Appendix 1

HOUSEHOLD SAMPLE SURVEY

OBJECTIVES

Data collected in other parts of this evaluation, while important, may not be truly representative of the health status of the entire population. To obtain data which more truly represents the entire population, it is necessary to conduct a random sample survey of the population. The Household Sample Survey, on the following page, can provide a reasonable estimate of health and nutritional status and other important indicators of the well being of the population. This may be the single most important step in the assessment.

It is extremely important that you complete this survey. Conditions may be worse, or better, than you or others observe. The only way to detect these conditions is to go into the population and check. Twenty households should be randomly selected and surveyed, and the arms circumference of all children in the family older than 12 months and under 5 years should be measured with the color coded tapes enclosed. Experience has demonstrated that children under five are the most vulnerable segment of a population. Thus, their health status is a sensitive barometer of the health and nutrition status of the whole population. In addition, the normal arm circumference changes only slightly in the 12-60 month age range.

INSTRUCTIONS

Step 1:

Determine (obtain or estimate) the numbers of shelters in the camp. (If this is not feasible, estimate the number of people in the camp.)

Step 2:

Divide the number of shelters by 20 (or the estimated population by 100). The resulting number is the sampling interval which helps you determine which families in the camp to sample. For example, if a camp contains 80 shelters, dividing by 20 gives you a sampling interval of 4. Thus, every fourth shelter should be sampled. If the number obtained for a sampling interval is not an even number, then round to the nearest whole number. For example, if a camp contains 68 shelters, the sampling interval is 68 divided by 20 or 3.4. This should be rounded to 3 and indicates that every third shelter is to be sampled. As another example in the situation where shelter numbers are unknown, assume a camp population of 3000. Dividing by 100 gives 30 which beomes the "sampling interval."

Step 3:

If the shelters are already numbered or if a good map of the camp exists, you can choose shelters before you begin: In the first example in Step 2 you would be able to choose before you begin shelters 1, 5, 9, 13, 17, and so on. If shelters are unnumbered you can walk up and down the roads or through the sections choosing every fourth house by some consistent method.

Alternate Sampling Method:

If the number of shelters or number of people is uncertain or if the camp is extremely large, you might try to sample several in each section or quadrant of the camp. One way to do this is to systematically criss-cross the camp as shown in Figure 1. When doing this you should be careful not commit one of the bias errors in the survey as noted in Table I.

If your sampling scheme results in selecting a shelter which is unoccupied, survey the next occupied shelter, then continue without changing the number of any other shelter to be surveyed.

If shelters contain more than one family, select the family closest to the doorway for the survey. Check all eligible children in that family. Do not seek out only families with children; it will "bias" the survey. Making it less representative of the total population.

TABLE I

POSSIBLE BIASES OF NON-RANDOMLY GATHERED DATA IN A REFUGEE CAMP

If You Sample People:	The Possible Bias Of Data Is:	Because
On the streets or in markets	- Better than actual	- Ill children are less likely to be outside
		- Without household mortality data, you will only see survivors (who are obviously "better off"
At feeding centers	- Better than actual	- They are getting food; may be others who need food but not getting it
	- Worse than actual	- In some situations, only worst cases are allowed in feeding centers
At hospitals/health centers	- Worse than actual	- Sicker people go to these health facilities
		- They may have been brought in medical staff
Near administrative center of camp	- Better than actual	- "Wealther" or more powerful people may live there
In any one area or quadrant of camp	- Better or worse than actual	- People of similar status (and thus physical condition) tend to live together
Along roads	- Better than actual	- "Wealther" or more powerful people live there

FAMILY HOUSEHOLD SURVEY FORM

Questions:	Record Data Here																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Time living at this place.																				
2. Total living here																				
adult males																				
adult females																				
children > 5 yrs.																				
children < 5 yrs.																				
3. Children born last 5 years?																				
Number alive now																				
Number died																				
how long ago?																				
age at death?																				
Cause of Death?																				
a. Cough																				
b. Diarrhea																				
c. Fever																				
d. Measles																				
e. Nutrition Prob.																				
f. Wounds (Trauma)																				
g. Other (list _____)																				
4. Current Illness of children < 5. (Use same codes above a, b, c, etc.)																				
5. Arm Circumference of children >1 - <5 yrs.																				
Child 1																				
Child 2																				
Child 3																				
6. How many children < 5 are attending a supplementary feeding program?																				

A. PRETRIP INTERVIEW FORM V: WFP OR OTHER FOOD LOGISTICS PERSONNEL

Name _____ Name of Interviewer _____

Position _____ Interview Date _____

Address _____ Organization _____

_____ Telephone _____

A. BULK RATIONS (FOOD BASKET)

101 Total number of refugees receiving food assistance: _____ as of _____.

902 Are all refugees receiving food assistance: Yes ___ No ___. If no, estimated percentage of total _____.

903 Source of food for those not receiving WFP (or other) rations _____.

904 What is the make-up of the food basket?

_____	grams of	_____	per day/week/month
_____	grams of	_____	per _____
_____	grams of	_____	per _____
_____	grams of	_____	per _____
_____	grams of	_____	per _____
_____	grams of	_____	per _____
_____	grams of	_____	per _____

905 What is the average total calorie intake per person per day? (now) _____.

906 If below 1800 calories per day, when will 1800 calorie level be met? _____.

907 How many days supply at current distribution rate is now on hand (in-country, ready/available for distribution? _____.

908 Are supplies on hand or in the pipeline adequate to meet needs of anticipated new arrivals? Yes ___ No ___. If no, how much more needs to be acquired.

909 What number is being used for contingency planning or estimating the number of people that will be receiving rations and how was that number derived? No. _____ by (date) _____. Basis for determining number _____

_____

_____

910 Is food basket purchased locally or imported?

911 If imported, how long is average delivery time (from date of request)? _____

912 If locally purchased, are local supplies adequate to meet needs? _____

913 Is food basket similar to refugee's normal, staple diet? Yes ___ No ___.

914 Are refugees receiving food from other sources? Yes ___ No ___. If yes, describe:

_____

915 If critical supplies needed to meet existing or anticipated needs are in route, what is ETA? _____.

B. SUPPLEMENTAL FEEDING

920 Are vulnerable groups receiving supplemental feeding? Yes ___ No ___.

921 How many people are receiving supplemental feeding: _____.

922 What percentage of need (for supplemental feeding) is being met? _____.

923 Is supplemental feeding in the form of prepared meal(s) _____, additional ration _____, milk _____, other.

924 Are foods for supplemental feeding provided by same agency as one supplying food basket? Yes ___ No ___. If no, name of agency _____.

925 Are supplies on hand adequate? Yes ___ No ___. If no, what quantity is needed? _____.

C. STORAGE AND TRANSPORT

930 Is food kept or received at a central warehouse? Yes ___ No ___ Where? _____.

931 Is it sent to a regional warehouse or direct to camps? _____

932 How much is sent to camps at one time? (i.e. how many days ration per person?)

_____.

933 Are there major problems in transport or storage? Yes ___ No ___. If yes, describe:

_____

_____

_____

934 Is transport adequate to meet future needs? Yes ___ No ___. If no, describe:

_____

_____

ONSITE INTERVIEW DATA SHEET - ADMINISTRATOR OR SENIOR RELIEF OFFICIAL

Name _____ How long at Site _____

Position _____ Address or Phone _____

Organization _____ _____

A. BACKGROUND

1. Name of camp: _____

2. Location: _____

3. Total Population: _____

4. Date site established: _____

5. People in camp classified as refugees _____, illegal immigrants _____, other _____

6. Within last month:
   a) arrivals _____
   b) deaths _____

6-A. Within last week:
   a) arrivals _____
   b) deaths _____

7. Within last 24 hours:
   a) arrivals _____
   b) deaths _____

8. Data source (Count, estimate, rumor, etc.): _____

9. Estimated distribution of adult population: men _____% women _____%.

10. Size of camp site (estimated square meters _____; hectres _____; acres _____; other _____).

11. Description of camp site: _____
_____.

B. WATER

1. Source: _____.

2. Distance to source: _____.

3. Quantity available: (Estimate liters per day) _____.

4. Purification/Treatment:
   (a) at source: _____;
   (b) at camp/site: _____.

C. FOODS IN CURRENT USE

	Food Item	Distribution Basis	Supply On Hand (Tons, Weeks, Etc.)
Example:	Rice (polished)	3 kg/per family/per week	240 tons
1.			
2.			
3			
4.			
5.			

8. Agency with overall responsibility for providing bulk rations: _____

9. Estimated daily calories provided per person (if known): _____

10. Are infant feeding bottles in use? Yes ___ No ___

11. Are there special feeding programs for young children or malnourished persons? Yes ___ No ___. If yes, which agency is in charge of these? _____

D. SANITATION

1. Type and number of latrines, if any: _____.

2. Distance from shelters: _____.

3. Lighting: Yes ___; No ___.

4. Frequency of maintenance: _____.

5. Who maintains? _____.

6. Other place of defecation: _____.

7. Estimate of latrine use (well used, not used, etc.): _____.

E. HYGIENE

1. Bathing facilities? Yes ____ No ____

2. Is soap available? Yes ____ No ____

3. Facilities for utensil washing? Yes ____ No ____

4. Method of garbage disposal? (Collection, burning, etc.) _____.

5. Frequency of garbage collection? _____.

F. RITES

1. Methods for disposal of bodies of dead?

   (a) Burial _____
   (b) Cremation _____
   (c) Are records kept or are graves registered? _____.

G. PROTECTION/PERCEIVED RISK

Is there real or perceived risk from:

1. cross border military action;
2. local military action;
3. violence among refugees;
4. violence among local/host population.

H. STAFF

How many staff are assigned to the camp?

Type	No.	Full-time	Adequate? (Yes/No)
Camp administrator			
Assistant camp administrator			
Health Workers			
Feeding Programs			

Are refugees participating in running the camp or any of it's operations?

_____

ON-SITE INTERVIEW DATA SHEET - SENIOR HEALTH WORKER

Name _____ Time at Site _____

Position _____ Address or Phone _____

Organization _____ _____

A. BACKGROUND

1. Name of camp: _____.
2. Location: _____.
3. Total population: _____.
4. Date site established: _____.
5. People in camp classified as: refugees _____; illegal immigrants _____; other _____.
6. Within last week:
   a) arrivals: _____;
   b) deaths: _____.

   6.A. Within last month
   a) arrivals: _____.
   b) deaths: _____.
7. Within last 24 hours:
   a) arrivals: _____;
   b) deaths: _____.
8. Data source (exact count, estimate, rumor, etc.): _____.
9. Estimated distribution of adult population: men _____% women _____%.
10. Size of camp site (estimate square meters _____; hectres _____; acres _____; other _____).
11. Description of camp site: _____
    _____.

B. WATER

1. Source: _____.
2. Distance to source: _____.
3. Quantity available (estimate liters per day): _____.

4. Purification/Treatment:
   a) at source: _____;
   b) at camp/site: _____.

C. FOODS IN CURRENT USE

	Food Item	Distribution Basis	Supply On Hand (Tons, Wk., Etc.)	Notes
Example:	Rice (polished)	3 kg/per family/per week	250 tons in camp	Supplies are irregular
1.				
2.				
3				
4.				
5.				

1. Agency with overall responsibility for providing bulk rations: _____

2. Estimated daily calories provided per person (if known): _____

3. Are infant feeding bottles in use?

4. Are there special feeding programs for infants or malnourished? Yes ___ No ___.
   If yes, which agency is in charge of these? _____.

D. PROTECTION/PERCEIVED RISK

Is there real or perceived risk from:

1. cross-border military action;
2. local military action;
3. violence among refugees;
4. violence among local/host population.

E. HEALTH FACILITIES

What facilities are in the camp? (health centers, OPD's hospitals, etc.)

(a) Mobile medical team? (yes ____ no ____)

(b) Aid station or out-patient facility? (yes ____ no ____)

(c) Clinic or hospital with beds for in-patients? (yes ____ no ___. If yes, how many beds _____.

(d) Hospital for referrals accessible? (yes ____ no ____). If yes, travel time _____ hours; or distance _____ kilometers.

(e) Supplemental feeding center? (yes ____/no____).

(f) Theraputic (intensive) feeding center for severely malnourished? (yes ____ no ____)

F. MOST COMMON ILLNESS

	Illness	Method of Treatment
1.		
2.		
3.		
4.		
5.		

G. MOST COMMON CAUSES OF DEATH

1. _____
2. _____
3. _____
4. _____

H. OTHER HEALTH CONCERNS _____

I. HEALTH PROGRAM GUILDELINES IN USE? GOBI (UNICEF) _____

Other(s) _____

J.

IMMUNIZATIONS	DATE OF LAST MASS PROGRAM	ADEQUATE SUPPLIES
1. Measles	_____	Yes ____ No ____
2. Polio	_____	Yes ____ No ____
3. DPT	_____	Yes ____ No ____
4. BCG	_____	Yes ____ No ____
5. Other	_____	Yes ____ No ____
6.		

7. Has a cold chain been established? (yes ____ no ____).

8. Have there been problems in maintaining the cold chain? (yes ____ no ____)

K. WHAT STANDARD DRUG LIST IS IN USE?

WHO _____; ICRC _____; Other _____; None _____;

L. ARE THERE ADEQUATE SUPPLIES OF THE FOLLOWING?

1. Bandages? (yes ____/no ____)
2. Vitamin A (200,000 IU UNICEF capsules)? (yes ____/no ____)
3. Oral rehydration supplies? (yes ____/no ____)
4. Antibiotics? (yes ____/no ____)
5. Soap or antiseptics? (yes ____/no ____)
6. Other: _____

M. SPECIAL FEEDING PROGRAMS

1. Supplemental feeding center:
   (a) Number of children enrolled _____.
   (b) Number of children usually attending? _____.
   (c) Method of measuring? Height for weight _____; arm circumference _____; weight for age _____.
   (d) Content of meals: _____
   (e) Frequency? _____
   (f) Feeding on-site or take-home? (Circle one)
   (g) Approximate percentage severely malnourished when admitted _____%
   (h) Approximate percentage severely malnourished at present _____%
   (i) Is there an outreach program to identify children who should be enrolled? (yes ____/no ____).
   (j) Thereputic (intensive) feeding? (yes ____/no ____)

N. HEALTH SCREENING

1. Are new arrivals given a health screening before they enter camp and mix with those already in the camp?
2. Are potentially infectious new arrivals isolated and treated? (yes ____/no ____).

O. STAFF

1.

Type	Number	Full-time?	Adequate (or number needed)
Health			
Feeding Programs			

2. Are refugees helping to operate the health and feeding programs? (yes ____/no ____).

Appendix III.

SIMPLE FORMS FOR HEALTH AND DISEASE SURVIELLANCE IN SUPPLEMENTARY FEEDING PROGRAMS

SAMPLE PATIENT LOG

Name	Age	Sex	Diagnosis	Treatment	Living Section
Example 1	29 years	F	Pneumonia	Penicillin 250 mg poQID	4
Example 2	4 months	F	Malnutrition	Send to supp feeding	18

POPULATION DATA

MONTH _____
YEAR _____

DATE	TOTAL NEW ARRIVALS	ADULT MALE	ADULT FEMALE	DEPENDENT CHILDREN (< 5 YRS)	NEW TOTAL IN CAMP (CUMULATIVE)
MONTHLY TOTALS					

MORTALITY (DEATHS) - Weekly

DATES _____ Total _____

AGES

	<1 Mo	1-11 Mo	1-4 Yrs	5-14 Yrs	15-44 Yrs	>44 Yrs	Unknown	Total
POSSIBLE CAUSES:								
Diarrhea								
Pneumonia								
Malaria								
Trauma/Accident								
Malnutrition								
Prematurity								
OTHER:								
TB								
Measles								
Meningitis								

Appendix IV.

CHECKLIST FOR ANALYSIS OF FOOD SUPPLY PROBLEMS

Although refugee food supply problems are ultimately reflected in childhood malnutrition (and its consequences) and/or increased food prices, such problems may also come to light in a number of other ways. Conversely, when trying to trace the source of disrupted food supply, you may encounter what appears to be a nearly endless list of possible problems. The table below indicates the expected linkages and activities which need to successfully occur if an adequate food basket is to be supplied to refugees and if childhood malnutrition is to be avoided.

APPROACH

If childhood malnutrition becomes or remains detectable in unexpectedly large numbers of children, do the following:

1) Review the food basket for quality and quantity. If a specific deficiency disease has been observed (e.g., xerophthalmia) examine the "food basket" for an adequate source of the appropriate vitamin (e.g. vitamin A). If the malnutrition is general calorie/energy deficiency (also called protein-energy malnutrition, wasting or marasmus), find out the intended number of calories in the food basket. Remember that at least 1800 calories per day for everyone (including children) is an absolute population minimum for reasonable growth).

2) If the food basket is adequate, find out from mothers of some malnourished children the circumstances of malnutrition. Possibilities include:

   a) pipeline problem - not enough food available to the family

   b) family education problem - a relatively simple questionnaire administered to a dozen such mothers would indicate ~~no~~ illness, or adequate family food supply, ~~but~~ not enough food being given to child

   c) support problem - adequate food available to family but inadequate cooking fuel

   d) support problem -supplementary feeding not available to the child

   e) illness problem - illness prevented normal appetite

   f) illness problem - excessive calorie loss/waste due to diarrhea

TABLE I

THE NUTRITION PIPELINE CHECKLIST FOR ASSESSMENT OF FOOD SUPPLY FOR REFUGEE AND DP's

Activity Decision	Desired Outcome	Responsibility	Indicators	Current Status
Choice of Foods	Adequate Food Basket	(Agency)	Nutritional Adequacy	
Amount of Foods	Growth/Health Status	(Agency)	Malnutrition Growth	
Importation or Purchase	Sufficient Supplies to Meet Needs and Contingencies	(Agency)	Stock Levels In-Out Flow	
Protected Storage	No Loss or Spoilage	(Agency)	Amount of Loss or Spoilage	
Distribution to Feeding Agencies	Adequate Stocks	(Agency)	Waybills, Receipts	
Delivery to Distribution Center	Adequate Supplies to Meet all Needs with Minimal Reserves	(Agency)	Waybills, Receipts	
Storage at Distribution Center	No Loss or Spoilage	(Agency)	Visual Inspection	
*Distribution to Families	Adequate Family Supplies	(Agency)	Receipts	
*Storage in Homes	Adequate Stocks with Minimal Spoilage	Mothers*	Nutritional Status	
*Proper Preparation	All Available Nourishment	Mothers*	Nutritional Deficiency Diseases	
*Provision of Adequate Amounts to Children	Satiety, Good Health	Mothers*	Malnutrition/ Growth	
*Breast Feeding	Adequate Growth, Absence of diarrhea	Mothers*	High infant mal-nutrition rates poor infant growth	

*Activities, decision and groups on which nutrition education could have an impact

TABLE 2

Finding	Implication	Next Steps
Pipeline Problem	Waste or diversion of food between purchase/import and delivery to family	1. Survey larger random sample for food supply/delivery data 2. If problem confirmed, request assistance to examine storage and distribution system
Family education problem	Incorrect understanding of child Nutrition principles	1. Create or expand nutrition in/and supplementary feeding
Illness problem	Possible failure of prevention system(s)	1. Survey larger random sample to confirm 2. If diarrhea confirmed indicates problem in sanitation loop (see pg. ___) or with feeding bottles 3. If vaccine-preventable disease, e.g. measles, confirmed improve immunization program(s) 4. If other disease, plan program specific for disease
Support Problem	Failure of normal support	1. Survey larger sample to confirm 2. Provide adequate cooking fu as appropriate - or 3. Institute or upgrade supplementary feeding program

Appendix V

Recommended Average Amounts of Energy and protein to be Supplied by SFP *

	Daily Ration
Energy supplement (kcal)	600
% of requirement	under 5's: 40-50% pregnant and lactating: 100% of additional requirement
Protein supplement (kcal)	20
% of requirement	under 5's: 100% pregnatn and lactating: 100% of additional requirement
Duration	under 5's: 1-2 yr pregnancy: from 4th-5th month lactation: first 6 months

* Based on guidelines for WFP rations.

Appendix VI.

Estimating food requirements for WFPs

To estimate a ration scale for a WFP the following procedure may be used:

1. Estimate the supplementary nutrients required using
   for
2. Select one or more foods from each group in food square 1 [1/]
3. Using food square 2 select those quantities of each of the chosen foods so that the total energy and protein content of the ration approximates the amounts recommended in . Check against to make sure that the quantities of WFP foods do not exceed those recommended.

Food square 1

To provide a balanced ration give at least one food from each group

Cereals: wheat, rice, maize, oats, barley sorghum soy fortified cereals (if cereals are unavailable use potatoes, plantains and more protein rich food)	Protein-rich food: pulses, oilseeds, meat, fish, eggs, dairy products
Breast feeding	
Fruit and vegetables: dark green leaves yellow/orange fruits and vegetables citrus fruit	Energy supplement: oil, butter, butter oil, fats, margarine, nuts sugar, syrups

1/ See footnote p 20.

Food square 2

Nutritive value of various quantities of selected foods

Cereals:

Amount g	kcal	protein g [1] regular	protein g [1] soy fort.
500	1 750	50	80
400	1 400	40	64
150	525	15	24
100	350	10	16
50	175	5	8

Protein rich foods:

	Amount g	kcal	protein g
Pulses	40	140	8
	20	70	4
Canned meat	40	80	7
	20	40	3
DSM	40	144	14
	20	72	7
	10	36	4

Vegetables and fruit:

1 serving or piece per meal

Energy supplement:

Oil	40	360	0
	20	180	0
	10	90	0
Sugar	20	80	0
	10	40	0

For purposes of estimating rations note that:

- cereals are interchangeable among themselves, i.e. wheat, flour, maize, rice[1], etc.
- pulses and canned meat and fish are interchangeable. Use 1 part dried fish to 2 parts canned fish
- replace 1 part DSM with 1.3 parts DWM
  1.4 parts cheese
  4.0 parts evaporated or condensed milk
  0.8 part dried egg (to maximum of 5 g)
- oils and fats are interchangeable
- CSM and WSB are interchangeable. 1 part replaces 1 part cereal + 0.5 part pulse + fruit/vegetables

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[1] Rice contains less protein than many other cereals (i.e. approximately 7 g per 100 g).

Appendix VII.

Recommended daily intake of nutrients (FAO 1974)

	Body Weight kg	Energy Kcal	Protein[a] g	Calcium g	Iron[b] mg	Vitamin A I.U.	Vitamin A mcg	Thiamine mg	Riboflavin mg	Niacin mg	Vitamin C mg
Children											
Under 1 year	7.3	820	14	0.5-0.6	5-10	1000	300	0.3	0.5	5.4	20
1-3 years	13.4	1360	16	0.4-0.5	5-10	850	250	0.5	0.8	9.0	20
4-6 years	20.2	1830	20	0.4-0.5	5-10	1000	300	0.7	1.1	12.1	20
7-9 years	28.1	2190	25	0.4-0.5	5-10	1350	400	0.9	1.3	14.5	20
Adolescents - boys											
10-12 years	36.9	2600	30	0.6-0.7	5-10	1900	575	1.0	1.6	17.2	20
13-15 years	51.3	2900	37	0.6-0.7	9-18	2400	725	1.2	1.7	19.1	30
16-19 years	62.9	3070	38	0.5-0.6	5-9	2500	750	1.2	1.8	20.3	30
- girls											
10-12 years	38.0	2350	29	0.6-0.7	5-10	1900	575	0.9	1.4	15.5	20
13-15 years	49.9	2490	31	0.6-0.7	12-24	2400	725	1.0	1.5	16.4	30
16-19 years	54.4	2310	30	0.5-0.6	14-28	2500	750	0.9	1.4	15.2	30
Adults - males											
moderately active	65.0	3000	37	0.4-0.5	5-9	2500	750	1.2	1.8	19.8	30
- females											
moderately active	55.0	2200	29	0.4-0.5	14-28	2500	750	0.9	1.3	14.5	30
last half of pregnancy	-	2550	38	1.0-1.2	14-28	2500	750	1.0	1.5	16.8	30
lactating	-	2750	46	1.0-1.2	14-28	4000	1200	1.1	1.7	18.2	30

a The recommended protein intake varies with the type of diet being consumed. For a diet based on cereals and legumes with some animal foods protein intake should be increased by about 40%. For diet consisting mainly of cereals increase intake by 60%.

b The higher value for iron should be used if there is little animal protein in the diet.

Appendix VIII.

Nutrient composition of common foods

Food	%	Nutrients per 100 g raw edible portion										
	Edible portion	Energy kcal	Protein g	Fat g	Calcium mg	Iron mg	Vitamin A (retinol) I.U.	Vitamin A (retinol) mcg	Thiamine mg	Riboflavin mg	Niacin mg	Vitamin C mg
Staple foods:												
millet, bulrush	100	341	10.4	4.0	22	20.7	0	0	.30	.22	1.7	3
whole rice, lightly milled, parboiled	100	364	7.0	0.6	6	2.4	0	0	.17	.03	5.4	0
cassava, fresh	74	149	1.2	0.2	68	1.9	50	15	.04	.05	0.6	31
cassava, flour	100	342	1.5	0	55	2.0	0	0	.04	.04	0.8	0
plantain	66	135	1.2	0.3	8	1.3	1 300	390	.08	.04	0.6	20
potato, sweet, yellow	89	121	1.6	0.2	33	2.0	2 100	620	.09	.04	0.7	37
potato, Irish	86	82	1.7	0.1	13	1.1	40	12	.07	.03	1.3	21
yam, fresh	84	119	1.9	0.2	52	0.8	17	5	.11	.02	0.3	6
bread, white	100	261	7.7	2.0	37	1.7	0	0	.16	.06	1.0	0
Pulses and oilseeds:												
groundnuts, dry	100	549	23.2	44.8	49	3.8	25	7	.79	.14	15.5	1
soybean	100	405	33.7	17.9	183	6.1	90	27	.71	.25	2.0	0
cashew nut	100	542	17.4	43.4	76	18.0	0	0	.65	.25	1.6	7
cocoonut, fresh, mature	65	388	3.6	39.0	21	2.5	40	12	.03	.03	0.6	2
sesame seeds	100	558	17.9	48.4	816	8.1	50	15	.68	.19	3.4	0
sunflower seeds	50	486	13.0	27.7	100	7.0	0	0	1.90	.20	5.8	-
Vegetables:												
kidney beans, raw	92	36	2.5	0.2	43	1.4	1 250	375	.08	.12	0.5	27
eggplant	78	32	1.0	0.2	14	1.3	57	17	.05	.05	0.5	9
leaves, dark green (spinach)	76	26	2.1	0.2	61	1.7	9 526	2 858	.03	.27	1.2	46
" , medium " (pumpkin)	80	27	4.0	0.2	477	0.8	6 000	1 800	.06	.32	0.3	80
" , light " (cabbage)	63	26	1.7	0.1	47	0.7	170	50	.04	.04	0.3	54
maize, fresh	70	152	5.0	2.1	18	1.8	0	0	.16	.08	1.3	10
onion and shallot	94	41	1.2	0.1	27	0.8	0	0	.02	.04	0.2	11

Food	%	Nutrients per 100 g raw edible portion										
	Edible portion	Energy kcal	Protein g	Fat g	Calcium mg	Iron mg	Vitamin A (retinol) I.U.	Vitamin A (retinol) mcg	Thiamine mg	Riboflavin mg	Niacin mg	Vitamin C mg
Vegetables (cont.)												
peppers, seeds removed	84	48	2.0	0.8	29	2.6	300	90	.12	.15	2.2	140
tomato	96	21	1.0	0.2	10	0.6	750	225	.06	.04	0.6	26
Fruits:												
avocado pear	50	121	1.4	11.3	19	1.4	880	265	.05	.15	2.0	18
banana	68	88	1.5	0.1	9	1.4	200	60	.03	.03	6.0	9
citrus	70	49	0.8	0.3	38	1.1	395	115	.08	.05	0.2	46
guava	81	64	1.1	0.4	24	1.3	480	145	.06	.04	1.3	326
mango	64	60	0.6	0.2	24	1.2	5 300	1 600	.03	.05	0.4	42
water melon	50	22	0.5	0	8	0.3	405	125	.02	.02	0.2	5
pawpaw, papaya	74	32	0.4	0.1	21	0.6	1 580	475	.03	.03	0.4	52
pineapple	67	47	0.4	0.1	16	0.4	150	45	.06	.03	0.1	34
Meat:												
beef, moderately fat	80	237	18.2	17.7	11	3.6	0	0	.07	.15	4.5	0
goat, " "	80	357	15.2	32.4	11	2.0	0	0	.07	.13	4.9	0
mutton, " "	80	249	15.0	21.0	10	2.4	0	0	.15	.20	4.5	0
pork, fatty	80	535	10.0	55.0	11	1.8	0	0	.50	.15	3.0	0
liver	100	136	20.0	4.0	10	10.0	40 000	12 000	.30	2.50	13.0	30
poultry	67	139	19.0	7.0	15	1.5	0	0	.10	.15	9.0	0
Egg, hen	88	140	11.8	9.6	45	2.6	2 000	600	.12	.35	0.3	0
Fish:												
sardines canned in oil	100	309	20.0	25.0	400	3.0	16	5	.05	.20	4.0	0
fresh fillet	52	119	21.6	3.0	32	1.7	0	0	.05	.08	2.8	0
dried, whole, freshwater	100	309	63.0	6.3	3 000	8.5	0	0	.10	.20	6.0	0
snail	47	82	12.0	2.0	1 500	8.0	207	62	0	.05	1.3	0
Milk and milk products:												
milk, human	100	75	1.3	4.6	30	0.2	180	55	.02	.04	0.2	4
milk, cow, whole	100	79	3.8	4.8	143	0.2	130	40	.04	.30	0.1	1

Appendix IX.

Nutrient composition of WFP foods

Food	Nutrients per 100 g raw edible portion										
	Energy kcal	Protein g	Fat g	Calcium mg	Iron mg	Vitamin A (retinol) I.U.	Vitamin A (retinol) mcg	Thiamine mg	Riboflavin mg	Niacin mg	Vitamin C mg
Cereals:											
wheat, whole	332	12.7	1.8	60	7.6	0	0	.35	.12	3.6	0
wheat, flour (medium extraction)	350	11.5	1.5	24	2.4	0	0	.32	.07	1.7	0
bulgur wheat	350	11.0	1.5	29	3.7	0	0	.28	.14	4.5	0
maize, whole (yellow)	364	10.0	4.8	13	4.9	170	50	.32	.12	1.7	4
maize meal	353	9.3	3.8	17	4.2	90	26	.30	.08	1.8	3
sorghum	332	11.0	3.3	28	4.4	200	67	.38	.15	3.9	0
barley	337	10.0	1.6	61	17.9	0	0	.36	.10	5.2	0
oats, whole	375	17.0	7.0	60	4.6	0	0	.35	.09	2.2	0
rolled oats	370	13.0	5.5	30	3.4	0	0	.20	.08	1.1	0
rice, polished	363	7.0	0.5	9	1.7	0	0	.10	.03	2.8	0
Soy fortified cereals:											
soy fortified wheat flour											
– 6% soy	355	14.0	1.2	–	–	–	–	–	–	–	0
– 12% soy	355	16.5	1.4	211	4.8	882	265	.66	.36	4.6	0
" " bulgur wheat	350	17.0	2.0	54	4.7	0	0	.25	.13	4.2	0
" " corn meal	390	13.0	1.5	178	4.2	760	228	.66	.27	3.1	0
" " rolled oats	380	20.0	6.0	81	5.3	0	0	.74	.14	4.0	0
" " sorghum grits	360	16.0	1.0	40	2.0	0	0	.20	.10	1.7	0
FPCA[b] fortified wheat flour – 5% FPC	350	15.0	1.5	–	–	0	0	–	–	–	0
– 10% FPC	350	19.0	1.5	–	–	0	0	–	–	–	0

a Values mainly from Food Composition Table for Africa, 1968 FAO. Composition of Foods, Agric. Handbook 8, Agric. Res. Serv. US Dept., Agric. 1963 or values supplied by the producers.

b Fish protein concentrate type A.

– Values not available.

Food	Nutrients per 100 g raw edible portion										
	Energy kcal	Protein g	Fat g	Calcium mg	Iron mg	Vitamin A (retinol) I.U.	Vitamin A (retinol) mcg	Thiamine mg	Riboflavin mg	Niacin mg	Vitamin C mg
Blended cereals:											
wheat soy blend (WSB)	360	20.0	6.0	750	20.8	1 658	498	1.50	.60	9.1	40
corn soy blend (CSB)	380	18.0	6.0	513	18.5	1 670	500	.65	.50	6.8	40
rison	350	25.0	1.0	450	2.7	0	0	.50	.20	1.0	0
corn soy milk (CSM)	380	20.0	6.0	1 000	18.0	1 700	510	.80	.80	8.0	40
instant corn soy milk (ICSM)	380	20.0	6.0	900	18.0	1 700	510	.80	.60	8.0	40
Pulses:											
dried beans and peas	335	22.0	1.5	75	5.0	0	0	.60	.20	2.2	0
lentils	340	23.0	1.0	68	7.0	0	0	.50	.30	1.3	0
Fruits:											
canned in syrup	60	0.5	0	7	0.3	210	63	.03	.03	0.2	5
dates	245	2.0	0.5	60	1.6	0	0	.04	.02	0.9	2
dried fruit (apricots)	270	4.0	0.5	62	4.5	1 000	300	.08	.09	1.6	5
Sugar	400	0	0	0	0	0	0	0	0	0	0
Meat:											
canned - average	220	21.0	15.0	9	1.9	0	0	.15	.19	3.2	0
- pork	271	16.0	22.0	8	2.1	0	0	.70	.16	3.7	0
- chicken	215	21.0	14.0	14	1.5	400	120	.08	.16	8.0	0
- corned beef	233	25.5	14.0	56	4.0	0	0	.02	.20	2.7	0
Dried egg	575	45.5	43.5	187	8.7	4 280	1 284	.33	1.20	0.2	0
Fish											
canned - in oil	305	22.0	24.0	44	1.3	100	33	.06	.20	2.6	0
- other	150	20.0	8.0	36	1.0	100	33	.03	.06	1.9	0
dried, salted, average	270	47.0	7.5	1 600	2.4	100	33	.10	.36	4.4	0
hard, dried, average	380	66.0	11.0	2 200	3.3	140	42	.14	.50	6.0	0
fish protein concentrate:											
- FPC (Astra) type A	330	82.0	0	-	-	0	0	-	-	-	-
- FPC (Norse) type B	390	75.0	10.0	1 800	26.9	0	0	?	.73	1.20	0

Food	Nutrients per 100 g raw edible portion										
	Energy kcal	Protein g	Fat g	Calcium mg	Iron mg	Vitamin A (retinol) I.U.	Vitamin A (retinol) mcg	Thiamine mg	Riboflavin mg	Niacin mg	Vitamin C mg
Milk and milk products:											
dried whole milk (DWM)	490	23.5	24.0	900	0.7	1 060	318	.24	1.23	0.7	4
dried skim milk (DSM)	360	36.0	0.7	1 290	0.6	26 [a]	8	.35	1.80	0.9	7
condensed milk, sweetened	325	9.0	9.5	300	0.3	190	56 [b]	.08	.40	0.2	2
evaporated milk	150	7.5	8.5	255	0.2	283	85	.04	.32	0.2	1
milk bars (NL) [c]	475	23.5	23.0	-	-	-	-	-	-	-	-
milk tablets (NZ) [d]	540	27.0	27.0	-	-	-	-	-	-	-	-
canned cheese - average	355	22.5	28.0	630	0.2	400	120	.03	.45	0.2	0
- cheddar	370	23.0	30.0	720	0.6	1 000	300	.04	.50	0.4	0
- gouda	340	22.0	26.0	840	0.6	1 000	300	.04	.50	0.4	0
Oils and fats:											
butter	725	0	81.0	12	0.2	2 380	714	.01	.02	0.1	0
butter oil, ghee	862	0	97.8	0	0	2 000	600	0	0	0	0
margarine, margarit	735	0	82.0	6	0.2	[e]	[e]	.01	.02	0	0
vegetable oil	890	0	100.0	0	0	0 [f]	0 [f]	0	0	0	0
Miscellaneous:											
cocoa	270	17.0	21.0	-	-	-	-	-	-	-	-
high protein biscuit (NZ) [g]	480	24.0	19.0	-	-	-	-	-	-	-	-

a If fortified with vitamin A contains 5 000 I.U. or 1 500 mcg retinol.

b If fortified 520 I.U. or 155 mcg retinol.

c 1 bar = 20 g (95 kcal and 4.7 g protein).

d 1 tablet = 18.5 g (100 kcal and 5 g protein).

e Depends on level of fortification.

f Red palm oil contains 20 000 I.U. or 6 000 mcg retinol equivalents.

g 1 biscuit = 7 g (34 kcal and 2 g protein).

Appendix λ

Maximum Quantities of WFP Foods Per Person Per Day

g edible portion

Food	Amount (grams)
cereals	150
soy fortified cereals	100
CSM/WSB	100
Pulses	20
Canned meat	20
Canned fish	20
Dried fish	10
Dairy products	40
Dried egg	5
Fats/oils	20
Sugar	10

It is recommended that not more than 6 foods (and preferably fewer) from the above list are selected for an SFP.

Appendix XI.

Oxfam Energy Biscuit (O.B.125)

Introduction

The Oxfam Energy Biscuit has been produced as a supplementary food for use in certain food emergency situations

There is good scientific evidence to show that energy (or calories) is the most important factor in treating acute malnutrition. The biscuit therefore aims to give the maximum number of calories possible while supplying sufficient protein

The O B. 125 is intended for use in early emergency situations as a supplement to the general ration when -

A) Other foods are not locally available
B) Logistics, cooking facilities and water supplies are inadequate or difficult to organise rapidly

Specifications

Each biscuit weighs 25gms and contains 125kcals ie. 4 biscuits = 100gms = 500kcals - typical daily supplement

ONE METRIC TON PROVIDES 100 CHILDREN WITH A SUPPLEMENT OF 500 KCALS FOR 100 DAYS

Ingredients

Wheat flour	45.4%
Vegetable Oils	29 0%
DSM (Dried Skimmed Milk)	13.3%
Sugar	11.2%
Ammonium Bicarbonate	0.5%
Salt	0 3%
Protein content	8 - 9%

Shelf Life

18 Months

Packaging

Tin Size: 220mm x 220mm x 240mm
Tin Weight: 4 8 Kgs.
Each pack contains 96 x 2 Biscuit Packs.
Storage space for IMT 1140mm x 2000mm x 1200mm (one metric tonne)

Oxfam Energy Biscuit (O.B.125)

Guidelines for Use

1. In times of food shortages or emergency, the priority should always be to establish an adequate general ration (1,750 kcals / person / day or 15kg of grain / person / month). This biscuit should **not** be used as part of the general ration but as a supplement only

2. Where alternatives are available for supplementary feeding, priorities should be -
   1) Use of local foods as far as possible
   2) Use of "indigenous" weaning foods i.e. **Faffa** (Ethiopia), **Pro Gro** (Zimbabwe)
   3) Relief foods that are normally available i.e. Corn, Soya, Milk (CSM), Dried Skimmed Milk (DSM), butteroil, grain etc

All these foods require cooking and as such use quantities of firewood and water. The interventions are also usually more effective if the community is involved If it is not possible to organise an SFP along conventional lines then the biscuit may be appropriate

3. The biscuits' main functions are -
   1) Short term supplementary feeding until other alternatives can be established
   2) As part of an ongoing S.F.P. when resources are limited (ie) one biscuit ration per day plus high energy milk or high energy porridge.
   3) As part of the theraputic feeding centre diet (TFC)

4 Typical Biscuit Rations

a) **Supplementary Feeding:** A supplement for those children who are moderately malnourished, (ie) between 70 - 80% Ht/Wt Some others from the "vulnerable groups" may be included ie. sick, elderly, pregnant and lactating women If general ration is adequate a modest supplement should be adequate ie) 500 kcals/day (4 biscuits). If the general ration is less than 1500 kcals/day 500-1,000 kcals should be given ie 4 biscuits a day plus 2 cups high energy milk

b) **Therapeutic Feeding:** Total nutritional rehabilitation giving up to 2,000 kcals / day in 4-5 feeds The biscuits can be used typically to completely replace one feed (4 biscuits) or in conjunction with a cup of High Energy milk (2 biscuits) **Note:** Because of its high fat content, the biscuit is **not** suitable for children of "normal" nutritional status
It is not necessary to give a drink with the biscuit, although some small children may prefer one

Oxfam Energy Biscuit (O.B.125)

For further information on Supplementary and Theraputic Feeding, refer to "Oxfam's Practical Guide to Selective Feeding Programmes". Practical Guide No1 available from the Health Unit, Oxfam

Remember when re ordering supplies:

1) The biscuit is an expensive source of energy Are other cheaper sources available or suitable?

2) The biscuit has little or no "Health Education" value Could indigenous foods products be used to greater advantage?

3) OXFAM would welcome comments from the users / distributors of OEB on the following
   a) Details of recipient groups and emergency situations
   b) Methods of distribution.
   c) Packaging and keeping qualities
   d) Effectiveness
   e) Weight gain

Comments to OXFAM HEALTH UNIT, 274 Banbury Road, Oxford OX2 7DZ, U K
Tel (0865) 56777. Telex 83610.

Appendix XII

Body measurements and their interpretation

1. How to take body measurements [1]

It is very important to take body measurements accurately using the methods described below. Quite small errors in measuring can lead to a malnourished child being classified as healthy and vice versa. Always write down a measurement immediately after taking it. If it seems wrong or very different from a previous measurement take it again.

Height. A centimetre tape fixed vertically to a smooth wall with the zero exactly at floor level can be used. Or the tape can be fixed to a straight measuring stick.

The subject stands with bare feet flat on the floor, heels together and heels, buttocks, shoulders and back of head touching the vertical surface. A horizontal board is pressed firmly against the top of the head while the subject is looking straight ahead and the reading taken. The board must be exactly horizontal and at right angles to the wall.

Length. Children below 2 years (or 85 cm) should be laid on a measuring board. The head should be held firmly against a vertical head board, the eyes looking straight up and the body held as straight as possible with the knees pressed straight. A sliding vertical board is then brought in contact with the heels.

Take height and length readings to the nearest completed centimetre (i.e. 96.7 cm = 96 cm).

Weight. Use a beam scale if possible. Sometimes this can be borrowed from a clinic or even a market. An example of a compact, cheap and quite accurate spring scale that can also be used for weighing children up to 6 years is the Salter portable scale [2]. Bathroom scales are not very accurate but are better than nothing for weighing school children.

Place scales on a horizontal surface, zero before each weighing and check daily with an object of known weight (e.g. large container filled with water, a stone). Keep scales free of dirt and arrange regular servicing.

Weigh small children naked or in pants only. Weigh other children in standard minimum clothing. Check the child is standing or sitting centrally and not holding anything beyond the scale pan. Read the scale at eye level and record weight to nearest 100 g or 250 g.

Birth weights should be taken within a few hours of birth on accurate beam scales and read to the nearest gram.

Arm circumference (AC). This measurement is less accurate and much less sensitive than weight for determining or monitoring nutritional status. It is best used when a large number of children have to be screened quickly or when weighing scales are unavailable.

1/ For more detail see de Ville de Goyet 1978, WHO 1978, WHO 1980.

2/ Model 235 PBW from CMS Weighing Equipment, 18 Camden High St, London.

Between 1-5 years, ages need not be accurately known as the normal arm circumference remains constant over this period.

A fibreglass tape or a thin (1 cm) strip of unstretchable plastic, card, X-ray film or cord can be carefully marked off or coloured as required. The circumference is measured on the upper half of the left arm at a point halfway between the shoulder and tip of the elbow. With the arm hanging relaxed the tape is held snugly, but not too tightly, around the arm and the reading taken to 0.1 cm.

It is difficult to measure AC below 6 months of age.

Age. Reliable documentary evidence of birthdate should be seen if possible. Failing this the date given by the mother should be checked against local events of known date and the child's dentition and development.

3. Using the indicators of nutritional status in monitoring and evaluation

Monitoring the progress of the individual child:

The child's '% weight-for-age' or '% weight-for-height' can be compared at the beginning and at selected intervals during the SFP. A more sensitive method is to plot his/her weight on a growth chart each month (Annex 11).

Evaluating programme effectiveness:

The proportion of children in each chosen nutritional status level is compared before, during and after the SFP.

The percent of reference level chosen to classify different levels of nutritional status (e.g. 'satisfactory', 'at risk', 'undernourished', 'malnourished') must be selected at the planning stage. The groupings > 80 %, 70-80%, 60-70%, < 60% have proved useful in some programmes. The AC of 1-5 year olds may be grouped into those above or below 13.5 cm or 12.5 cm.

Sometimes evaluation data is examined by age group. The following groupings are recommended: 0-5 months; 6-11 months; 12-23 months; 24-47 months; 48-71 months; 6 years - 7 years 11 months; 8 years - 9 years 11 months.

4. Reference values for body measurements

The following tables give international reference values for weight-for-age, weight-for-height and AC-for-age. The tables enable a child's measurement to be placed in his/her correct '% of reference' group without calculation. Example:

Sex	Age	Weight	Height	% of reference value	
		kg	cm	weight-for-age	weight-for-height
F	18 months	7.7	80	60 - 70 (table A1)	70 - 80 (table A3)
M	7 years	20.3	123	80 - 90 (table A2)	80 - 90 (table A4)

Tables 1-4 have been calculated 1/ from median reference values recommended by WHO in 'Measurement of nutritional impact: a guideline for the measurement of nutritional impact of supplementary feeding programmes aimed at vulnerable groups', WHO/FAP/79.1, Geneva 1979. In some cases these values differ slightly from figures given in earlier FAO publications.

1/ By the Nutrition Department, Institute of Public Health, University of the Philippines.

Table A1

Reference weight-for-age, 0-72 months, sexes combined

Age	Percent of Reference				
	100%	90%	80%	70%	60%
months	kg	kg	kg	kg	kg
0	3.3	3.0	2.6	2.3	2.0
1	4.2	3.8	3.4	2.9	2.5
2	5.0	4.5	4.0	3.5	3.0
3	5.7	5.1	4.6	4.0	3.4
4	6.4	5.8	5.1	4.5	3.8
5	7.0	6.3	5.6	4.9	4.2
6	7.5	6.8	6.0	5.3	4.5
7	8.0	7.2	6.4	5.6	4.8
8	8.5	7.7	6.8	6.0	5.1
9	8.9	8.0	7.1	6.2	5.3
10	9.2	8.3	7.4	6.4	5.5
11	9.6	8.6	7.7	6.7	5.8
12	9.9	8.9	7.9	6.9	5.9
13	10.1	9.1	8.1	7.1	6.1
14	10.4	9.4	8.3	7.3	6.2
15	10.6	9.5	8.5	7.4	6.4
16	10.8	9.7	8.6	7.6	6.5
17	11.0	9.9	8.8	7.7	6.6
18	11.2	10.1	9.0	7.8	6.7
19	11.4	10.3	9.1	8.0	6.8
20	11.5	10.4	9.2	8.1	6.9
21	11.7	10.5	9.4	8.2	7.0
22	11.9	10.7	9.5	8.3	7.1
23	12.1	10.9	9.7	8.5	7.3
24	12.2	11.0	9.8	8.5	7.3
25	12.4	11.1	9.9	8.7	7.4
26	12.6	11.3	10.1	8.8	7.6
27	12.7	11.4	10.2	8.9	7.6
28	12.9	11.6	10.3	9.0	7.7
29	13.1	11.8	10.5	9.2	7.9
30	13.3	12.0	10.6	9.3	8.0
31	13.5	12.2	10.8	9.5	8.1
32	13.7	12.3	11.0	9.6	8.2
33	13.8	12.4	11.0	9.7	8.3
34	14.0	12.6	11.2	9.8	8.4
35	14.2	12.8	11.4	9.9	8.5

Table A1 cont.d

Age	Percent of Reference				
	100%	90%	80%	70%	60%
months	kg	kg	kg	kg	kg
36	14.3	12.9	11.4	10.0	8.6
37	14.6	13.1	11.7	10.2	8.8
38	14.7	13.2	11.8	10.3	8.8
39	14.9	13.4	11.9	10.4	8.9
40	15.1	13.6	12.1	10.6	9.1
41	15.2	13.7	12.2	10.6	9.1
42	15.4	13.9	12.3	10.8	9.2
43	15.5	14.0	12.4	10.9	9.3
44	15.7	14.1	12.6	11.0	9.4
45	15.9	14.3	12.7	11.1	9.5
46	16.1	14.5	12.9	11.3	9.7
47	16.2	14.6	13.0	11.3	9.7
48	16.4	14.8	13.1	11.5	9.8
49	16.5	14.9	13.2	11.6	9.9
50	16.6	14.9	13.3	11.6	10.0
51	16.8	15.1	13.4	11.8	10.1
52	17.0	15.3	13.6	11.9	10.2
53	17.1	15.4	13.7	12.0	10.3
54	17.3	15.6	13.8	12.1	10.4
55	17.5	15.8	14.0	12.3	10.5
56	17.6	15.8	14.1	12.3	10.6
57	17.7	15.9	14.2	12.4	10.6
58	17.9	16.1	14.3	12.5	10.7
59	18.0	16.2	14.4	12.6	10.8
60	18.2	16.4	14.6	12.7	10.9
61	18.3	16.5	14.6	12.8	11.0
62	18.5	16.7	14.8	13.0	11.1
63	18.7	16.8	15.0	13.1	11.2
64	18.8	16.9	15.0	13.2	11.3
65	19.0	17.1	15.2	13.3	11.4
66	19.2	17.3	15.4	13.4	11.5
67	19.3	17.4	15.4	13.5	11.6
68	19.5	17.6	15.6	13.7	11.7
69	19.6	17.6	15.7	13.7	11.8
70	19.8	17.8	15.8	13.9	11.9
71	20.0	18.0	16.0	14.0	12.0
72	20.1	18.1	16.1	14.1	12.1

Table A2

Reference weight-for-age. 5-10 years, males and females

Age	Males			Females		
	Percent of Reference			Percent of Reference		
	100%	90%	80%	100%	90%	80%
year	kg	kg	kg	kg	kg	kg
5	18.7	16.8	15.0	17.7	15.9	14.2
5½	19.7	17.7	15.8	18.6	16.7	14.9
6	20.7	18.6	16.6	19.5	17.6	15.6
6½	21.7	19.5	17.4	20.6	18.5	16.5
7	22.9	20.6	18.3	21.8	19.6	17.4
7½	24.0	21.6	19.2	23.3	21.0	18.6
8	25.3	22.8	20.4	24.8	22.3	19.8
8½	26.7	24.0	21.4	26.6	23.9	21.3
9	28.1	25.3	22.5	28.5	25.7	22.9
9½	29.7	26.7	23.8	30.5	27.5	24.4
10	31.4	28.3	25.1	32.5	29.3	26.0

Table A3

Reference weight-for-length. 49-85 cm, sexes combined

Length	Percent of Reference			
	100%	90%	80%	70%
cm	kg	kg	kg	kg
49	3.3	3.0	2.6	2.3
50	3.4	3.1	2.7	2.4
51	3.5	3.2	2.8	2.5
52	3.7	3.3	3.0	2.6
53	3.9	3.5	3.1	2.7
54	4.1	3.7	3.3	2.9
55	4.3	3.9	3.4	3.0
56	4.6	4.1	3.7	3.2
57	4.8	4.3	3.8	3.4
58	5.1	4.6	4.1	3.6
59	5.4	4.9	4.3	3.8
60	5.6	5.0	4.5	3.9
61	5.9	5.3	4.7	4.1
62	6.2	5.6	5.0	4.3
63	6.5	5.9	5.2	4.6
64	6.8	6.1	5.4	4.8
65	7.1	6.4	5.7	5.0
66	7.4	6.7	5.9	5.2
67	7.6	6.8	6.1	5.3
68	7.9	7.1	6.3	5.5
69	8.2	7.4	6.6	5.7
70	8.5	7.7	6.8	6.0
71	8.7	7.8	7.0	6.1
72	9.0	8.1	7.2	6.3
73	9.2	8.3	7.4	6.4
74	9.5	8.6	7.6	6.7
75	9.7	8.7	7.8	6.8
76	9.9	8.9	7.9	6.9
77	10.2	9.2	8.2	7.1
78	10.4	9.4	8.3	7.3
79	10.6	9.5	8.5	7.4
80	10.8	9.7	8.6	7.6
81	11.0	9.9	8.8	7.7
82	11.2	10.1	9.0	7.8
83	11.4	10.3	9.1	8.0
84	11.6	10.4	9.3	8.1
85	11.8	10.6	9.4	8.3

Table A4

Reference weight-for-height. 75-125 cm, sexes combined

Height	Percent of Reference			
	100%	90%	80%	70%
cm	kg	kg	kg	kg
75	9.9	8.9	7.9	6.9
76	10.2	9.2	8.2	7.1
77	10.4	9.4	8.3	7.3
78	10.6	9.5	8.5	7.4
79	10.8	9.7	8.6	7.6
80	11.0	9.9	8.8	7.7
81	11.2	10.1	9.0	7.8
82	11.4	10.3	9.1	8.0
83	11.6	10.4	9.3	8.1
84	11.8	10.6	9.4	8.3
85	12.0	10.8	9.6	8.4
86	12.2	11.0	9.8	8.5
87	12.4	11.2	9.9	8.7
88	12.6	11.3	10.1	8.8
89	12.8	11.5	10.2	9.0
90	13.0	11.7	10.4	9.1
91	13.2	11.9	10.6	9.2
92	13.4	12.1	10.7	9.4
93	13.8	12.4	11.0	9.7
94	14.0	12.6	11.2	9.8
95	14.2	12.8	11.4	9.9
96	14.5	13.1	11.6	10.2
97	14.8	13.3	11.8	10.4
98	15.2	13.7	12.2	10.6
99	15.3	13.8	12.2	10.7
100	15.6	14.0	12.5	10.9
101	15.9	14.3	12.7	11.1
102	16.1	14.5	12.9	11.3
103	16.4	14.8	13.1	11.5
104	16.7	15.0	13.4	11.7
105	17.0	15.3	13.6	11.9
106	17.2	15.5	13.8	12.0
107	17.5	15.8	14.0	12.3
108	17.9	16.1	14.3	12.5
109	18.2	16.4	14.6	12.7