

# 8. APPENDICES

## 8.1 Abbreviations

<b>CDAAE</b>	Committee for Drought Aid Africa-Ethiopia
<b>CFP</b>	Child Feeding Programme
<b>cm</b>	centimetre
<b>CRDA</b>	Christian Relief & Development Association
<b>CRS</b>	Catholic Relief Services
<b>CSM</b>	Corn Soy Milk
<b>DRC</b>	Drought Relief Committee
<b>DSM</b>	Dried Skimmed Milk
<b>ENI</b>	Ethiopian Nutrition Institute
<b>EPI</b>	Extended Programme of Immunisation
<b>ERCS</b>	Ethiopian Red Cross Society
<b>ETCA</b>	Ethiopian Transport Construction Authority
<b>EWWCA</b>	Ethiopian Water Works & Construction Authority
<b>FA</b>	Farmers' Association
<b>FAWcDA</b>	Forest & Wildlife conservation & Development Auth.
<b>FCM</b>	Full Cream Milk
<b>g</b>	gramme
<b>HA</b>	Health Assistant
<b>HED</b>	High Energy Drink
<b>HEM</b>	High Energy Milk
<b>HFA</b>	Height for Age
<b>ICRC</b>	International Committee of the Red Cross
<b>IP</b>	intra-peritoneal
<b>IU</b>	International Unit
<b>IV</b>	intravenous
<b>kcal</b>	kilocalorie
<b>km</b>	kilometre
<b>LORCS</b>	League of Red Cross Societies
<b>m</b>	metre
<b>mcg</b>	microgramme
<b>mg</b>	milligramme
<b>MJ</b>	megajoule
<b>mo</b>	month
<b>MOH</b>	Ministry of Health
<b>MUAC</b>	Mid Upper Arm Circumference
<b>NATRACOR</b>	National Transport Corporation
<b>NFW</b>	Nutrition Field Worker
<b>NG</b>	naso-gastric
<b>NGO</b>	Non Governmental Organisation
<b>ORS</b>	Oral Rehydration Solution
<b>OPD</b>	Out Patient Department
<b>PLW</b>	Pregnant or Lactating Woman
<b>RRC</b>	Relief and Rehabilitation Commission
<b>SCF</b>	Save the Children Fund
<b>SWF</b>	Soya Wheat Flour
<b>UNICEF</b>	United Nations Children's Fund
<b>WFA</b>	Weight for Age
<b>WFL/H</b>	Weight for Length / Height
<b>WPE</b>	Workers' Party of Ethiopia

## 8.2 How to make a length board

### Suggestions for constructing a length-measuring board

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#### 1. Materials required

1.1 Wooden planking, approximately 30cm wide and 2cm thick, cut into the following lengths:

- 1 of 150cm
- 2 of 10cm
- 2 of 10cm x 10cm

1.2 5cm x 5cm timber, cut into 2 lengths of 30cm.

1.3 2 fibreglass tape measures (graduated by 0.5cm).

1.4 Wood glue, preferably one which is transparent when dry.

1.5 Screws.

#### 2. General points

2.1 Construct the length-board according to the plan below.

2.2 Glue and screw all joints, for strength.

2.3 Countersink all screws, for safety.

2.4 Avoid screw-heads on the underside of the head-slide, to prevent wear on the tape measures.

2.5 Glue the tape measures to the length-board along their entire length, to avoid slipping or stretching. If possible, coat the surface of the tapes with (transparent) wood glue, both to protect the markings on the tapes and to provide a smooth surface for the head-slide to run on.

2.6 Also coat the underside of the head-slide with wood glue, to provide a smooth surface.

#### 3. Insertion of the tape measures

3.1 After fixing the foot-board to the length-board mark a line on the length-board at exactly 50cm from the foot-board.

3.2 Cut a hole through the full thickness of the length-board, on the foot-board side of the 50cm line.

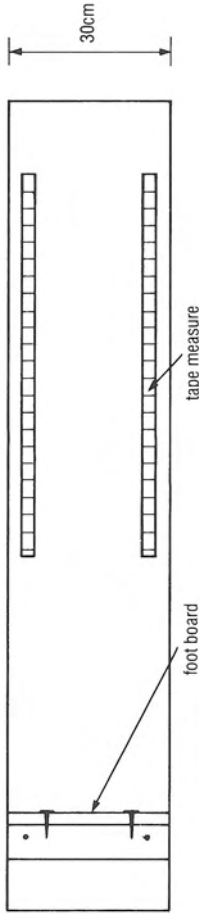
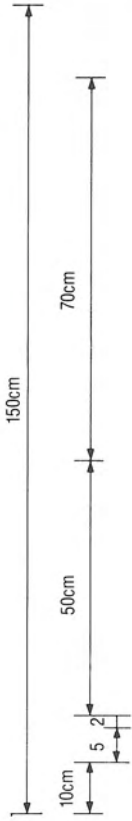
3.3 Thread the zero end of the tape measure through the hole, and pull it through until the 50cm mark on the tape is exactly aligned with the 50cm mark on the length-board. Glue it in place.

3.4 Fill the hole with a wedge and glue, making sure that the surface is level with the length-board. Using a steel tape measure, check that the tape is accurately placed.

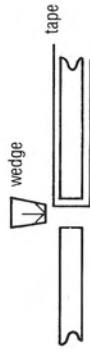
3.5 Repeat for the other tape measure.

# How to make a lengthboard

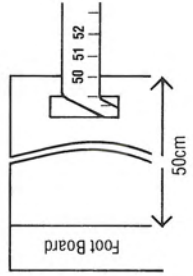
FROM ABOVE:



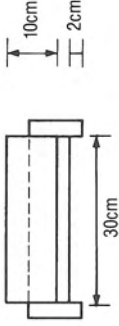
FROM THE SIDE:



DETAIL:



THE HEAD SLIDE:



FROM ABOVE:



FROM THE SIDE:



## 8.3 Mid upper arm circumference

1. Explain that you are only going to measure the left arm and it will not hurt - children usually expect a needle! If the child is very young, get mother to hold it in her arms, with the left arm outwards. For older children you must kneel or squat down by the child's left side. Do not bend down; if you do, you will get backache and bad measurements.
2. Expose the whole of the left arm. Bend the arm at the elbow so that the left hand rests on the stomach. (With small children you can hold the child's hand with three fingers of your left hand, keeping the thumb and index free).
3. Place the left index finger on the bone at the end of the shoulder, then place the zero end of the measuring tape between the finger-tip and the end of the bone.
4. Measure the distance - to the nearest whole centimetre - between the tip of the shoulder and the point of the elbow, using the right hand. Do not move your left index finger - leave it on the shoulder bone. Work out what half the measured distance is - to the nearest half centimetre - and place your left thumb over the exact point on the measuring tape, ie at the mid-point between the shoulder tip and the end of the elbow-bone. Your left index finger should be kept on the tape at the shoulder end while placing the left thumb exactly half way down the arm. Once you have placed it, **DO NOT MOVE YOUR LEFT THUMB**. (You can now move your left index finger).
5. Remove the tape from under your left thumb and keep the thumb in exactly the same place.
6. Straighten the child's arm so that it hangs by his side. If necessary, hold the child's arm straight with the fingers of your left hand. Do NOT move your left thumb .
7. Take the tape in your right hand and pass the zero end under the child's arm, towards the left. Bring the zero end of the tape round to the front of the child's arm, above your left thumb, then slide the end under your left thumb. Let about 1 cm of tape stick out to the right of your thumb.
8. Pull the long end of the tape firmly, but not tightly, around the child's arm, towards your left thumb, and read off the measurement where the tape crosses the short zero end that you have left sticking out from under your left thumb. Repeat this two or three times, until you get the same measurement twice. The circumference of the arm should be measured to the nearest millimetre.
9. The measurement should be written down immediately, with information like identity number, name, age, etc.

## 8.4 Weighing

8.4

Weighing. Spot the errors!

1. tripod too short — weigher should not have to bend to read scales
2. use hands to steady the scales, but take them OFF while reading the weight.

(Photo: Tony Nash)

1. Suspend the scales so that you will be able to get your eyes level with the needle when you are standing upright. You should not have to look up at the scale. There should be at least 1 metre clearance all around the scales. Remove any stones etc. that are lying on the ground below and around the scales, so that if a child falls it will be less likely to be hurt.
2. CHECK THE SCALES at the beginning of each session, (and if you have dropped them on the ground!).

2.1 Place the baby sling (or the pants) on the hook and zero the balance. Your eyes should be level with the scale, where the '0' mark is. Place "the stone" in the baby sling, and suspend it



from the hook. Get your feet out of the way in case it falls. Now get your eyes level with the end of the needle, at a distance of about 30 cm, and read the weight of "the stone". Repeat the whole procedure to make sure you have got it right.

**2.2** Remove "the stone" and put it away in a safe place. If there is a difference between the known weight and the reading, then all subsequent readings must be corrected by that amount. For example, if the known weight is 18.2 kg and the scale reads 18.4 kg (+0.2 kg), then you must deduct 0.2 kg from the results you get. This should only be done for a short time. A balance which gives incorrect readings or which does not zero easily and properly should be replaced as soon as possible.

**2.3** Hang the empty pants on the hook and check that the balance reads zero. This should be done before each weighing.

**3.** Put the pants on the child, lift it (NOT by the loop) and place the loop over the hook. As you lower the child check that the loop is right over the hook. With older children the loop can be slipped over the hook while the child stands beneath the balance, the child must then bend its legs up off the ground in order to swing freely from the hook. Check the child is hanging freely and not touching anything, or being held. Older children can be asked to grab the hook and hang from it.

**4.** Hold the side of the balance to stop it rotating, being careful not to pull it out of the vertical position. Don't touch the mechanism at the bottom of the balance. When the balance is steady, take your hands off while you read the weight. Get your eyes level with the needle and take the reading, which should be called out to the registrar and called back, as you take it. The reading should be made to the nearest 0.1 kg; if the balance is only calibrated to 0.5 kg then you must estimate the readings in between the divisions.

## 8.5 Measuring length

**1.** All children must be measured lying face upwards on the measuring board. Three people, two observers and a registrar, are needed to measure a child accurately.

**2.** The board should be off the ground but not too high - this is a compromise between having to lift the bigger children onto the board or having to bend down to make the readings. Supporting the board with two butteroil cartons or 100 litre cooking barrels, or 2 chairs, is about right.

**3.** Move the slide out of the way to the high end of the board and sit the child centrally on the board with its feet firmly, and flat,



8.5  
Measuring length.  
(Photo: Tony Nash)

against the fixed footboard. This is best done by the observer grasping the child's ankles and then sliding the soles of the feet down the footboard until the ankles are firmly against the board and there is no gap between the soles of the feet and the board. One hand now holds the top of both ankles firmly while the other is used to flatten the knees against the board.

4. While this is being done the second observer supports the child by placing one hand behind its neck and lowers its head gently onto the board, making sure that the shoulders are flat on the board. The left hand is now used to grasp the child's chin and raise it so that the eyes are pointing directly upwards, and the slide is moved with the right hand so as to be in firm contact with the top of the head. After checking that the feet are still secure, the observer now adjusts the slide so that the same reading is obtained on both tapes. The observer's eyes must be vertically over the slide. The observer then calls the reading out to the registrar, who writes it down in the correct column and calls it back before the child gets up from the board. Length should be determined to the nearest 0.5 cm.

## 8.6 WFL table

WFL Table = Weight (in kg) For Length (Based on US NCHS 1976)

Cms	100% WFL	80% WFL	70% WFL	Cms	100% WFL	80% WFL	70% WFL
50	3.4 kg	2.7 kg	2.4 kg	80	10.8 kg	8.6 kg	7.5 kg
50.5	3.5	2.8	2.5	80.5	10.9	8.7	7.6
51	3.5	2.8	2.5	81	11	8.8	7.7
51.5	3.6	2.9	2.5	81.5	11.1	8.9	7.8
52	3.7	3	2.6	82	11.2	9	7.8
52.5	3.8	3	2.7	82.5	11.3	9	7.9
53	3.9	3.1	2.7	83	11.4	9.1	8
53.5	4	3.2	2.8	83.5	11.5	9.2	8.1
54	4.1	3.3	2.9	84	11.6	9.3	8.1
54.5	4.2	3.4	2.9	84.5	11.7	9.4	8.2
55	4.3	3.4	3	85	11.8	9.4	8.3
55.5	4.5	3.6	3.2	85.5	11.9	9.5	8.3
56	4.6	3.7	3.2	86	12	9.6	8.4
56.5	4.7	3.8	3.3	86.5	12	9.6	8.4
57	4.8	3.8	3.4	87	12.1	9.7	8.5
57.5	5	4	3.5	87.5	12.2	9.8	8.5
58	5.1	4.1	3.6	88	12.4	9.9	8.6
58.5	5.2	4.2	3.6	88.5	12.5	10	8.8
59	5.4	4.3	3.8	89	12.6	10.1	8.8
59.5	5.5	4.4	3.8	89.5	12.7	10.2	8.9
60	5.6	4.5	3.9	90	12.8	10.2	9
60.5	5.8	4.6	4.1	90.5	12.9	10.3	9
61	5.9	4.7	4.1	91	13	10.4	9.1
61.5	6.1	4.9	4.3	91.5	13.1	10.1	9.2
62	6.2	5	4.3	92	13.2	10.6	9.2
62.5	6.3	5	4.4	92.5	13.3	10.6	9.3
63	6.5	5.2	4.6	93	13.5	10.8	9.5
63.5	6.6	5.3	4.6	93.5	13.6	10.9	9.5
64	6.8	5.4	4.8	94	13.7	11	9.6
64.5	6.9	5.5	4.8	94.5	13.8	11	9.6
65	7.1	5.7	5	95	14	11.2	9.8
65.5	7.2	5.8	5	95.5	14.1	11.3	9.9
66	7.4	5.9	5.2	96	14.2	11.4	9.9
66.5	7.5	6	5.3	96.5	14.4	11.5	10.1
67	7.6	6.1	5.3	97	14.5	11.6	10.2
67.5	7.8	6.2	5.5	97.5	14.6	11.7	10.2
68	7.9	6.3	5.5	98	14.8	11.8	10.4
68.5	8.1	6.5	5.7	98.5	14.9	11.9	10.4
69	8.2	6.6	5.7	99	15.1	12.1	10.6
69.5	8.3	6.6	5.8	99.5	15.2	12.2	10.7
70	8.5	6.8	6	100	15.4	12.3	10.8
70.5	8.6	6.9	6.0	100.5	15.5	12.4	10.9
71	8.7	7	6.1	101	15.6	12.5	10.9
71.5	8.9	7.1	6.2	101.5	15.8	12.6	11.1
72	9	7.2	6.2	102	15.9	12.7	11.1
72.5	9.1	7.3	6.4	102.5	16.1	12.9	11.3
73	9.2	7.4	6.4	103	16.2	13	11.3
73.5	9.4	7.5	6.6	103.5	16.4	13.1	11.5
74	9.5	7.6	6.6	104	16.5	13.2	11.6
74.5	9.6	7.7	6.7	104.5	16.7	13.4	11.7
75	9.7	7.8	6.8	105	16.8	13.4	11.8
75.5	9.8	7.8	6.9	105.5	16.9	13.5	11.8
76	9.9	7.9	6.9	106	17.1	13.7	12
76.5	10.1	8.1	7.1	106.5	17.2	13.8	12
77	10.2	8.2	7.1	107	17.4	13.9	12.2
77.5	10.3	8.2	7.2	107.5	17.5	14	12.3
78	10.4	8.3	7.2	108	17.7	14.2	12.4
78.5	10.5	8.4	7.4	108.5	17.8	14.2	12.5
79	10.6	8.5	7.4	109	18	14.4	12.6
79.5	10.7	8.6	7.5	109.5	18.1	14.5	12.7



## 8.7 WFA table

WFA table = Standard weights (in kg) for age, 0-12 months				
MONTHS	100% WFA	80% WFA	70% WFA	60% WFA
0	3.3 kg	2.6 kg	2.3 kg	2 kg
1	4.2	3.4	2.9	2.5
2	5	4	3.5	3
3	5.7	4.6	4	3.4
4	6.4	5.1	4.5	3.8
5	7	5.6	4.9	4.2
6	7.5	6	5.3	4.5
7	8	6.4	5.6	4.8
8	8.5	6.8	6	5.1
9	8.9	7.1	6.2	5.3
10	9.2	7.4	6.4	5.5
11	9.6	7.6	6.7	5.8
12	9.9	7.9	6.9	5.9

## 8.8 Table of normal growth rates

Table of normal growth rates		
A child should weigh	& gain	At the age of
3-6 kg	800 g per month	3 months
6-9	500	9
9-15	200	39
15-21	150	79

## 8.9 Calculations

In order for your measurements to be of some use they must be standardised against some reference values. There are many ways of doing this but the most common is to calculate the percentage of the reference value. (Do not confuse this with percentile, which is a totally different concept.) In the example here we shall consider only the calculation of Percentage Weight For Length (WFL%, or simply WFL). In other cases, such as Weight For Age, Length For Age, Arm Circumference For Length etc, the method is

exactly the same; the only difference is in the table used to look up the reference values.

The tables of Weight-For-Length show a weight - the reference weight - which corresponds to a given length. These are the average values found in well-nourished populations, typically Western ones. Look down the left side of the table until you come to the length of the child. Within the table, the column marked 100% gives the reference weight corresponding to that length. Remember that 100% WFL is only the AVERAGE reference weight.

The 100% WFL for a child of 71.5 cm is 8.9 kg (see Table 1, Appendix 8.6.2). If the actual weight of the child was 6.9 kg, then:

- %WFL = 6.9 divided by 8.9, multiplied by 100 = 77.528...
- Rounded to nearest whole number this is 78%.

On most electronic calculators the above calculation is accomplished by entering 6.9, followed by the 'divide' key and then 8.9, followed by the '%' key.

If you have any difficulty 'rounding' numbers the formal rule is as follows: add 0.5, and discard all figures to the right of the decimal point. For example,  $77.528 + 0.5 = 78[0.028] = 78$ .

## **8.10 Very basic nutrition for emergency work**

### **8.10.1 Water**

Our bodies are more than half water. Water is involved in many normal body functions. We have to drink at least 1-2 litres a day to keep these functions going, and to replace all the liquid lost in sweating, crying, bleeding, urine, faeces, etc.

Replacing water quickly is especially important during attacks of diarrhoea.

### **8.10.2 Energy**

Energy is necessary for normal body functions, physical activity and growth. Without enough energy, children quickly stop growing, stop playing and become thin.

Energy is measured in kilocalories (kcal), and comes from carbohydrates and fats.

Sources: Sorghum, maize, wheat, rice, potatoes, ensete, and other cereal and root foods provide carbohydrates. Oil and fat give a very concentrated form of energy. Beans contain both forms of energy.

### 8.10.3 Protein

Protein is also essential for for maintaining and repairing the body's tissues, and for growth.

Protein is measured in grammes.

Sources of protein are beans of various sorts as well as animal foods like milk, eggs and meat.

### 8.10.4 Vitamins & minerals

These are important for normal body functions and for good health. They are measured in International Units (IU), grammes (g) or microgrammes (mcg).

**Vitamin A** helps people's eyes stay healthy. Unhealthy eyes make children night-blind, then go cloudy, then form thick white spots.

Sources: breastmilk; all milk and butter; most green, yellow and red fruits and vegetables.

**NB** Some oil or fat in the diet is essential for the body to absorb Vitamin A.

**Vitamin D** ensures proper bone formation and growth. Rickets ('bandy legs') is the result of not enough Vitamin D.

Sources are sunlight, fish, liver, butter, eggs.

**Iron** is essential for healthy blood. A person eating insufficient iron has pale insides of their eyelids and lips, instead of dark pink.

Sources are meat and beans.

Ask the doctor about treating people with signs like iron deficiency. If you have any beans or tinned meat in your store, give them to these people and to any cases of kwashiorkor.