

BACKGROUND

Since the first group of refugees arrived in Thailand in 1984, the TBBC food basket has evolved from only 50% rice to a full food basket.

Over the years, opportunities for the refugees to supplement the food basket have decreased substantially, and the refugees are now dependent on food aid.

This briefing paper outlines the main elements of TBBC's nutrition programme in the camps.

TBBC FOOD BASKET

Fortified blended food (*AsiaMIX*) has been introduced into the food basket to address dietary deficiencies which is offset by a reduction in rice.

The TBBC Food Basket provides:

- an average of 2210 kcal per person per day (average of adult and child rations) and is 74% carbohydrates, 9% protein, and 17% fat (% of kcals)
- adequate amounts of most vitamins and minerals and an easily used weaning food following the introduction of fortified flour to the ration in 2004

SUPPLEMENTARY/THERAPEUTIC FEEDING PROGRAMMES

Supplementary and therapeutic feeding is supported and guided by TBBC and administered by the health agencies in the camps.

- target groups include pregnant and lactating women, acutely malnourished children and adults, TB/HIV and chronically ill patients, including disabled persons, and infants unable to breastfeed.
- supplementary feedings are distributed as dry, take home rations that are prepared in the home and therapeutic feeding is hospital-based.
- new statistics and nutrition surveys identify programme coverage and average length of stay in programme to determine efficacy.

NURSERY SCHOOL FEEDING

TBBC support school lunches in most nursery schools in most camps at 3 baht/child/day, plus oil and *AsiaMIX*. Meals include meat, fruits and vegetables in addition to rice.

VITAMIN A

TBBC oversees the procurement (via UNICEF) and distribution of vitamin A supplements to the camps for prevention and treatment of vitamin A deficiency.

- target groups for prevention include children <12 years and lactating women
- coverage is targeted at 95%

NUTRITION STATUS

TBBC supervises and reports on annual nutrition surveys on children under 5 years of age in all camps in collaboration with health agencies. All agency staff participating receive refresher training and supervision during the survey. Nutrition issues in the camps are as follows:

- acute malnutrition is within acceptable limits (<5% of children under 5 years, WHO criteria)
- chronic malnutrition is moderate to very high (between 25-48% of children under 5 years, WHO criteria)
- acute malnutrition is due mainly to social issues (care practices) or new arrival status, and chronic malnutrition is mainly due to child weaning/feeding practices, micronutrient intake, and recurring infection.

Beriberi

Beriberi continues to be reported. Following revision of the case-definition and medic training, rates have steadily declined. Beriberi is no longer used as a programme indicator.

Angular Stomatitis (AS)

Clinical detection of AS is included in nutrition surveys as a more sensitive indicator of micronutrient deficiency in children. AS is found in most camps.

NUTRITION TASK FORCE

TBBC leads the Nutrition Task Force with the health agencies to identify and address issues and coordinate nutrition-related education and other activities in the camps.

THE TBBC FOOD BASKET

The **CURRENT TBBC FOOD BASKET** includes the items listed below. The basket is distributed in full for adults and in ½ quantities of rice, beans, and oil for children < 5 years. The total amount planned for distribution is based on an average ration calculation using the percent of adults and children under five in the population.

Current TBBC Food Basket

Food Item	Adult per month	Adult per day	Child per day	average per person day*
rice (polished)	15 kg	500 g	250 g	461 g
split mung bean (yellow, hulled)	1 kg	33 g	16 g	31 g
AsiaMIX	1 kg	33 g	33 g	33 g
fermented fish	750 g	25 g	25 g	25 g
iodized salt	300-500 g	10 – 16.6 g	10-16.6 g	11 g
sugar	250 g	8 g	8 g	8 g
soybean oil	914 g (1 L)	30 g	15 g	28 g
condiments (dried chili)	125 g	4 g	4 g	4 g
Average TBBC Ration		kcal	protein	fat
		2210 (74%)	47 g (9%)	42 g (17%)

*average ration = adult ration x .87 + child ration x .13 (child = children < 5 years)

- **the TBBC Food Basket Provides:**
 - an average of 2210 kcal per person per day (average of adult and child rations) and 74% carbohydrates, 9% protein, and 17% fat
 - adequate amounts of most micronutrients
 - a fortified rice/soy flour blend easily used for complementary feeding or weaning food
- **World Food Programme/UNHCR Guidelines (Sphere Minimum Standards)**
 - provide a minimum average of 2,100 kcals per person per day in ration, 10-12% protein, at least 17% fat
 - provide essential micronutrients
 - provide an appropriate weaning foods in the ration

Kilocalorie Calculation

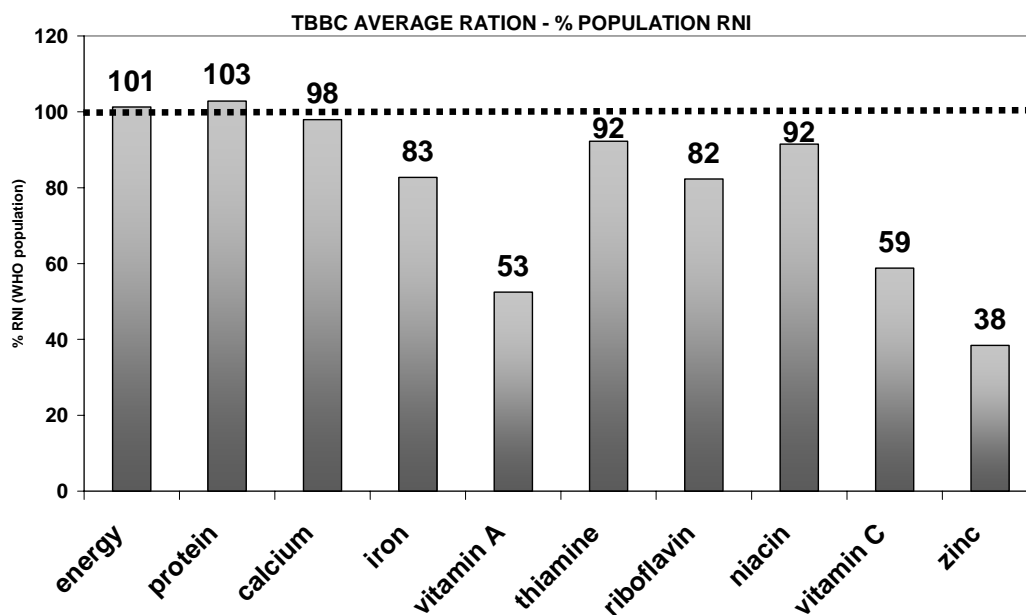
Kilocalorie requirements are calculated according to the specific demographic profile of the camp population border-wide at 2180 kcal per person per day.

KCAL REQUIREMENTS FOR BURMESE BORDER REFUGEES - Based on UN Registered and PAB Populations 2006

age group	male				female				average requirement	
	% pop*	no	requirement	%	% pop	no.	requirement	%		
0-5	0.07177	10,198	1320	94.7	0.06813	9,709	1250	85.2	179.9	
5-10	0.06958	9,736	1980	137.8	0.06612	9,227	1730	114.4	252.2	
10-15	0.07192	9,693	2370	170.5	0.06731	9,146	2040	137.3	307.8	
15-20	0.06590	8,780	2700	177.9	0.06159	8,322	2120	130.6	308.5	
20-60	0.21359	29,878	2460	525.4	0.20707	29,088	1990	412.1	937.5	
60+	0.01810	2,372	2010	36.4	0.01892	2,492	1780	33.7	70.1	
TOTAL	0.51086	70,657			0.48914	67,984			2,056	
pregnant					2.5%	3,517	285	7.1	7.1	
lactating					2.5%	3,517	500	12.5	12.5	
whole pop	51.1%		average =	2285	48.9%		average =	1866	2,076	
* UNHCR July 06					physical activity level		light / moderate*		+ 105	
					AVERAGE KCAL/DAY = 2,181					

Ration Analysis

The graph below shows the TBBC ration distributed in comparison with WHO minimum recommendations (kcal and population RNI for micronutrients).



With the contribution of non-ration foods, the overall diet is estimated to meet the requirements for most nutrients (estimated from Mae La survey of intake).

Introduction of Fortified Flour

AsiaMIX was introduced into the food basket to provide a weaning food for young children and to improve the micronutrient and protein profile of the general ration. The micronutrients incorporated in the flour are formulated to respond to the specific needs of the population.

AsiaMIX Composition

Finished Product	Minimum Quantity
refined rice flour (wet-milled)	75%
soy bean flour (precooked)	25%
kcal per 100 grams	400
protein	14%
fat	6%
Micronutrients per 100 grams	
vitamin A (dry acetate 325 CWS/F)	600 RE
thiamine (mononitrate)	1 mg
riboflavin (universal)	2.5 mg
niacin (niacinamide)	5.6 mg
folate (folic acid)	160 mcg
vitamin C (ascorbic acid)	48 mg
vitamin B12 (0.1% WS)	1.4 mg
zinc (sulphate)	10 mg
iron (ferrous fumarate)	20 mg
calcium (carbonate)	100 mg



Introduction Schedule for Blended Food/ **AsiaMIX**

Camp	Blended Food	AsiaMIX
Site 1	Jan-04	Mar-05
Site 2	Nov-04	Nov-05
MaeRaMaLuang	Mar-05	Dec-05
MaeLaOon	Mar-05	Dec-05
Mae La	Jul-04	Mar-05
Umpiem Mai	Aug-04	Apr-05
Nu Po	Dec-04	Jun-05
Ban Don Yang	Jan-05	Jun-05
Tham Hin	Sep-04	Mar-05

SUPPLEMENTARY AND THERAPEUTIC FEEDING

Supplementary and therapeutic feeding is supported by TBBC and implemented by the health agencies in the camps

- Supplementary feeding is for the prevention and treatment of moderate acute malnutrition, to supplement the diet of vulnerable groups, and is conducted as an outpatient programme.
- Therapeutic feeding is for the treatment of severe acute malnutrition and is administered in the camp hospitals.
- Target groups are listed in the table below – criteria have been expanded as of October, 2004, and in response to the ECHO evaluation.
- All feedings are distributed as dry, take home rations that are prepared in the home (except therapeutic feeding)
- Foods provided include **AsiaMIX**, oil, eggs, beans, dried fish, canned fish, etc.

SUPPLEMENTARY FEEDING PROGRAMME CRITERIA

TARGET GROUPS	ENTRANCE	EXIT
MODERATELY MALNOURISHED CHILDREN <10 years	<ul style="list-style-type: none"> ❖ <-2 to -3 Z-scores ❖ children discharged from TFP 	<ul style="list-style-type: none"> ❖ >-1.5 Z-scores for 2 consecutive weightings 1 week apart ❖ children should receive ongoing follow up visits from health workers
MODERATELY MALNOURISHED ADOLESCENTS 10-18 yrs	<ul style="list-style-type: none"> ❖ <80% to 70% median weight-for-height AND poor clinical condition ❖ bilateral pitting oedema 	<ul style="list-style-type: none"> ❖ >85% weight-for-height for 2 consecutive weeks and good clinical condition ❖ absence of bilateral pitting oedema
MODERATELY MALNOURISHED ADULTS >18 years (except pregnant and lactating women)	<ul style="list-style-type: none"> ❖ BMI <17 to 16 AND poor clinical condition ❖ bilateral pitting oedema ❖ discharged from TFP 	<ul style="list-style-type: none"> ❖ weight gain for 2 consecutive weeks (BMI >17 or MUAC >18.5) ❖ absence of bilateral pitting oedema ❖ good clinical condition
MODERATELY MALNOURISHED OLDER ADULTS 50+ years	<ul style="list-style-type: none"> ❖ BMI <16 to 15 ❖ bilateral pitting oedema ❖ discharged from TFP 	<ul style="list-style-type: none"> ❖ increased weight (BMI >16 or MUAC >17.5) AND good clinical condition ❖ absence of bilateral pitting oedema
PREGNANT WOMEN	<ul style="list-style-type: none"> ❖ at diagnosis of pregnancy 	<ul style="list-style-type: none"> ❖ refer to SFP for lactating women
MODERATELY MALNOURISHED	<ul style="list-style-type: none"> ❖ MUAC <21 to 17 cm or discharged from TFP ❖ no weight gain/teenage pregnancy ❖ clinical disease 	<ul style="list-style-type: none"> ❖ Duration of pregnancy, to be reassessed after delivery to determine enrolment status in supplementary feeding for lactating women or malnourished lactating women
LACTATING WOMEN	<ul style="list-style-type: none"> ❖ after delivery 	<ul style="list-style-type: none"> ❖ 6 - 9 months after delivery
MODERATELY MALNOURISHED	<ul style="list-style-type: none"> ❖ MUAC <21 to 17 cm or discharged from TFP 	<ul style="list-style-type: none"> ❖ Duration of supplementary feeding programme for lactating women
TB/HIV Patients	<ul style="list-style-type: none"> ❖ upon diagnosis 	<ul style="list-style-type: none"> ❖ TB patients – after completing DOTS therapy ❖ HIV – ongoing
Chronic Patients	<ul style="list-style-type: none"> ❖ individual case basis ❖ children with physical or mental disability which prevent normal recovery from malnutrition 	<ul style="list-style-type: none"> ❖ resolution of condition
Infants (unable to breastfeed)	<ul style="list-style-type: none"> ❖ upon diagnosis or assessment 	<ul style="list-style-type: none"> ❖ after 18 months

THERAPEUTIC FEEDING PROGRAMME CRITERIA

TARGET GROUPS	ENTRANCE	EXIT
SEVERELY MALNOURISHED CHILDREN <10 years	<ul style="list-style-type: none"> ❖ <-3 Z-scores ❖ bilateral pitting oedema ❖ <-2 Z-scores and severely ill (measles, pneumonia, diarrhoea) 	<ul style="list-style-type: none"> ❖ >-2 Z-scores for 2 consecutive weightings 1 week apart ❖ good appetite, free from illness ❖ absence of bilateral pitting oedema
SEVERELY MALNOURISHED ADOLESCENTS 10-18 years	<ul style="list-style-type: none"> ❖ <70% median weight-for-height AND poor clinical condition ❖ bilateral pitting oedema 	<ul style="list-style-type: none"> ❖ ≥80% weight-for-height for 2 consecutive weeks and good clinical condition ❖ absence of bilateral pitting oedema
SEVERELY MALNOURISHED ADULTS (except pregnant and lactating women) >18 years	<ul style="list-style-type: none"> ❖ BMI <16 ❖ bilateral pitting oedema 	<ul style="list-style-type: none"> ❖ MUAC and BMI ≥16 ❖ absence of bilateral pitting oedema ❖ good clinical condition
SEVERELY MALNOURISHED OLDER ADULTS 50+ years	<ul style="list-style-type: none"> ❖ BMI <15 ❖ bilateral pitting oedema 	<ul style="list-style-type: none"> ❖ MUAC ≥16 cm or BMI ≥15 ❖ good clinical condition
SEVERELY MALNOURISHED PREGNANT and LACTATING WOMEN	<ul style="list-style-type: none"> ❖ MUAC <17 cm 	<ul style="list-style-type: none"> ❖ good clinical condition ❖ weight gain ❖ good appetite

SUPPLEMENTARY FEEDING PROGRAMME PROTOCOLS (Weekly)

Food Item	mod mal child<12	severe mal child	mod mal adult >12	preg women	mal preg women ⁴	lact women	mal lact women	Chronic /IPD - no solid food	Chronic /TB /HIV Patients	IPD patients
AsiaMIX Premix 1	1 kg	see guidelines						up to 2 kg		
AsiaMIX Premix 2			1 kg							
vegetable oil	230 gm (1/4 L)		230 gm (1/4 L)	230 gm (1/4 L)	230 gm (1/4 L)	230 gm (1/4 L)	230 gm (1/4 L)	230 gm (1/4 L)	230 gm (1/4 L)	230 gm (1/4 L)
beans				1/2 kg	1 kg	3/4 kg	1 kg		1/2 kg	1/2 kg
<i>CHOOSE 1 OF THE OPTIONS BELOW</i>							<i>CHOOSE 2 BELOW</i>	<i>CHOOSE 1 BELOW</i>		
beans	1/2 kg		1/2 kg							
eggs	7		7	5	7	5	7		5	5
peanuts			1/2 kg	1/8 kg	1/2 kg	1/4 kg	1/2 kg		1/8 kg	1/8 kg
dried fish			1/2 kg	1/8 kg	1/2 kg	1/4 kg	1/2 kg		1/8 kg	1/8 kg
tinned fish	4 tins		4 tins (+1/2 kg other item)	2 tins	4 tins (+1/2 kg other item)	2 tins	4 tins		4 tins	4 tins
<i>KCAL/DAY</i>	1000 (+)		1,000 (+)	500 (+)	1,000 (+)	700 (+)	1,000 (+)	2200 (+)	850+	850+
<i>% kcal Pro</i>	10-12%		10-19%	12-16%	16-25%	15-20%	24-26%	to 30%	>20%	>20%
<i>% kcal Fat</i>	42-50%		28-41%	50-53%	33-42%	40-45%	33-39%		3-10%	3-10%

Distribution)

Supplementary Feeding Programme Coverage

Supplementary Feeding programmes do not treat chronically malnourished (stunted) children unless they are also acutely malnourished (thin). The feeding is intended for short-term treatment of acute malnutrition and does not address chronic malnutrition

NURSERY SCHOOL FEEDING

TBBC provides 3 baht per child per day in most camps (Ban Don Yang and Tham Hin have private donors supporting feeding) and other ration commodities for school lunches in nursery schools.

Principles and Guidelines for School Feeding Programmes

- meals should cost 3 baht per child per day.
- meals should include foods that children cannot normally get in the camp, such as meat, fish, milk, eggs, vegetables, fruits, etc. (see example below).
- extra rice, noodles, mama should not be included in the meal, unless other foods are not available – children can bring rice from home.
- meals should not include sweet foods, unless other foods are not available.
- food purchaser and cooks should have excellent hygiene and sanitation habits
- foods should be purchased as fresh as possible.
- all camps participating should arrange a meal/nutrition training for meal planners or teachers with TBBC staff.

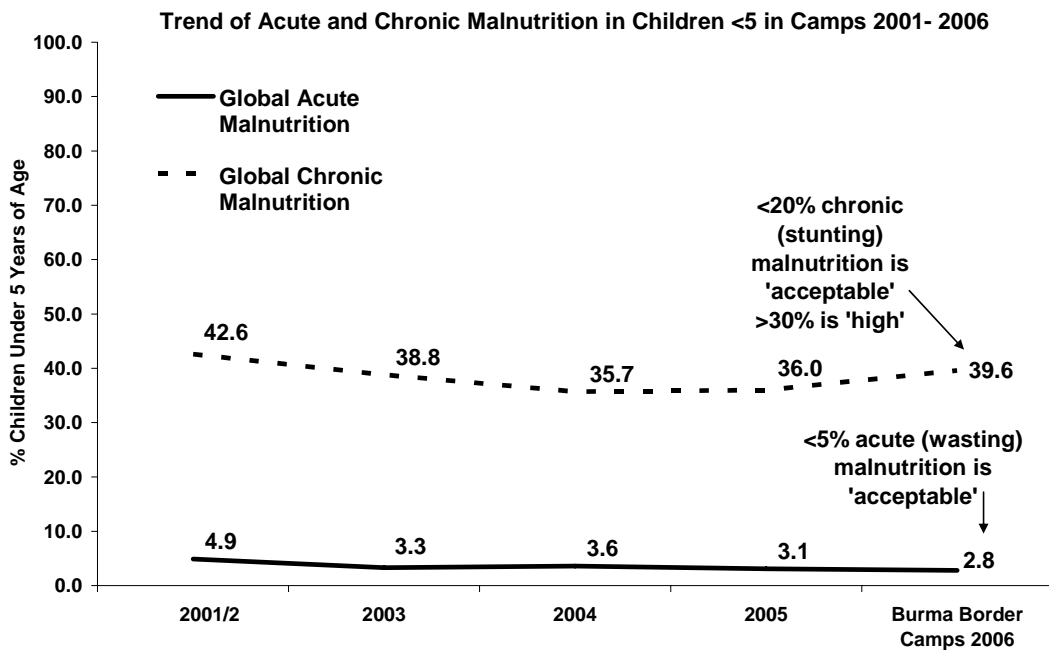
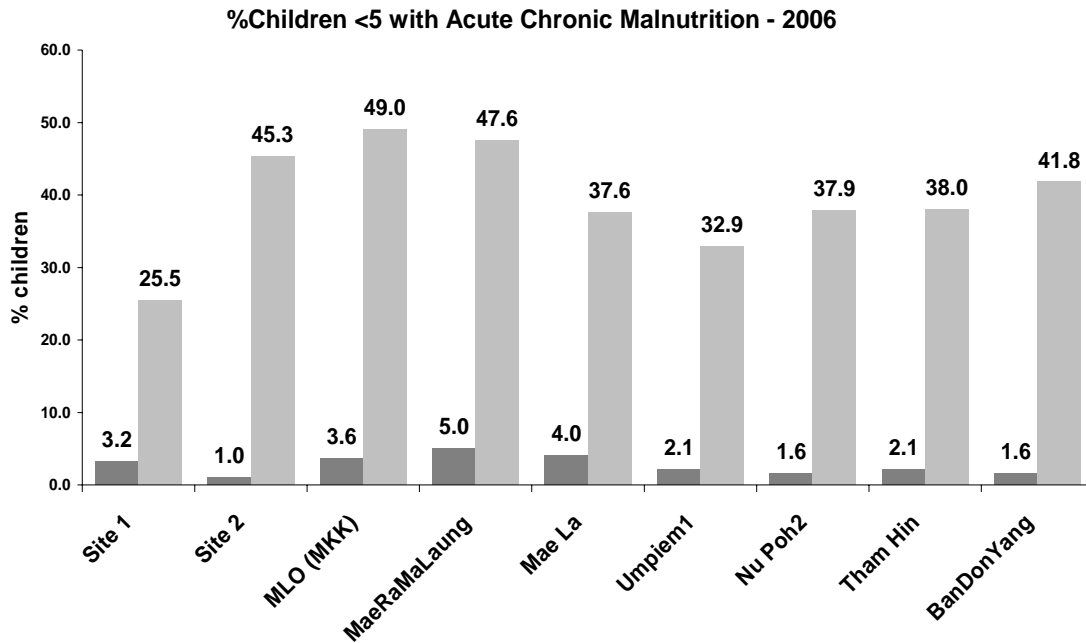
Examples of meal plans include the following:

Mon	Tues	Wed	Thurs	Fri
Week 1				
<i>milk bananas</i>	<i>chicken curry steamed pumpkin leaf</i>	<i>vegetable curry with dried fish</i>	<i>Karen porridge with egg</i>	<i>soy milk steamed sticky rice with bean</i>
Week 2				
<i>pork curry with raw cucumber</i>	<i>vegetable soup with chicken</i>	<i>curried eggs with steamed morning glory</i>	<i>mama with chicken (other foods not available)</i>	<i>soymilk banana</i>

UPDATE ON NUTRITION STATUS OF REFUGEES

Nutrition Surveys

Nutrition surveys have been conducted and reported in all camps (excluding Tham Hin) by health agencies since 2003 using guidelines prepared by TBBC. Surveys are expected to be conducted annually to ensure ongoing nutrition surveillance.



- Global Acute Malnutrition = 2.8% of children <5 (thin). This rate is considered acceptable using the WHO Classification.

- Global Chronic Malnutrition = 39.6% of children <5 (stunted). This rate is considered **high** using the WHO Classification.

Severity of Acute Malnutrition		Severity of Chronic Malnutrition	
severity	prevalence in <5 population	severity	prevalence in <5 population
acceptable	<5%	low	<20%
poor	5-9%	medium	20-29.9%
serious	10-14%	high	30-39.9%
critical	≥15%	very high	≥40%

WHO Classifications

- acute malnutrition = low weight for height (<-2SD W/H)
 - caused by acute shortage of food or illness
 - may be reversed in the short-term
- chronic malnutrition = low height for age (<-2SD H/A)
 - caused or influenced by long-term mild food deficit or poor quality diet, previous acute malnutrition, poor maternal nutrition status, low economic status, poor feeding practices, etc.
 - must be addressed in the long-term

Note: high levels of acute malnutrition are of much greater physiological significance than similar levels of chronic malnutrition – eg a population of 10% low weight for height (acute) is at much higher risk than a population that is 10% low height for age (chronic).

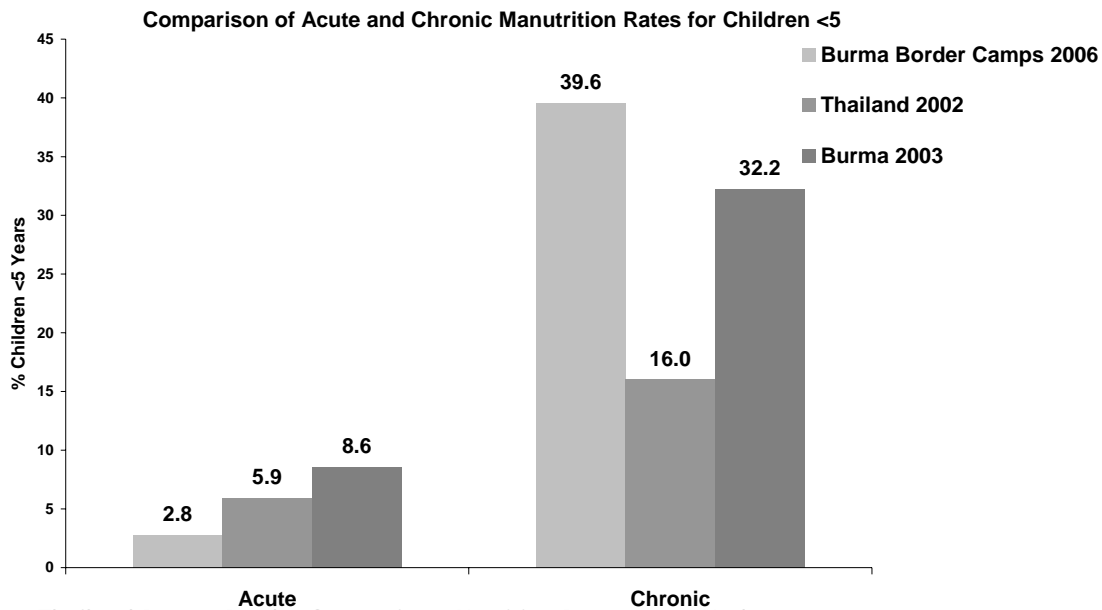
Causes of Malnutrition in Camps

Acute malnutrition: main issues identified include care and feeding practices of young children and acute infection, such as diarrhoea and respiratory infections.

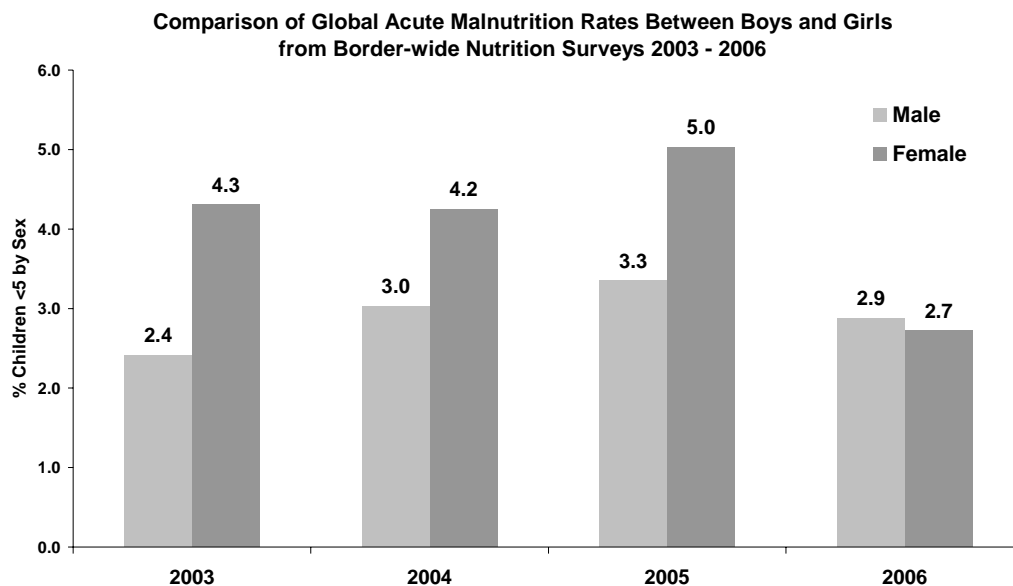
Chronic malnutrition: main issues seem to be young child feeding practices, dietary deficiencies, and recurring infection. A new cohort study of low birth weight infants by SMRU (unpublished) suggests that these infants have 'catch up growth' until about 6 months and then falter, indicating that exclusive breastfeeding and feeding practices at this time are an issue.

Comparison of Acute and Chronic Malnutrition Rates

Rates of acute malnutrition in the camps are lower in comparison to Thailand and Burma, but rates of chronic malnutrition are high.



Rates of both acute and chronic malnutrition are higher in girls than in boys, but the differences have not been tested for significance.



Vitamin A Coverage for Children

TBBC oversees the procurement (via UNICEF donation) and distribution of vitamin A supplements to the camps for prevention of vitamin A deficiency, which can lead to permanent blindness.

Target populations for prevention doses include children <12 years and lactating women. Children receive supplements every 6 months. Health agencies are expected to report percent of children that receive supplements using the CCSDPT common data form.

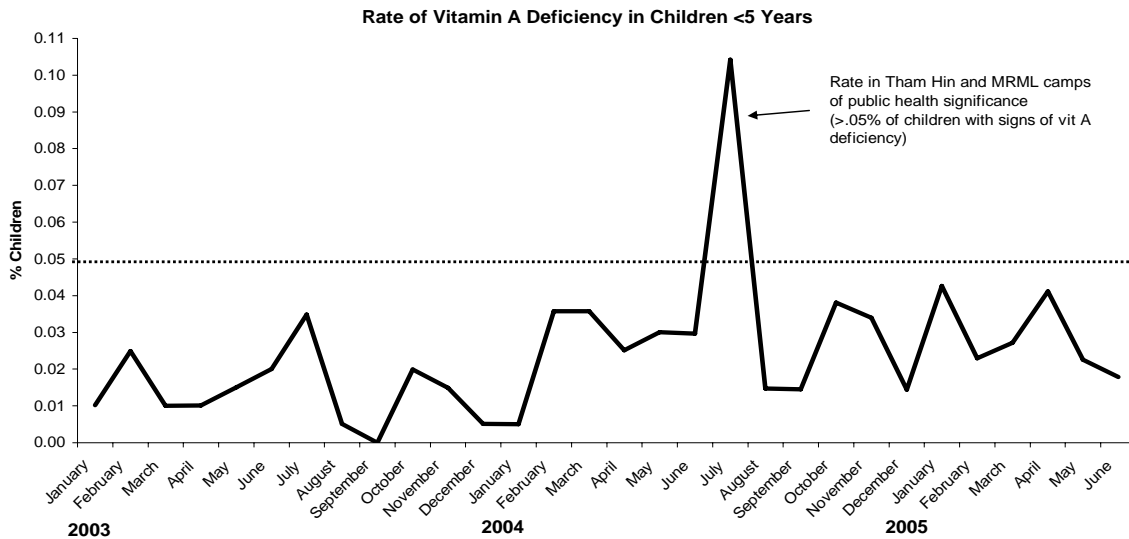
Vitamin A coverage in all but 2 camps reporting is over 95%. Minimum recommendations for coverage to be effective are 65% (Micronutrient Initiative). It has been recommended that the CCSDPT attempt 95% coverage.

Vitamin A Coverage 2004/5

Vitamin A Coverage Rates in Children <5 and 5-12 Years:

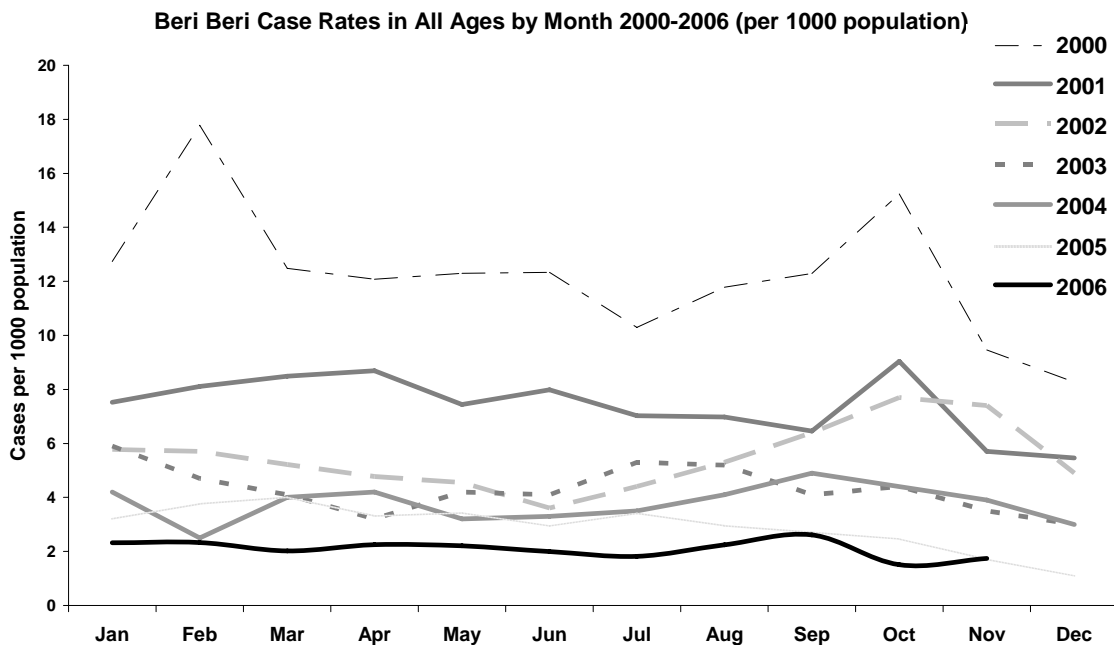
Camp	<5 Years % Coverage	Date Conducted	5-12 Years % Coverage	Date Conducted
Site 1	100.0	Feb 05	100.0	Feb 05
Site 2	100.0	Feb 05	100.0	Feb 05
Mae La Oon	100.0	Jun-05	100.0	Jun-05
Mae Ra Ma Luang	100.0	Jan-05	100.0	Jan-05
Mae La*	89.9	May-05	na	na
Umpiem Mai	98.0	Dec 04	97.0	Dec 04
Nu Poh	99.5	Jan/Feb 05	99.4	Jan/Feb 05
Ban Don Yang	100.0	Jan 05	100.0	Dec 04
Tham Hin**	90.0 (2-5 yrs)	Jun 05	90.0 (5-10 yrs)	Jun 05
Border-wide	94.8		97.3	

Incidence of clinical deficiency border-wide remains below what is considered of public health significance (with the exception of 1 month)



Beriberi (vitamin B₁ or thiamine deficiency)

Beriberi continues to be reported by the health agencies in the camps. However, following the inclusion of a more concise case definition and training for medics on diagnosing Beriberi during 2000, there has been a downward trend in cases, and all cases are unconfirmed.



TBBC NUTRITION SURVEY FORM FOR CAMPS

နိဂ် ကစာ်နီဂ်ဂ် / (မှတ်ပုံတင်နံပါတ်) Number/ID..... မှ်နံ (ရက်စွဲ) Date.....

မံ (အမည်) Name _____ ခဲကဝီ / (စခန်း) Camp _____

ကဝီ / ကဝီဒု / (ဇုန်း၊ ရပ်ကွက်) Zone/Section _____ ဟံဂ်နီဂ်ဂ် / (အိမ်နံပါတ်) House number _____

ခဲကဝီ အပူတော်ဆာကတီဂ် (စခန်းအတွင်းအချိန်) Time in Camp နံဂ် (နှစ်) Years _____ လါ (လ) Months _____

ကလေးရိက္ခာရရှိသလား (ဖိသဂ် ဒီးနံဘဂ်တော်အိဂ်) Child receives ration ဆိဂ်/ (ရီ) Yes (Y) တဆိဂ်/ (မရ) No (N)

အိမ်တွင်နေထိုင်သောလူဦးရေ (ဟံဂ်ဂ်ပူဂ်အိဂ်နီဂ်ဂ်) No. people living in household _____

အိမ်တွင်နေထိုင်၍ရိက္ခာရရှိသောလူဦးရေ (ဟံဂ်ဂ်ပူဂ်ပူဂ်အိဂ်နီဂ်ဂ်လါဒီးနံဘဂ်တော်အိဂ်) No. people receive ration _____

1. မှ်/ ခွါ (လိင်) Sex: ခွါ (ကျား) Male (M) မှ် (မ) Female (F)

2. ဆိဂ်ဖျဲဂ်မှ်နံ / (မွေးနေ့၊ သက္ကရာဇ်) Birth date:

မှ်နံ (ရက်) Day(dd) _____ လါ / (လ) Month(mm) _____ နံဂ် (နှစ်) Year (yyyy) _____

သးနံဂ် (အသက်) Age: နံဂ် (နှစ်) Years _____ လါ / (လ) Months _____ တသ့ဂ်ညါဘဂ် / (မသိ) don't know (DK)

3. နီဂ်ကစာ် အသယာ် (ကိုယ်အလေးချိန်) Birth weight _____ kg တသ့ဂ်ညါဘဂ် / (မသိ) don't know (DK)

4. ခဲအံတော်တူလိင်အီဖဲ / (လက်ရှိလက်ခံထားခြင်း (တစ်ခုကိုပိုင်းပါ)) Currently enrolled in:

SFP (S) TFP (T) တသ့ဂ်ညါဘဂ် / (မသိ) don't know (DK)

5. မှ်နံ၊ မှ်သီလီဂ်ကတော်လါအခဲနံဘဂ် (ဗီတာမင်အေ နောက်ဆုံးရရှိသောနေ့ရက်) Date of last vitA suppl (check card):

မှ်နံ (ရက်) Day (dd) _____ လါ / (လ) Month(mm) _____ နံဂ် (နှစ်) Year (yyyy) _____

တဒီးနံဘဂ် / (မရရှိ) no record (NR)

6. ထးခိဂ်အနာ်ထံးဆုဂ် / (ခံကပလါဂ်) / (ကျီးကန်းပါးစပ် (နှစ်ဘက်စလုံး)) Angular Stomatitis (both sides)

ဆိဂ်/ (ရီ) Yes (Y) တဆိဂ်/ (မရ) No (N)

7. ကဘုထိဂ် (ခိဂ်ခိလါဂ်) / (ဖေါရောင်ခြင်း (ခြေနှစ်ဖက်စလုံး)) Edema (both feet):

ဆိဂ်/ (ရီ) Yes (Y) တဆိဂ်/ (မရ) No (N)

8. ဖိသဂ်အတယာ် / (ကလေး၏ကိုယ်အလေးချိန်) Weight of child _____ kg

တံထိဂ်အီတနံဘဂ် (တိုင်းတာ၍မရ) unable to measure

9. ဖိသဂ်အနီထီ / (ကလေး၏အရပ်အမြင့်) Height / Length of child _____ cm

တံထိဂ်အီတနံဘဂ် (တိုင်းတာ၍မရ) unable to measure

10. နီဂ်ကစာ်အတယာ် / အထီ / Z- score (ကွာ်လံင်တီလုတကွာ်) (ကိုယ်အလေးချိန်အရပ်အမြင့် Z-score (ဇယားကိုကြည့်ပါ))

Weight-for-height z-score (refer to table): < -3 < - 2 ≥ -2

11. တံဆာ်အီဆူ (လွဲပြောင်းခြင်း (တစ်ခုပိုင်းပါ)) Referred to: SFP (S) TFP (T)

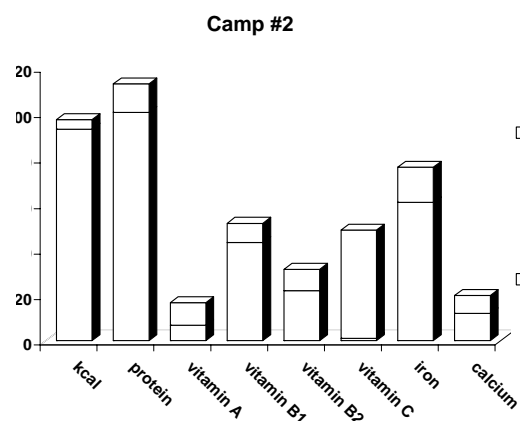
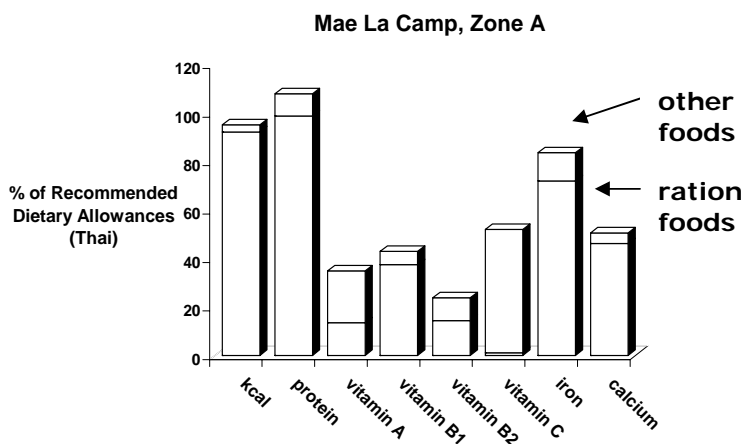
RESULTS FROM PREVIOUS SURVEYS

The Thailand Burma Border Consortium and the Institute of Nutrition at Mahidol University (INMU) conducted a series of surveys in 2001 to assess food consumption and nutrition status of refugees living in camp on the Thai-Burma border.

A summary of results, interpretations, and conclusions are presented below.

- **actual average kcal consumed in households per person per day (all foods)**
 - 2029 kcal – Camp #2
 - 2072 kcal – Mae La
- **the total diet meets an average of 96.6% and 104.5% of the RDA for energy in Mae and Camp #2, respectively**
 - households with children <5 years consume, on average, less than 100% of the RDA - households without small children consume more than 100% RDA
- **the diet (TBBC ration + other foods) is proportionately high in carbohydrates**
 - the ratio of carbohydrate : protein : fat is 84:9:7 in Mae La, and 82:9:9 in Camp #2
 - most of carbohydrates come from rice consumed (rice provides approx. 90% total energy) – rice is a culturally important food
- **micronutrient intake does not meet minimum cut-off of 70% RDA for most micronutrients, except iron**
 - ration foods supply vitamins A, B1, B2, C, and calcium between only 18.4 - 51.3% in Camp #2 and 24.2 - 53.1% in Mae La. Iron is supplied mainly by plant foods, and mainly from rice (51.9% in Mae La and 58.6% in Camp #2)
- **ration foods supply the majority of energy in the diet**
 - ration foods supply 88.9-98% of carbohydrates, protein, and fat in both camps
- **protein comes mainly from plant sources**
 - animal protein in diets in Mae La = 12%; Camp #2 = 5%

The graphs and table on the next page show the average %RDA for all foods eaten (ration + other foods) by households.



	kcal	protein	vitamin A	vitamin B1	vitamin B2	vitamin C	iron	calcium
Mae La	95.1	107.9	34.8	42.9	23.8	51.9	83.6	50.5
Camp 2	97.2	112.9	16.7	51.6	31.4	48.6	76.3	19.9

INMU/TBBC surveys, 2001

CLINICAL NUTRITION STATUS

The table below shows evidence of clinical nutrient deficiencies (INMU – Mae La and Camp #2; TBBC – Tham Hin, Don Yang, and Umpiem Mai, 2001/2)

% Children With Clinical Signs of Nutrient Deficiencies

Camp	Mae La	Camp #2	Umpiem Mai*	Don Yang*	Tham Hin*
Clinical Sign					
Bitot's Spots (vit A)	0	0	0	0	0
angular stomatitis (vitamin B2 deficiency)					
active	5.0	21.1	3.1	2.6	2.1
previous	7.6	10.9	2.1	1.9	2.1
paleness (iron deficiency or other anaemia)					
eyelids	9.2	8.6	27.3	20.7	no data
fingernails	3.6	0.5	18	18.8	no data
goitre grade 1	2.0	5.6	na	na	na
(iodine deficiency checked in children age 7-13 years only) *children <5 only					

YOUNG CHILD FEEDING PRACTICES

(TBBC surveys – Tham Hin, Don Yang, and Umpiem Mai, 2001/2)

- **children <5 start complementary foods too early**
the average age of starting solid or complementary foods well below 6 months in camps surveyed. UNICEF recommends exclusive breastfeeding until 6 months
- **children wean from the breast at an appropriate age**
children wean at approximately 1.6 years, which is an adequate amount of time to breast feed
- **children do not eat enough meals to consume adequate nutrients**
children eat only 2-3 meals, on average. WHO/UNICEF recommend 4-5 meals in addition to breastfeeding for children >1 year

median age - first foods	average weaning age	average meals/day (>1year)
3-5 months	20 months	2

ADULT NUTRITION STATUS

Adults

- **a low to moderate proportion of adults are mildly to moderately underweight**
This indicates that the refugees are receiving and consuming their rations as planned

BMI <18.5

	Mae La Camp	Camp #2	Thailand
male	4.5%	12.7%	na
female	7.9%	11.2%	15.3%

Note: figures for Thailand include only females, and at BMI <18- WHO/SEARO

Centers for Disease Control – Nutrition Survey Summary of Nutrition Status Results from Umpiem Mai Camp 2004

In an effort to improve the micronutrient content of the ration and the nutritional status of the population of Umpiem Mai camp, in August 2004, TBBC will incorporate wheat soy blend (WSB) a fortified, blended flour into the general food basket.

A baseline evaluation of physical and biochemical nutritional status of children 6 to 59 months of age and their mothers, in addition to a household survey addressing food security was conducted. The objectives of the evaluation were to determine the extent and severity of several types of nutritional deficiencies, to assess feeding practices and food security at the household level and within Umpiem camp.

Data collection procedures for the survey to determine the types of and prevalence of nutrient deficiencies included household interviews, anthropometric measurement, and collection of biologic specimens.

Acute malnutrition (wasting) was 4.6% in children 6 to 59 months of age, and chronic malnutrition (stunting) was 29.9%. The mean WHZ score was -1.44 and almost all children shows some signs of chronic malnutrition.

Acute malnutrition (BMI<17) among non-pregnant women was low (1.6%), but 9.3% of non-pregnant mothers were "at risk" (BMI 17-18.4), but 16.3% of non-pregnant women were overweight and 2.1% obese.

7.6% of women reported night blindness during their last pregnancy - IVACG cut-off of $\geq 5\%$ indicates vitamin A deficiency of public health significance.

40.5% of children were anaemic at (<11.0 g/dl Hb), and 0.5% were severely anaemic (<7.0 g/dl Hb). The greatest proportion of anaemia among children is among those in the 6-11 and 12-23 months of age groups, 67.6% and 64.8%, respectively. 9.3% of non-pregnant women were anaemic. The mean [Hb] for pregnant women is 11.8 g/dl (range: 8.9-15.7).

Preliminary results from the follow-up survey, June 2006

There has been a significant reduction in the prevalence of anaemia among children 6 to 59 months of age and non-pregnant women between the baseline survey in 2004 and the follow-up survey in 2006. As well, there has been a significant increase in the mean haemoglobin concentration in these target groups. The results from the sTfR analysis will provide more data on a possible change in iron stores. There was no change in either the anaemia prevalence or mean haemoglobin concentration among pregnant women, but they accounted for a small number of participants at both baseline and follow-up.

Despite the lack of improvement in supplementation or diversification of available foods, several factors may have positively influenced the improvement in iron status (haemoglobin and anaemia). A change in consumption patterns for both children and their mothers in iron rich foods (eggs and meat) was detected, albeit this change was not significantly related to anaemia. Consumption of Asia Mix, particularly among women appears to be consistent. By incorporating Asia Mix into the supplementary feeding programmes for malnourished children exposure has increased in this vulnerable group benefits significantly from not only the increased energy, fat and protein but also the increased micronutrient content. Additionally, household income has increased significantly during the course of the evaluation as well as the number of households involved in animal production. More detailed analysis of the data may provide possible associations with anaemia.

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