive each week in the SFCs a Nutrition and Health education session, medicines and a ration ready to use. The ration is composed of rice, yellow split beans, and sugar. Two suppliers in Yangon and Mandalay make rations. Before the distribution, Action contre la Faim adds oil to balance the ration. This ration provides daily 1350 kcal. From December, Action Contre la Faim is going to open 2 TFCs to treat the severe malnutrition of children from 12 months to 59 months.
# နောက်ဆုံးအမှုပေးချက်များ

<table>
<thead>
<tr>
<th>အကြိမ်အရာ</th>
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</tr>
</thead>
<tbody>
<tr>
<td>≥ 0.01 g</td>
<td>အပေါ်ပေါ်</td>
</tr>
<tr>
<td>≥ 0.01 g</td>
<td>အပေါ်အပေါ်</td>
</tr>
<tr>
<td>&lt; 0.01 g</td>
<td></td>
</tr>
</tbody>
</table>

# နောက်ဆုံးအမှုပေးချက်များ

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<tr>
<td>≥ 0.01 g</td>
<td>အပေါ်အပေါ်</td>
</tr>
</tbody>
</table>
Causes and symptoms of malnutrition and use of weight/height charts are discussed in other articles. In this article we will concentrate on the medical management and the preparation of special feeding for the severely acute malnourished children.

Acute Severe Malnutrition (ASM) is a medical emergency. Children with ASM are at risk of life-threatening problems. Often children with acute severe malnutrition have also chronic malnutrition (they are wasted and stunted).

Because severe malnutrition is very serious, the ideal is to prevent it. Each child coming to OPD should have weight and height registered and Z score calculated. In order to prevent severe malnutrition, moderate malnutrition should be promptly recognised and treated. Children should be given Supplementary feeding and carefully monitored by health workers and home visitors.

**Diagnostic features of severe malnutrition**

1. **Weight/Length (Height) Z-score < -3SD** (or < 70% of median: less accurate) — marasmus
2. Presence of bilateral oedema (at least both feet) — kwashiorkor

A Child with severe malnutrition should be admitted in the IPD and followed by medics who know the protocol for therapeutic feeding and the medical care of this condition.
Management of Severe Acute Malnutrition is divided into 2 phases:

History

It is very important to take a very careful history to understand why the child has become malnourished. Look for risk factors. Points not to forget:

- Parents health and work / How many people in the family / Who looks after him/her
- Birth weight / Born premature or full term / Any deaths of brothers or sister / Is the child a twin?
- Immunization status / Contact with people with measles or tuberculosis / suspected HIV in mother
- Developmental milestones reached (sitting up, standing, walking, etc.)
- Breastfeeding history / Usual diet before becoming sick this time
- Has the child a younger brother/sister who is now breastfeeding
- Food and fluids taken in the past few days / Duration and frequency of vomiting and diarrhoea if present
- Time when urine was last passed
- Past Medical History: is the child often sick.

Examination should be complete and careful.

Acute Malnutrition is divided into 2 phases:

Initial treatment or Phase 1

when infections, hypoglycaemia, hypothermia and dehydration are treated and feeding is started.

- The child is not expected to gain weight during this phase.
- The child needs to be monitored and assessed frequently day and night.
- This phase usually lasts 2-7 days

Rehabilitation or Phase 2

when intensive feeding is given to recover most of the lost weight and the mother or carer is trained to continue the care at home.

This phase usually lasts 2-6 weeks.

PHASE 1 — medical treatment

Children with ASM are often seriously ill. Their body’s physiology and metabolism are not normal: each organ and system is affected and does not respond as usual. Some of the differences are described under each paragraph.

1. Treat, Look for and Prevent INFECTIONS

Note: Fever is often not present, even if the child has infection or sepsis, because immunity is decreased. If the child has no fever, this does not mean that he has no infection. If possible, keep the child far from children with measles and severe infections.


(1) ဗီရှိတွေ့ရှိတဲ့ အရာကို ရုံးစွေးနှုန်းမှုများကို နောက်ပို့နှုန်းမှုများ ဆောင်ရွက်မှုများ ဖော်ပြသည်။

(2) အခြားသော အရာများကို လုံးဝန်ဆောင်ရွက်မှုများကို သတ်မှတ်ပြုသည်။

(3) အခြားသော အရာများကို လုံးဝန်ဆောင်ရွက်မှုများ ဖော်ပြသည်။

(4) အခြားသော အရာများကို လုံးဝန်ဆောင်ရွက်မှုများကို သတ်မှတ်ပြုသည်။

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Recognise and treat DEHYDRATION

1.a) Treat: give antibiotics to all children with ASM, even if they have no fever.

If the child is not too sick:
Cotrimoxazole or Amoxicillin oral x 10 days

If the child is very sick or in shock:
Ampicillin 50 mg/kg iv QID and Gentamicin 7.5 mg/kg im OD (change Ampicillin to oral Amoxicillin when the child is better) OR Ceftriaxone 100 mg/kg iv OD

If the child has diarrhoea and does not get better on oral dehydration, consider Giardia infection and give Metronidazole 5mg/kg oral TID x 5 days.

If not improving after 48 hours, give Chloramphenicol 50 mg/kg iv QID

If the child has diarrhoea and does not get better on oral dehydration, consider Giardia infection and give Metronidazole 5mg/kg oral TID x 5 days.

1.b) Look for:
Check Malaria Smear in every child for 3 days, even if the child has no fever.

1.c) Prevent:
Give Measles Vaccination to children > 6 months if they are not in shock.

2. Treat, Look for and Prevent HYPOTHERMIA
Note: in children with ASM the centre which regulates the production of heat does not work properly. For this reason they become easily very cold.

- Put the baby in contact with the mother skin and cover both with a blanket
- If the child is older, wrap in blankets and put a lamp nearby
- Cover the head with a hat
- Change frequently wet clothes/nappies
- Feed/Rehydrate as soon as possible
- Do not wash the child in phase 1.

3. Treat and Prevent HYPOGLYCAEMIA
Note: Hypoglycaemia is an important cause of death in the first 48 hours

2.a) Treat: if glucose is < 3 mmol/L (or if the child is drowsy or sleepy): give sugar!

- Give a sugary drink by mouth or nasogastric tube (1 teaspoon of sugar in 3 ½ tablespoon of water or dilute 20cc of 50% dextrose with 80 cc of water and give 50 cc)
  - If the child is unconscious: give 1 ml/kg 10% dextrose iv
If inserting an iv line is too difficult: do not waste time! insert a ng tube and give sugary drink

2.b) Look for: do glucose test in each child with acute severe malnutrition and repeat it in case of very low temperature and shock.

2.c) Prevent: start feeding as soon as possible and feed the child every 2-3 hours, day and night

4. Recognise and treat DEHYDRATION:
Note: in a child with ASM who is NOT dehydrated:
- the fat around the eyes has gone and children often have sunken eyes;
- many glands do not work any more: no sweat (dry skin); no saliva (dry mouth),
စီးပွားရေးနှင့် အခြေခံသော တာဝန်လုပ်ငန်းများ

- အခြေခံသော တာဝန်လုပ်ငန်း (ခေါ်မှု ပေးမည်)
  - ကြက်ကလေးအား စီးပွားရေးကြည်စွာ ဗိုလ်ချားသော
  - စီးပွားရေး စမ်းသပ်မှုကို လေ့လာလိုသည့်အခါ
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Treatment

Give IV fluids ONLY if the child is in shock

no tears (dry eyes);
• all fat under the skin is gone and the skin is very loose and goes down very slowly after being pinched;
• children are often sleepy.

4.a) Recognise dehydration
For the above reasons often dehydration is overdiagnosed in these children and it is difficult to differentiate dehydration from septic shock. Suspect dehydration if a child has a recent history of diarrhoea, is very thirsty, is not passing much urine. Weak pulses, cold hands and feet are signs of dehydration, but also of infection.

4.b) Treat dehydration
Note: in a child with ASM cardiac output is reduced: if you give iv fluids you can easily cause heart failure and death. If possible avoid iv fluids.

Note: children with ASM have low potassium and high sodium in their blood: YOU NEED TO DILUTE THE ORS so that there is not too much salt, and you should add some potassium.

DILUTED ORS: 1 litre of water + 40g Sugar + 2g Salt (decreased) + 2.5g Potassium (increased)

Oral Rehydration
• Give 5-10 ml/kg of DILUTED ORS every hour for at least 12 hours
• Assess the child every hour:
  - if worse respiratory and heart rate increase or the oedema increase:
  - stop rehydration when better the child is no more thirsty and he has passed urine: stop rehydration
• Continue breastfeeding

Give IV fluids ONLY if the child is in shock
Note: in children with SAM you should NOT use Normal Saline (contains too much salt) and you should rehydrate at a slower rate than usually, to avoid overload.

Use Ringer's lactate with 5% glucose or Half-Normal Saline with 5% glucose or Ringer's lactate.
Give 15 ml/kg over 1 hour together with DILUTED ORS via NG TUBE (10 ml/kg over 1 hour)
• Check pulse and respiratory rate every 10 minutes.
• After 1 hour:
  - if better:
    (respiratory and heart rate decrease)
    -- repeat the same treatment for another hour;
    -- then stop iv and continue DILUTED ORS via NG tube
  - if not better:
    the child probably has severe septic shock
    -- give maintenance iv (4 ml/kg/hour) while waiting for blood;
    -- give blood transfusion (10 ml/kg over 3 hours)

  - if worse:
    (respiratory rate increases by 5/min and pulse rate increases by 25/m)
    -- stop iv fluids.

5. Treat Micronutrients deficiencies
Note: children with ASM can not transport iron normally in the body: don't give Ferrous Sulphate in Phase 1.
PHASE 1 — feeding

Give Vitamin A (treatment dose), Folic acid (5 mg on day1, then 1 mg od), Vitamin B1 (10 mg od), Multivitamins and if possible Zinc (2 mg/kg od) and Copper (0.3 mg/kg od) (you can add these to the feeds).

6. Electrolyte imbalances
Note: These children have low potassium and magnesium. Oedema is partly a result of this. Never treat oedema with diuretics.

- Add Potassium to the feeds (3-4 mmol/kg od) and, if available, Magnesium (0.4-0.6 mmol/kg od)

Note: These children have too much salt (Sodium): giving a load of salt can KILL the child

- When giving rehydrating solution, DILUTE IT
- Do not add salt to the food

7. Treat Anaemia
Note: to avoid risk of overloading the child and cause heart failure, transfuse only very severe anaemia.

-½Give blood transfusion ONLY if Haemoglobin is < 4 g/dL.

- Give no more than 10 ml/kg slowly (over 3 hours)

8. Treat Kwashiorkor dermatosis:
Apply Gentian Violet and give Cloxacillin if infected

PHASE 1 — feeding

Note: the liver and intestinal function of severe malnourished children do not work properly, and they have electrolyte imbalances. They can not tolerate the usual amounts of protein, fat and sodium. They need a diet LOW in these and HIGH in carbohydrate. For this is important to make special food.

1. Start with 130 ml/kg/day
2. Feed the child day and night at frequent intervals to prevent hypoglycaemia and hypothermia and to not overburden the gastrointestinal system.
3. Explain to the mother not to give any other food.
4. The mother should continue breastfeeding as much as the child wants.
5. The more sick the child, the more frequently you should feed him, dividing the feed into smaller amounts:

How to prepare formula 75

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried whole milk</td>
<td>35 g</td>
</tr>
<tr>
<td>Sugar</td>
<td>70 g</td>
</tr>
<tr>
<td>Vegetable Oil</td>
<td>17 g</td>
</tr>
<tr>
<td>Rice flour</td>
<td>35 g</td>
</tr>
<tr>
<td>Dried skimmed milk</td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>70 g</td>
</tr>
<tr>
<td>Vegetable oil</td>
<td>25 g</td>
</tr>
<tr>
<td>Rice flour</td>
<td>35 g</td>
</tr>
</tbody>
</table>

Mix all the ingredients in 700 ml of water. Boil for 5-7 minutes. Cool, and add water to make 1000 ml. If available, add Mineral Mix as advised by WHO.

Never treat oedema with diuretics.

USE FORMULA 75
(100 ML = 75 KCAL)

- If the child is very weak
FEED EVERY HOUR
Divide total ml/24

- If the child is weak
FEED EVERY 2 HOURS
Divide total ml/12
If the child is not too weak
**FEED EVERY 3 HOUR**
Divide total ml/8

6. If the child is too weak to eat, 
**pass nasogastric tube**
7. Every time you feed the child, write how much you have prepared, how much the child takes and how much he vomits. If possible replace the amount vomited.
8. Every morning weigh the child and plot it on a chart
9. Every morning calculate how many calories the child has taken in the previous 24 hours.

and responds to stimuli: you have successfully finished phase 1 and you can start Phase 2.

**PHASE 2 — MEDICAL TREATMENT**

1. Give Ferrous Sulphate for 3 months
2. Deworm
3. Continue Folic Acid, Vitamin B1 and Zinc

**PHASE 2 — FEEDING**

**CHILDREN UNDER 2 YEARS**

- Start with 130ml/kg/day (same amount you were giving of F 75)

<table>
<thead>
<tr>
<th>Total amount of ml taken in 24 hours x 0.75</th>
<th>weight of the child that day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To do this follow this formula:

10. If the child is not taking enough: 
**take action!**
• is the formula prepared correctly?
• are you giving the right amount?
• is the child too sick to eat and you need to give the food more frequently in smaller amounts?
• is the child too weak and you need to insert a nasogastric tube?
11. If the child is taking too much: re-
• review the amount given and decrease:
giving too much can be very dangerous!
12. Never use iv feeding

When the child becomes hungry, has no vomiting or diarrhoea, has no fever, does not need nasogastric tube, smiles

- **Feed day and night every 4 hours** (divide total ml/6)
- For the first 2 days do not increase the amount
- From day 3, when the child finishes one feed, increase by 10 ml next feed
- When the weight starts to increase, stop feeding at night and give 5 feeds/day (divide total ml/5)
- After a few days, give unlimited amounts
- Continue breastfeeding

**USE FORMULA 100**

(100 ML = 100 KCAL)

<table>
<thead>
<tr>
<th>Dried whole milk</th>
<th>110 g</th>
<th>or</th>
<th>Dried skimmed milk</th>
<th>80 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>50 g</td>
<td></td>
<td>Sugar</td>
<td>50 g</td>
</tr>
<tr>
<td>Vegetable Oil</td>
<td>30 g</td>
<td></td>
<td>Vegetable Oil</td>
<td>50 g</td>
</tr>
</tbody>
</table>

Mix all the ingredients in 700 ml of water.
Boil for 5-7 minutes.
Cool and add water to make 1000 ml.
စားသောက်မှုကြောင့် အနီရေးသားသောကြောင့် သင်္ကေတအား ရှိနိုင်သည်။

• သင်္ကေတအား စိုးရိမ်မှုအားလုံးကို တိုးတက်အောင် ရမည်။
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ဤသည် လူမှုရေး အားလုံးကို ပြင်ဆင်နိုင်။

အကြောင်းအရာ
• အကြောင်းအရာများ အဓိက၍ အထိမ်းအမှတ်များ ပြုလုပ်ရန် ရှိနိုင်သည်။
• အကြောင်းအရာများ အဓိက၍ အထိမ်းအမှတ်များ ပြုလုပ်ရန် ရှိနိုင်သည်။

* "Management of the child with a serious infection or severe malnutrition" WHO, 2000
Take time to talk with the parents

During admission
- Take time to talk with the parents and to explain them what you are doing
- Give iron, vitamin B1, vitamin A and ferrous sulphate to the mothers.
- Deworm all family.
- Give vitamin A to other children in the family and send them for immunisation.
- Teach the mothers how to prepare ORS and about which food is good for growing.
- Involve as much as possible the mother in the care of her child.
- During Phase 2 find time to play with the child at least for 30 minutes each day

Discharge
- Discharge the Child when Height/Weight Z score is -1SD (or 85% of the median) for at least 1 week, the child has no more oedema and is smiling and interested in what is happening around him.
- Show the child to the OPD medics and give the mother OPD follow-up.
- If possible follow at 1, 2, 4 weeks and then monthly for 6 months.

Successful Management of severe acute malnutrition does not require sophisticated equipment; it requires that each child is treated with proper care and affection and that management is done by trained and dedicated health workers.

Sources:
- “Management of severe malnutrition – a manual for physicians and other senior health workers” WHO, 1999
- “Management of the child with a serious infection or severe malnutrition” WHO, 2000
Growth monitoring is an essential means to detect malnutrition in children. This article presents the different tools available for an effective measurement of growth.

**Why Measure Growth?**

Good nutrition is essential for healthy growth and development of children. One way to determine that children are receiving adequate nutrition is to monitor their growth and development. Growth monitoring means checking regularly that a child is growing according to standards set for their age, their height, and their weight as compared to a population of healthy children. For a relatively small expenditure per child, growth monitoring can greatly strengthen preventive health programmes.

Changes in body measurements reflect the overall health and welfare of both individuals and populations. These measurements can predict the performance, health, and survival of children. It is recommended that children from 6 months to 3 years should be measured monthly. This is because this group is most likely to suffer from both acute (wasting) and chronic (stunting) malnutrition that can have lasting effects. While wasting can be reversed in any age group, stunting can only be addressed in younger children. After 3 years and up until 5 years, measurements can be taken less frequently - every 2 - 6 months.

For early detection of children with growth retardation and high risk of malnutrition and mortality, health workers need special tools and training in growth monitoring. The growth status of children is a measure of the health and well-being of the whole community. Birth weight is of particular significance in determining the nutritional status of a community: low birth weight is a good indicator of subsequent illness and death in children.

**Key issues to consider when setting up a growth-monitoring programme:**

- What equipment is required?
- Who will use the equipment and where?
- What will be done with the results?
- What is the programme’s objective?

**Problems associated with growth monitoring programmes include:**

- Lack of understanding on the part of health workers about the role of growth monitoring; many existing training methods only look at teaching the skills of growth chart completion or checking it for errors;
- Lack of involvement of mothers in monitoring the growth and development of their children;
- Lack of commitment of senior health personnel to the monitoring of children’s growth and development;
- Lack of planning and facilities when children with growth faltering are detected.
အရက်စီးခြင်းမှုအပေါ် မေးခွန်းများ

- ပြင်သည်မှာ အလွန်ကြူးများစွာ တိုးတက်သည့် ဦးခေါက်စာရင်း ပြုလုပ်ခြင်း
- မြင်ကြားမှာ ရရှိသော အလိုအပါးဆိုင်ရာ မိန်းကလေး ကို စိတ်ချရေးပြုလုပ်ခြင်း
- ကြည့်ရှုမှာ အလွန်များစွာ တိုးတက်သည် အလိုအပါး

(Weight for Height W/H)

- စိုက်ပျိုးခြင်းအပေါ် မိခိုင်းများစွာ တိုးတက်သည်
- အလွန်များစွာ တိုးတက်သည် အလိုအပါး
What to Measure

Looking at the current weight of a child in isolation is not very useful. Most methods of growth monitoring, including weight-for-age, use a chart on which a child’s weight is plotted at intervals, ideally monthly, from birth to five years of age.

Various body measurements are used to assess growth. Some are easier to use, more accurate and more useful than others. Monitoring the growth of a child usually requires taking the same measurements at regular intervals and seeing how they change. A single measurement only indicates the child’s size at that moment; it does not give any information about whether a child’s size or weight is increasing, staying the same, or declining.

Careful repeated measurements and comparisons with previous measurements are necessary because most children will continue to grow a little, unless they are very ill, and it is easy to mistake some growth for adequate growth. Growth measures are usually compared to a reference population. Gathering data to establish a local reference population is a major undertaking. Therefore, western standards are usually used for comparison, such as the National Centre for Health Statistics (NCHS).

Some measures you might be familiar with are as follows:

Weight for Height (W/H)
- Measures thinness or ‘wasting’ for acute malnutrition
- Gives an accurate estimate of body wasting in the short term
- Is used to enroll children into supplementary feeding programs

< -3 SD: Severe acute malnutrition
Between -2 and -3 SD: Moderate malnutrition
Between -1 and -2 SD: Mild malnutrition.
၀န်ရောဂါတချိန်မှာ အကြောင်းချက်ကြည့်ရှုခြင်း

Weight for Age (W/A)

- ဗုဒ္ဓဟူးရှိသောအခါးသည် အကောင်းဆုံးကြိုးစားမှု အခြေအနေအပြောင်းအလဲကို စစ်ဆေးသော အချက်အလက်ကို တိုးတက်စေရန် သင်ပေးသော ရှိသည်။
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Height for Age (H/A)

- ဗုဒ္ဓဟူးရှိသောအခါးသည် အကောင်းဆုံးကြိုးစားမှု အခြေအနေအပြောင်းအလဲကို စစ်ဆေးသော ရှိသည်။
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Weight for Age (W/A)
• Measures an individual child’s growth over time and is used to monitor growth and development
• Does not tell us if the child is too thin or too short
• Should be used with other measures (W/H and H/A) to determine the cause of growth faltering.

Weight for age can be plotted on a chart over time to look at a child’s growth as related to a healthy population. As a child’s growth begins to falter - a downward trend - then the health worker should take both weight for height and height for age measurements to determine if the child is wasted or stunted or both.

It is the direction of the growth curve on the chart that is crucial, and a child whose growth curve shows a levelling off or flattening needs help. A falling weight curve is a more urgent sign for investigation and help.

The chart is also very useful for educating parents.

Height for Age (H/A)
• Measures shortness or ‘stunting’: Chronic malnutrition. (less than 90% of the median=stunted)
• Gives an idea about nutritionwell-being in the long term (over a number of years) and past malnutrition
• May be partly treated by improving the quality of the diet, improving child feeding practices, and improving the overall environment (sanitation, health, etc).

HOW TO INTERPRET MEASUREMENTS

The measurements you take are compared to tables or charts that contain data on a healthy population of children. You probably have heard of the 2 different indices that are currently being used: percentage of the median (%median), and z-scores (SD).

% Median has been used for many years, but now Z-scores are the preferred index, since the will more accurately identify which children are malnourished. Z-scores will be put into use in growth monitoring and for entrance into supplementary feeding programs soon.

Cutoff points for each of the indices are used to define when a child is malnourished or not growing properly. These cutoff points are shown on the chart next page:

TAKING MEASUREMENTS

In order to look at trends and determine the health of a population, it is VERY IMPORTANT to do precise and accurate measurements. The pictures (next page) below outline the main steps and staff needed to do correct measurements.

FOLLOWING UP

The benefits of growth monitoring in promoting better nutritional status and child health are wholly dependent on effective follow-up action being taken by mothers and health workers. This means that:
• Health workers need to follow up to de-
2 children same age, one stunted
termine the cause of growth faltering and ensure that it is being addressed; • Mothers must be motivated and enabled to acquire the necessary skills and resources to take action to improve their child’s nutritional status; • Any advice that is given to mothers must be culturally appropriate and compatible with the resources that exist within the home.

### Mae Tao Clinic Chart

<table>
<thead>
<tr>
<th>AGE</th>
<th>REFERENCE HEIGHT (cm)</th>
<th>90% of REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 m</td>
<td>49.8</td>
<td>44.8</td>
</tr>
<tr>
<td>1 m</td>
<td>53.3</td>
<td>48.4</td>
</tr>
<tr>
<td>2 m</td>
<td>57.0</td>
<td>51.3</td>
</tr>
<tr>
<td>3 m</td>
<td>60.0</td>
<td>54.0</td>
</tr>
<tr>
<td>4 m</td>
<td>62.5</td>
<td>56.3</td>
</tr>
<tr>
<td>5 m</td>
<td>64.8</td>
<td>58.3</td>
</tr>
<tr>
<td>6 m</td>
<td>65.8</td>
<td>60.1</td>
</tr>
<tr>
<td>7 m</td>
<td>68.3</td>
<td>61.4</td>
</tr>
<tr>
<td>8 m</td>
<td>70.0</td>
<td>63.0</td>
</tr>
<tr>
<td>9 m</td>
<td>71.3</td>
<td>64.1</td>
</tr>
<tr>
<td>10 m</td>
<td>73.0</td>
<td>65.7</td>
</tr>
<tr>
<td>11 m</td>
<td>74.0</td>
<td>66.5</td>
</tr>
<tr>
<td>1 yr</td>
<td>75.0</td>
<td>67.5</td>
</tr>
<tr>
<td>1 yr 1 m</td>
<td>75.3</td>
<td>68.6</td>
</tr>
<tr>
<td>1 yr 2 m</td>
<td>77.5</td>
<td>69.8</td>
</tr>
<tr>
<td>1 yr 3 m</td>
<td>78.5</td>
<td>70.7</td>
</tr>
<tr>
<td>1 yr 4 m</td>
<td>79.8</td>
<td>71.8</td>
</tr>
<tr>
<td>1 yr 5 m</td>
<td>80.8</td>
<td>72.7</td>
</tr>
<tr>
<td>1 yr 6 m</td>
<td>81.8</td>
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<tr>
<td>1 yr 7 m</td>
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</tr>
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<td>1 yr 10 m</td>
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<td>77.0</td>
</tr>
<tr>
<td>1 yr 11 m</td>
<td>85.5</td>
<td>77.9</td>
</tr>
</tbody>
</table>

If < 90% = short for age = stunted
Weight assessment in children

- Please rest until it is set.
- Check the baby is on the scales.
- Child's feet off supports and placed on rear.
- Child's head on breast plate.

Length assessment in lying position

- Length should be measured from occipital bone to superior of head.
- Use of a tape measure to measure the length of the child.

This year, blended food or fortified flour was introduced in the camps in order to tackle the problem of micronutrient deficiencies. This article presents the advantages of this new food and gives some ideas of recipes.

What is blended food or Fortified Flour?

**BLENDED FOOD =**
Whole wheat flour +
Soya bean flour +
extra micronutrients
(vitamins and minerals)

Micronutrients (vitamins and minerals) include - Vitamin A, B1, B2, B3, (Niacin), B12, C, Folate, Iron, Calcium and Zinc.

Why Did TBBC introduce blended food to the ration?

The current TBBC ration does not provide all the important nutrients especially vitamins and minerals that people need for their body to stay healthy. Therefore, besides the TBBC ration, people have to find these extra needs themselves in order to get enough nutrition. But, while the camps are currently facing various difficulties such as limited space to grow or raise food, no income to buy food, camp restriction (unable to go out of camp to seek for jobs), difficulty collecting the wild food as the population is growing, it is rather hard in terms of filling these needs. Lack of nutrients can effect on the health of people in general and especially the growth and development of children both physically and mentally in the long term.

“Fortified Flour was introduced to tackle the problem of micronutrients deficiencies”

**Nutrient Content of Calculated BBC Ration**
Nutrition surveys were conducted and the results showed that there are many important nutrients lacking in the diet, including iron and calcium, vitamin A, B vitamins, vitamin C, and many other nutrients. Because of this, we still see the following problems in the camps.

- **Chronic malnutrition (stunting)** - caused partly by a diet low in many micronutrients and good quality protein. It is also caused by weaning a child too early or too late, and not feeding them enough nutritious foods when they are young.

- **Anaemia** - often iron-deficiency anemia, and caused by a diet low in heme iron (found in meat and animal foods), and high in carbohydrates, like rice.

- **Beri - Beri** - caused by a diet low in vit B1 (B1 is found in pork, beans, brown rice and in small amounts in many vegetables), and worsened by chewing betel nut, eating fish paste and drinking tea before and after meals.

- **Constipation** - caused by a diet low in fiber (fiber is found in beans whole grains, like brown rice or whole wheat, and in fresh fruits and vegetables)

- **Other diseases** - vitamin A deficiency, etc.
(အာနိုင်) ဆီးဖြင်စွဲအိုက်ခိုက်မှု

- ဆီးဖြင်စွဲမှုအားလုံးကို စီမံနိုင်သည်။
- ဆီးဖြင်စွဲမှုအားလုံးကို စီမံချက်မှုများကို စီမံနိုင်သည်။
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ထို့ပြင် ဆီးဖြင်စွဲမှုအားလုံးကို မြန်မာစိုးစံရေး ကိုယ်စားလှယ်ပေးသည်။

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Who can eat this blended food?

How blended food is good for health?
• make children grow strong and tall
• make children study better and be smarter
• make people have strong blood
• make sure women have healthy babies
• prevent weakness
• prevent beri beri (Vitamin B1 deficiency)
• prevent chicken eyes (Vitamin A deficiency)
• prevent constipation
• make people strong and healthy

Who can eat this blended food?
• Children - starting at 6 months - should eat this food every day
• Young children - starting at 6 months - need to be fed 5 times per day to grow properly!
• Pregnant and lactating women - should eat this food every day to make sure their babies are healthy

How can you use blended food?
You can prepare and eat blended food as you like, but should be cooked for at least 5 minutes.
Blended food can be prepared and eaten as
• snacks
• Curries
• Porridge for young children (very suitable for young children > 6 months)

Can blended food be harmful if you do not use it properly?
Blended food is not harmful. But it can cause gas in your stomach at the beginning, as you are not familiar with this food. This will go away later if you continue eating it. Additionally if you do not handle and eat it properly or hygienically you can get other problems such as diarrhea.

How can you store blended food safely?
TBBC provides plastic containers and scoops to all families.
• Therefore, blended food should be stored in this container. The container should be covered tightly when not in use.
• Blended food should not get wet and do not let insects get into it. If these things happen, throw that part away and do not use it.
• Blended food can last for at least six months if you store it properly.

“Don’t waste this important food on animals; it is for your own health.”

ALL REFUGEES CAN AND SHOULD EAT BLENDED FOOD
The MISOLA project was born in 1982, in Fada’n Gourma, in Burkina Faso, on French doctors’ initiative who found in this flour a solution to fight against malnutrition in children. During a private journey in Burkina Faso, Claire and Francois Laurent, pediatricians from the North of France, observed living conditions of people living in the villages and cities they visited. They finally decided to make a detailed nutritional survey including social and economical parameters in order to underscore the nutritional deficiencies of the population. The survey revealed that malnutrition was due to three main factors:

• Lack of available and adequate food for children and adults
• High cost of industrial flours
• Dependence on external food aid.

The MISOLA flour appeared to be an effective means to fight malnutrition with the country’s own resources. Taking into account people’s nutritional habits, ingredients with an adequate protein-energy value to complement breastfeeding and all other traditional foods were found on site. Mil, Soya and groundnut were finally selected, as these three plants could be locally produced and were commonly appreciated by the people. The flour obtained after transformation was easily digestible and corresponded to WHO’s recommendations.

Nowadays, ten traditional production units of MISOLA flour have been implanted all throughout the country. The production of MISOLA flour is an integrated part of the Ministry of Health’s “Plan for dissemination of weaning flour made with local products” and the project benefits from UNICEF financial support. In 1991, the MISOLA project has been exported to Mali where 4 production units cover the needs of Mopti-V region.

The MISOLA project is a good example of what can be done at local level to fight against malnutrition. In Thailand, the production of such a flour with local products could also be cost-effective option. Corn could replace small Millet as their composition in nutritious elements is quite similar.
### The composition of MISOLA

<table>
<thead>
<tr>
<th>Cereals</th>
<th>Proteins (g)</th>
<th>Fats</th>
<th>Fibers</th>
<th>Carbohydrates</th>
<th>Energy (Kcal)</th>
<th>Ca (mg)</th>
<th>Fe (mg)</th>
<th>Thiamin (mg)</th>
<th>Riboflavin (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.2</td>
<td>4.6</td>
<td>2.8</td>
<td>73</td>
<td>358</td>
<td>26</td>
<td>2.7</td>
<td>0.38</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>9.7</td>
<td>5.2</td>
<td>7.5</td>
<td>60.9</td>
<td>329</td>
<td>17</td>
<td>9.3</td>
<td>0.30</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>Small Mil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Proportions for a ration of 100g with 12% of humidity)

**WARNING:** During preparation and storage of the flour, beware of contamination and fungus infection.

### Description

The composition of MISOLA is based on the association of cereals with leguminous plants that allows a balance of amino acids close to the one of animal proteins. The cereal (small mil) brings carbohydrates and proteins, and the leguminous plants (groundnut and Soya) are rich in proteins and fats that increase the energetic value of the flour.

The ingredients of the flour are mixed in the following proportions:
- Grilled Small Mil: 60%
- Grilled Soya: 20%
- Grilled Groundnut: 10%

The calorific value of the flour is 420 calories for 100 g. Its energetic value is 1 800 joules.

**WARNING:** During preparation and storage of the flour, beware of contamination and fungus infection.
Fortified flour is a good ingredient for the preparation of first food.

Mix 1 part flour and 2 parts water, add other ingredients such as sugar and milk, and cook until done (about 5-10 minutes).
မြင်ခြင်းနှင့် ဖြေပို့ခြင်း ချက်ကြီးများ ဖြစ်စေမှု့ အမှန်တွေ့အခြေခံချက်ကို အသုံးပြုခြင်း

(ကြောင်းချက်)

မြှောက်ချက် = အိုင်ဆောင်ချက်

မြင်ချက် = ້ိန်ချက် မည်သည့် စာရင်းသို့ စာရင်းသို့ ပေါ်ခြင်း

မြှောက်ချက် = အိုင်ဆောင်ချက်

(ချက်: Healthy Pregnancy, Health Baby by Andrea Meleise (Burmese Border Consortium)
Different groups of people need different types of nutrition and pregnant women is one group vulnerable to malnutrition. This article explains why nutrition is important for pregnant women and how they can ensure they get a good diet.

Pregnancy is a condition that requires a series of complex yet coordinated changes to occur in the female body. It is not an illness. In ordinary circumstances a pregnant woman can do almost all the things she did before she became pregnant, including working, exercising, and participating in recreational activities. She should, however, take extra care of her health. For 9 months, a fetus will be depending on her for all its body-building materials. Ideally, she should be in excellent health before starting the pregnancy.

A pregnant woman should be sure to eat adequate quantities of protein foods, fruits, vegetables, and grains and to drink plenty of liquids. Because she is eating for a special condition; pregnancy, she should expect to gain a reasonable amount of weight, ideally about 10 kg during the course of the pregnancy. The hormonal changes that occur with pregnancy account for the woman’s increased appetite. This is natural way of providing for the developing fetus. Women who are weight-watchers before the pregnancy should cease dieting while they are pregnant because continued dieting can have an adverse effect on the health of the fetus. Pregnant women should also get regular exercise and

### Weight gain in pregnancy (approximately):

- **3.0 kg = the baby**
- **4.0 kg = increase in size of uterus and breasts, increased blood and fluids, and placenta**
- **3.0 kg = fat stores, to be used after baby is born to make breast milk**
- **10.0 kg = Total Average Weight Gain During Pregnancy**

(Source: Healthy Pregnancy, Health Baby by Andrea Menefee (Burmese Border Consortium))

A pregnant woman should be sure to eat adequate quantities of protein foods, fruits, vegetables, and grains.
proper nutrition to maintain their strength and endurance.

**Nutrition requirements**

A pregnant woman must pay special attention to nutrition. Her diet must provide the nutrients the baby needs to develop properly. Otherwise, both her health and that of her baby can be affected.

A pregnant woman needs to eat a varied and balanced diet. Foods high in calcium, iron, phosphorus, magnesium, vitamin D, and folic acid are very important. These vitamins and minerals are needed for the baby to form healthy cells. A pregnant woman must get enough nutrients for both herself and the baby. If she doesn’t, she may feel weak as the vitamins and minerals stored in her body are taken away by the foetus.

Protein foods such as meat, fish, and eggs are equally necessary. Protein supplies the building blocks for all of the baby’s body tissues, so lack of protein can affect development of the baby’s whole body. But it is the baby’s brain that can be most affected. A baby’s brain grows most rapidly just before and after birth. If the mother’s diet does not supply enough protein, normal brain development does not take place. In fact, it will never take place, even if the baby later gets more protein. Throughout life, then, the baby will be mentally retarded, a victim of its mother’s poor diet.

**Foods and nutrients**

A pregnant woman should eat meals at least 5 times a day, which includes 2 snacks that contain a variety of balanced diet from three food groups commonly known as foods for growth and repair, foods for energy and foods for protection. In addition, all women of child bearing age should be supplemented with Folic Acid, Iron (200 mg per day) and Vitamin B1 (10 mg per day) as long as the food provided is not enough.

**Foods for growth and repair:**

This food group is also named as body building foods. This group contains proteins, a type of nutrients used by the body for growth, maintenance and repair of body tissues. They include breast milk, cheese, tofu, soybeans, other beans, duck, pork, beef, crab, duck, pork, beef, crab, etc.
The diagram shows a balanced diet with various food groups including fruits, vegetables, grains, proteins, and dairy. This aligns with the recommendations for maintaining a healthy pregnancy.

**References:**
- Healthy Pregnancy, Healthy Baby by Andrea Menefee (RBC)
- Health Pregnancy, Healthy Baby- Health Messenger magazine Issue No. 19/2003
Pregnant mother should eat every day as follows:

- almost 1 milk tin of raw rice (8-9 cups of cooked rice/flour)
- 1 or more cups of beans (about 50 grams raw)
- 1 egg + meats + chicken, fish, if available
- a little more than 1/2 cup of leafy green vegetables
- 1/2 cup of fruit, or other vegetables
- plenty of oil to cook foods

All pregnant women should be sure to take their prenatal vitamins and minerals - the extra iron, calcium, folic acid and B vitamins are important in ensuring a healthy delivery and healthy baby!

Source: Healthy Pregnancy, Health Baby by Andrea Menefee (Burmese Border Consortium)

Sources:
- Health Pregnancy, Healthy Baby- Health Messenger magazine Issue No. 19/2003

Foods for energy:
These foods are good sources of carbohydrates or fats (types of nutrients) used by the body to provide fuel for physical activity. Foods rich in carbohydrates are rice, noodles, potato, sweet potato, taro, yam, corn, bread, sugar, sugar cane and honey. Those high in fats are coconut milk, cooking oil, butter, and animal oils.

Foods for protection:
This food group contains essential vitamins and minerals, types of nutrients that work with the bodybuilding and energy foods in preventing and fighting diseases and illnesses. They contain micro-nutrients classified as vitamin A, B, C, D, E, K, iron, iodine, calcium and many others, which are necessary for health. Foods in this group include mainly fruits and vegetable, but animal foods are also very important sources of these nutrients.

“Foods rich in carbohydrates are rice, noodles, potato, sweet potato, taro, yam, corn, bread, sugar, sugar cane and honey.”
This article provides knowledge and guidelines to help health workers, social workers and mothers to learn the advantages of breastfeeding.

The birth process stimulates the mother's breasts to produce milk. This milk is the natural food for infants. Modern science has not yet been able to duplicate the composition of human milk for artificial feeding.

Human milk provides an infant with a number of benefits that artificial formula does not. It transfers disease-fighting substances from the mother's body, providing the baby with a greater resistance to infections. Breast-fed infants are also less likely to be overweight or underweight and constipated. In addition, breastfeeding reduces the occurrence of allergies, and it is, of course, less expensive than artificial feeding.

Breastfeeding has benefits for the mother as well. It causes the uterus to contract back to its normal size more quickly. In addition, the intimacy involved in breastfeeding may strengthen the emotional bond between mother and child.

Almost all mothers are capable of breast-feeding their infants. They must include an extra 500 to 1000 calories per day in their diet to produce an adequate supply of milk. They must also drink an extra liter or more fluid. Breast milk alone is the best possible food and drink for a baby. No other food or drink is needed for about the first six months of life. From the moment of birth up to the age of six months, breast milk is all the food and drink a baby needs. It is the best food a child will ever have. All substitutes, including cow's milk, infant formula, milk powder solutions, and cereal meals, are inferior. Even in hot, dry climate, breast milk contains sufficient water for a young baby's needs. Additional water or sugary drinks are not needed to quench the baby's thirst. They can also be harmful leading to diarrhea and other illnesses.

Different kinds of breast milk

Colostrum:
For the first days after the delivery the breasts feel soft and empty and secrete only small amounts of yellowish milk, called colostrum. The colostrum contains more anti-bodies than the later milk. It is nutritious and helps to protect babies against infections. The baby does not need any other food or drink while waiting for the mother's milk to come in. In some community, mothers are advised not to feed this colostrum to their babies. This advice is wrong.

Mature Milk:
A few days after giving birth, the mother's breasts start to feel full and sometimes hard. They begin to produce mature milk with all the nutrients that the baby needs. Sometimes it comes in 2 days or more. It comes more quickly if the baby is allowed to suckle frequently from the time of delivery. This situation is called unrestricted feeding.

Breastfeeding
• Helps the mother and baby to bond;
• Helps to delay a new pregnancy for 6 months if it is exclusive breastfeeding; and
• Costs less than artificial feeding.

Breast Milk
• Contains exactly the nutrients that a baby needs up to the age of 6 months;
• Is easily digested and efficiently used by the body; and
• Shares the mother's immunity that protects a baby against infections.
Fore milk and hind milk:
The milk is not the same throughout a feeding. First the milk looks gray, watery and contains proteins, vitamins and lactose, but not much fat. This is the fore milk. Then at the end of a feed, the milk becomes whiter; it is called the hind milk. It contains more fat, which is important for producing energy.

Common breastfeeding problems

Engorgement:
Sometimes, breasts become swollen, painful, hard, and the milk does not flow well due to collection of fluid and milk in the breasts. This condition is diagnosed as engorgement of breast, which is usually due to delaying breastfeeding. This condition can be prevented if the newborn is allowed to suckle frequently from the time of delivery. To manage the engorgement of breast, let the mother express out some of the milk from her breasts and keep them warm to help milk flow.

Blocked duct:
Sometimes, a painful and tender mass can be experienced in some part of a breast. It can be a condition that the milk is not getting out of that part of a breast and could be diagnosed as block duct. The condition may be managed by feeding baby more frequently on that side of the breast and gently

Breastfeeding according to chronological order

<table>
<thead>
<tr>
<th>Newborn babies:</th>
<th>Start breastfeeding during the first hour of delivery and feed colostrum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 0 to 6 months:</td>
<td>Exclusive breastfeeding is highly recommended for the first six months of the baby's life.</td>
</tr>
<tr>
<td>Children 7 to 11 months</td>
<td>Breast milk alone does not provide enough nutrients for a baby's growth and development. But breast milk still remains the most important part of the baby's diet.</td>
</tr>
<tr>
<td>Children 12 to 23 months:</td>
<td>At this age, children are ready to start eating the same foods as other family members. Mothers should continue to breastfeed at least until the baby is 2 years old.</td>
</tr>
<tr>
<td>Over 24 months (2 years):</td>
<td>At this time most children stop breastfeeding. They are now ready to receive all of the nutrients that they need from all kinds of foods.</td>
</tr>
</tbody>
</table>

“Exclusive breastfeeding means that the baby receives no other food or drink but breast milk only, not even water for hiccups.”

“Colostrum is the first yellow milk produced by the mother just after the delivery. It is rich in antibodies and therefore is the best protection against infections.”
- Understanding Health by William M. Kane, Random House School Division, New York/ (Second Edition)
- Facts for life/ published jointly by UNICEF, WHO, UNESCO and UNFPA/1993
Sore and cracked nipples:

Massage the mass towards the nipple. It can also be prevented by changing the position of the baby for the feed e.g. instead of the baby lying in front of the mother it can lie under her arm.

Mastitis:

If engorgement of the breast or blocked duct continues for more than a day or two, the lesion can become infected and develop into mastitis, which could later turn into a breast abscess. The breast becomes very painful, and the mother usually feels unwell and has fever. It is important to remove the milk by feeding the baby continuously. If this is not possible, mother should express her milk. It may be necessary to give appropriate antibiotics and rest to mother.

Sore and cracked nipples:

Sore nipples are very common and the best way to prevent them is by practicing good attachment from the very first breast feed. If a baby bites a nipple with the gums due to bad position of breastfeeding, it becomes sore. The baby usually does this because the nipple is not completely inside the mouth. Sore nipples are more common when a mother’s nipples are short, or if her breasts are swollen. To prevent this lesion, check the baby’s position when suckling and correct it and ask the mother to leave a drop of hind milk on the nipple or apply gentian violet for both baby’s mouth and mother’s nipple. It will help to heal. It is also necessary to empty the breast by hand or with pump.

Flat nipples:

Some women have short flat nipples. Flat nipples are common, especially in mothers who are having their first child. Most mothers are able to stimulate the nipples to get them out but if they are inverted, which is rare, then it is not possible. If the nipple does not stretch out easily, the baby may need extra help at first to take enough portion of the breast into his or her mouth. She can express some milk to soften her breasts, so that it will be easier for the baby to suck the nipple.

Reference

- Understanding Health by William M. Kane, Random House School Division, New York/ (Second Edition)
- Facts for life/ published jointly by UNICEF, WHO, UNESCO and UNFPA/1993
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Another commonly used first food is sweet ‘Mali Milk.’ Many parents think that this is a good, nutritious food for children. But, this milk is mostly sugar and fats and contains only a small amount of protein. Because of this, Mali Milk is NOT a suitable food for young children. And it is expensive - the amount of money spent to purchase this milk could buy plenty of fresh, nutritious foods instead.

Below are some guidelines for feeding infants and children, according to their age.

### Food needs for different ages

#### INFANTS: from 0 to 6 months old

Breast milk, and only breast milk, is the best food for infants. It is the only food they need until they are 6 months old. However, mothers should get extra food during their pregnancy. Babies who are breastfed are healthier, grow stronger, and are less likely to get sick than babies who use bottled milk, since breast milk provides not only the exact nutrition that a baby needs, but also important antibodies that help young babies fight diseases. And, if a mother uses a bottle but does not keep her hands, the bottles and water used to mix the formula very clean, bottle-fed babies will have more chance of getting serious infections.

#### INFANTS: from 6 - 12 months (First Foods)

When babies reach six months old, they start to become more active and need more food than just breast milk. Also, they need vitamins and minerals
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(like vitamin A and iron) that breast milk no longer provides in adequate amounts. Mothers should continue breast-feeding at the same time as their babies start eating other foods.

Babies should be introduced to new foods slowly and carefully. These “first foods” must be very clean, very soft, and should include foods from all the food groups in addition to blended food. Infants should be fed small meals before breastfeeding.

OLDER CHILDREN >1 year

When a child begins to eat less breast milk and more other foods, they need to begin eating small, nutritious meals frequently throughout the day to ensure that their small stomachs can take enough nutrients for proper growth and development.

Children >1 year have similar needs for nutrients and can eat many of the same types of foods as adults. But because they have small stomachs, they need to eat more often than adults - about 5 or 6 times per day is best (adults only need to eat 2-3 times per day). A child’s diet should include foods from all of the food groups in addition to rice, which means eating some protein foods, some energy foods and some vitamin/mineral foods every day to ensure optimal growth and development.

Making first foods

When making first foods for babies, there are some important things that parents need to know:

- First foods need to have high amounts of protein, energy, and vitamins and minerals - they should include blended food (if available), meat, fish, beans, plus plenty of fresh fruit and vegetables, and added oil for energy, in addition to rice.

- First foods for babies should be soft, smooth and easy to digest.
- First foods must be as fresh and clean as possible because babies can get infections easily.
- First foods must be inexpensive and easy to prepare.

If blended food is not available, nutritious first foods can be made from foods that people normally eat. For example, first foods can be made from:

- rice
- oil
- dark, green vegetables
- other vegetables
- Boiled sweet potatoes
Rice Porridge

- pumpkin or other squash
- pork, chicken, chicken eggs, duck eggs
- mashed beans and peanuts
- fruit, such as papaya and banana, mango.
- Yellow boiled eggs

Below are some simple recipes to make nutritious first foods for your child. You can add any other ingredients as you like or that are available.

Blended Food Porridge
1. Mix 1 part blended food with 2 parts water.
2. Cook for about 5-10 minutes, stirring all the time to get the lumps out.
3. Add oil, cooked meat, chicken, fish, or egg, and other ingredients, like vegetables or banana, and continue cooking until done.

Rice Porridge
1. Soak one spoon full of dry yellow beans in water for several hours
2. Add one or two spoons of dry rice, one or two pieces of pumpkin, and then add clean, boiled water. Mix all of this food together until it is soft.
3. Then, add some cooked, green vegetables and a little oil.
4. If you have an egg, fish or meat, add them to the mixture. Then boil the whole mixture together until it is very soft.

Cooked rice and beans can also be used, but be sure to heat vegetables and meat well and mash mixture until very soft.

Mashed fruit with Lemon
1. Mash one banana in a cup, using a spoon, until it is completely soft
2. Or, mash some pieces of papaya together in a cup, using a spoon, until it is completely soft.
3. Squeeze lemon or orange juice and mix well.
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### 6-9 Months

**Breast Feed on Demand**

**Feed Solids 3-4 Times per Day**
- Porridge made with blended food (or rice) with a small amount of oil added
- Add mashed with vegetables and fruit (4-8 small spoons)
- Add cooked mashed meat, chicken, egg, beans (start with 1 small spoon and increase to 6 small spoons)
- Later, add pieces of soft fruit, noodles

**Avoid foods that can cause child to choke**, such as nuts and seeds, corn, large pieces of food...

### 9-12 Months

**Breast Feed on Demand**

**Feed Solids 5-6 Times per Day**
- Porridge and other snacks made with blended food (or rice) with a small amount of oil added and other ingredients as available
- Vegetables and fruits, soft pieces (1/2-1 cup)
- Cooked meat, chicken, beans, egg (1/3-1/2 cup)
- Other finger foods (fruits, noodles, etc.)

**These foods can be eaten mixed into porridge or eaten in small pieces by hand**

### Older Children >1

**Breast Feed on Demand**

**Feed 3-5 Small Meals per Day**
- Blended food snacks and curries
- Rice with oil mixed into it
- All other foods eaten by family - take out foods before putting spice in pot

**Be sure to provide plenty of other foods in addition**
FOOD GROUPS

The nutrients are:
- Carbohydrates
- Fats and sugars
- Protein
- Vitamins and minerals
- Water
- Fiber * (Not digested by enzymes)

FOOD GROUPS

Foods can be organized by groups, according to what nutrients that have the most of, and what they do for our bodies.

The Foods Groups Include:
- Group 1: Carbohydrate or Energy Foods
- Group 2: Protein Foods
- Group 3: Vitamin and Minerals
- Group 4: Fats and sugars

Group 1: The Energy Group

The energy group is made up of carbohydrates. This nutrient provides food for the brain, and also give our bodies energy.

Foods in the energy group usually include the main stable food. For example, RICE is the main food of Asian people, and provides the largest source of energy in the diet. Some common examples of foods from the energy group include:
Group 2: The Protein Group

Protein foods can also be called “body-building” foods. Protein is important to develop muscle, for growth, and to repair the body after illness or injury.

Protein foods are especially important for children and pregnant women, as this is the time that the body is growing.

Some common examples of foods in the Protein Group include:

Animal protein = all meats, like chicken, pork, beef, fish, and crab, also eggs, milk

Plant protein = beans and nuts like calipe and red beans, soybeans, and peanuts

There are 2 kinds of protein; 1 kind comes from animals and the other from plants. Animal protein is easily used by our body because it contains the same things that are found in our muscles. But, protein from plant foods can be combined so that they also provide the correct proportion of amino acids. To get good protein from plant foods we need to combine:

- grains + beans OR maize + beans
- OR grains + nuts

Here are some examples of good protein combinations:
- rice yellow beans, corn with red beans, rice with groundnuts, bread with groundnuts, etc.

Group 3: Vitamins and minerals

Although all foods have some amounts of different vitamins and minerals, fruits and vegetables tend to have high amounts of vitamins and minerals. In general, vitamins and minerals help build our immune function, protect us from disease, and help build and maintain the many components of our bodies, including blood, skin, teeth, bones, etc. Some vitamins also help our bodies to use the energy foods that we eat.

Minerals such as iron, iodine, calcium, help the body make strong blood, teeth,
bones, and can be found in many foods.

Vitamins, such as vitamins A, B, and C, and minerals, such as calcium and iron, can be found in foods in other groups, but the best way to get lots of vitamins are from eating fresh vegetables and fruits, especially dark green, orange or yellow vegetables and fruits.

Some common examples of foods high amounts of vitamins and minerals include:

- Dark green and orange vegetables, and fresh vegetables, such as green beans, pumpkin, morning glory, tomatoes.
- Fresh fruits, such as papaya, mango, jackfruit, and oranges.

**Group 4: Fat and Sugar**

These foods are foods that we should eat the least of. They include oil, fat from meat, refined sugar, etc.

**BUILDING A BALANCED DIET**

People need food from all groups to have a balanced diet and good nutrition. It is not healthy to eat only oil every day, or only eggs everyday, or only morning glory every day. If we only eat foods from one group, we will not be getting the benefit from nutrients from the other groups.

It may be difficult for people to find foods that contain all the nutrients they need, because some foods might not be available to them, or because they do not have money, or because some foods that people like to eat are naturally low in certain nutrients. Still, it is important that people know WHAT types of foods to grow, purchase, trade, etc. to create the most balanced diet under the circumstances.

- **TRY TO EAT A VARIETY OF FOODS EVERY DAY IN ADDITION TO RICE, INCLUDING BEANS OR NUTS, FRESH FRUITS AND VEGETABLES, AND MEAT AND EGGS IF AVAILABLE**

- **EVERYONE SHOULD TRY TO EAT SOME DARK GREEN LEAFY VEGETABLES, AND YELLOW AND ORANGE FRUITS AND VEGETABLES, EVERY DAY**

- **EVERYONE SHOULD TRY TO EAT SOME MEAT AND PUT LEMON ON YOUR FOOD OR EAT SOUR FOODS WITH YOUR MEALS - THESE ARE VITAMIN C FOODS THAT HELP YOUR BODY USE IRON**

- **CHILDREN NEED PLENTY OF PROTEIN FOODS AND FRESH FRUITS AND VEGETABLES TO GROW PROPERLY - THEY NEED VARIETY EVERY DAY**

- **BETEL NUT, COFFEE AND TEA DESTROY SOME VITAMINS AND MINERALS - DO NOT EAT THEM CLOSE TO MEALS**

“ALL PEOPLE - men, women, and children NEED FOOD FROM ALL THE FOOD GROUPS TO STAY HEALTHY AND STRONG.”
The case study presented in this paper indicates the relationship between poverty, ignorance, neglect and social factors, which are contributory causes of malnutrition in children.

Clinical examination

Sanetun is a little 3-year-old boy, who was admitted at Nu Po hospital’s Therapeutic Feeding Program. His weight and height were recorded on admission as 5.7 kg and 69.5 cm putting him below 70% of the median weight for height and indicating that he showed severe acute malnutrition. His weight was 1.5 kg below that expected for his length according to averages that would be seen in healthy populations. Also, his height was what a person might expect to see in a small one-year-old child. His length for age, an indicator of the presence of chronic malnutrition, showed that he was stunted and wasted, even if his age might have been two years old.

On clinical examination, Sanetun was suffering from: irritability, lethargy, weakness, open sores around the lower part of his body, with evidence of skin infections. His limbs and buttocks were wasted with pitting oedema of his feet, indicating combined marasmus and kwashiorkor.

Social history

Sanetun is the first and only child of his mother, Malun Tin. Malun Tin is 28-years-old, and she lives outside the camps, with her husband. Male Tun’s husband is not Sanetun’s father, which explains the little attention the child receives from his stepfather. During his stay at the hospital, Sanetun’s stepfather never visited him.

Malun Tin and her husband are working as daily workers in neighboring farms. The income of the family is very irregular and most meals are composed of rice, chili and clear soup. Meat is consumed occasionally and the family has to rely on neighbors’ generosity to get some fruits from time to time. Sanetun usually eats only 2 meals a day with no snacks in between.

Sanetun’s mother is also malnourished and as she has to work outside to support the family’s income, Sanetun is often left alone at home without proper care. The sores and skin infection suggest that Sanetun is usually left for many hours in swaddles soiled with urine and faeces.

Treatment and Rehabilitation

Sanetun’s recovery was very smooth. He received vaccination against measles, some antibiotics, vitamin A, and de-worming treatment. His mother stayed with him during the 20 days of his hospitalization, assisting the emotional and physical healing of...
Treatment and Rehabilitation

her little boy. Medics explained what had happen to her child and advised her on how to avoid such a situation to happen again in the future.

Sanetun was brought to the hospital on the recommendation of Malun Tin’s stepmother. Despite his age, he could neither walk nor talk and displayed the usual anorexic symptoms of a child suffering from acute malnutrition. After three days, Sanetun’s condition started to improve. His weight gain was steady and he suffered no medical complications. His appetite recovered with the introduction of a medically prescribed and strictly monitored feeding treatment. After twenty-five days of treatment Sanetun’s weight had reached 7 kgs, which is equivalent to 85% of the median weight for height index. He was discharged home to his mother and stepfather. He returned to the family home where he had been previously denied nutrition and basic care. It was a concern whether or not his mother would be able to follow up with the health pieces of advice she received at the hospital or would she provide cause for further neglect.

Arrangement were made for Sanetun to attend follow up visit at the hospital one day every week for weight check, to assess his progress and to receive a regular allowance of supplementary foods to prevent relapse.

This case is an example of a severely malnourished, physically and emotionally traumatized child. However, because of the difficult economic situation of his family, he was returning home to a situation, which had caused his condition. Sadly, a recurrence cannot be ruled out because the underlying causes were not addressed, due to the reduced capacities of the mother to provide care and attention and the lack of concern of Sanetun’s stepfather. Health workers can help by making regular home visits and providing ongoing health education to the family.

The recovery of a child suffering from severe, acute malnutrition must be carefully monitored by medical and nursing staff, with good knowledge of nutritional care. Major medical complications can arise in a severely malnourished child, giving rise to conditions such as pneumonia, cardiac failure, suppression of the immune system and toxic shock, which can result in death. They can be reduced through skilled work, adherence to protocols and attention.

“The recovery of a child suffering from severe, acute malnutrition must be carefully monitored by medical and nursing staff.”

“The recovery of a child suffering from severe, acute malnutrition must be carefully monitored by medical and nursing staff.”
Quiz 2004 ရက်စွဲစားမှု ၂၀၀၄

You can answer either in English or in Burmese. Write down your answers on this sheet and please return to the following address by 15 March 2005. Put ✓ or fill in Blanks for correct answers.

Address ရောင်းပွဲအား Aide Medicale Internationale Mae Ta'o Road, Mae Sot, Tak, 63110 Mobile:05-744-3387 Email: hMESS@loXinfo.co.th

1. What is a community contingency plan?
ယခုကစားဖျင်သောစျေးနှုန်းမှုအား ဖျင်စားနေသည်။

2. Describe signs and symptoms of shock.
စိုက်ကူးနေသည်သောစျေးကူးမှု၏အနားအတွင်းမှုများအား ဖော်ပြချက်ချက်ပေါ်ရေး။

3. Mention the reference value for Measles coverage during health emergency.
စောက်ဘောင်ကျသောအခါမှ အကြံပေးမြို့ယားတို့နှင့်အပါအဝင် ဖျင်စားစောင်းစိုးကြောင်းပေးထားသည့်နိုင်ငံများကို ဖော်ပြချက်ချက်ပေါ်ရေး။

4. What should you do if your clothes catch fire?
စိုက်ယာနွယ်မြင်သည်သောအခါ ဖျင်စားအားထွက်စိုးကြောင်းပေးထားသည့်နိုင်ငံများကို ဖော်ပြချက်ချက်ပေါ်ရေး။

5. Name the 2 main contents of central nervous system.
စိုက်ယာနွယ်မြင်သည် အမိန့်စနစ်အားထွက်စိုးကြောင်းပေးထားသည့်နိုင်ငံများကို ဖော်ပြချက်ချက်ပေါ်ရေး။

6. Describe signs of meningitis.
စိုက်ယာနွယ်မြင်သည် အမိန့်စနစ်အားထွက်စိုးကြောင်းပေးထားသည့်နိုင်ငံများကို ဖော်ပြချက်ချက်ပေါ်ရေး။

Health MESSENGER ကျွန်ုပ်တို့အား ဖော်ပြချက်ချက်ပေါ်ရေး။

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7. What do you use for treating meningitis?

8. What is child abuse?

9. What are the signs and symptoms of deep vein thrombosis?

10. What is the definition of tetanus?

11. What is septicemia?

12. Name 3 blood borne viral diseases.

13. What is the combined oral contraceptive?
14. What are the side effects of DEPO?

15. Does a man lose his sexual capacity after a vasectomy?

16. Describe the definition of health according to the World Health Organization.

17. Name 5 vector-borne diseases.

18. Define Trachoma.

19. What is diarrhoea?

20. What is the causative organism of typhoid fever?
21. Name 3 groups at risk of HIV/AIDS infection.

22. Name 3 countries currently experiencing serious HIV/AIDS epidemics in South-East Asia.

23. Describe advantages of existing triple anti-retroviral therapy.

24. HIV/AIDS is a punishment from God. a) True    b) False

25. HIV/AIDS can be transmitted from a mosquito bite and bed bug bites. a) True    b) False
Health Messenger is a distance learning magazine directed at health and social workers and their communities. It is published every three months by AIDE MEDICALE INTERNATIONALE.

Health Messenger aims at communicating health information and knowledge to those living in areas where resources are limited. In order to achieve this purpose all those concerned about health problems should become actively involved in the project. Everyone is aware that teaching is more effective if the whole community is involved in the learning process.

Medics, nurses, laboratory technicians, home visitors, and school teachers should all join together in this effort.

All of us should try to gain more knowledge regarding health problems through any means available in order to help improve health conditions in the camps for temporarily displaced persons and also those outside the camps.

Health Messenger serves as one of the means for those who want to benefit from this knowledge and information exchange regarding health and medical problems.