World Vision

Nutrition Toolkit

MEASURING CHILD GROWTH FOR SURVEYS

Part 1: Training for Measuring Weight, Height and Mid-Upper Arm Circumference

Participant's Workbook

Version 1, December 2011

World Vision

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A Module of the Nutrition Toolkit

MCGS

Participant's Workbook

Version 1, December 2011

Nutrition Centre of Expertise
World Vision International, Global Health and WASH

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The Measuring Child Growth for Surveys Tool, Part 1: Training for Measuring Weight, Height and Mid-Upper Arm Circumference, one tool within the Nutrition Toolkit, contains all the essential information needed for a trainer who is building the skills and competencies of those who take anthropometric measurements in surveys.

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We hope that the Measuring Child Growth for Surveys Tool, Part 1 will enhance your efforts to build capacity in field staff to measure accurately weights, heights and MUAC of children in surveys so that their nutritional status can be determined. Ultimately, we want to see improvements in children's nutritional status so they can reach their full potential.

Sincerely,

Miriam Yiannakis
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Welcome to the Training for Measuring Weight, Height and Mid-Upper Arm Circumference.

Proper measurement of children during surveys helps us assess and monitor changes in child nutritional status.

Measuring Child Growth (Anthropometrics)

Proper measurement of child growth is an important part of assessment and evaluation surveys (including World Vision Child Well-Being Outcomes and Indicators), sponsorship programmes, sector-specific projects in nutrition, health, food security or other areas, and emergency programmes. By measuring child growth, we get information that helps us determine the levels of malnutrition within our communities and informs our programming decisions. Over time, we can monitor changes in nutritional status to see if we are reaching the target. The Measuring Child Growth for Surveys, Part 1 module of the Nutrition Toolkit is designed to increase factual knowledge, understanding and practical skills of people responsible for measuring child growth in the context of population surveys.

There are several different tasks involved in measuring child growth. These include taking accurate measurements of height, weight and size of the upper arm. Other tasks are collecting accurate information about the date of birth, age and sex of children and recording this information. The calculations of nutritional status and interpretation of data will be covered in Measuring Child Growth for Surveys, Part 2: Training for Data Entry, Analysis and Interpretation. This information will be used to determine if there is widespread malnutrition within a community or population.

This module of the Nutrition Toolkit will help you to understand how to collect anthropometric information. Lessons will show the practical steps for correctly measuring height, weight, upper-arm size and age of children.

Welcome and Introduction

Workshop Purpose

To train participants to take accurate anthropometric measurements in a survey.

Skills To Learn

Skill 1. We will learn how to measure weight of children under 5 years.
Skill 2. We will learn to measure children's length.
Skill 3. We will learn to measure children's height.
Skill 4. We will learn to find a child's date of birth for calculating age.
Skill 5. We will learn how to record information clearly on forms.
Skill 6. We will learn to measure mid-upper arm circumference.

	Day 1	Day 2
Early Morning	Lesson 1 – Welcome and Introduction (20 min) Lesson 2 – What Is Anthropometry? (20 min) Lesson 3 – Information About Sex and Age of Children Under 5 (45 min)	Lesson 7 – Measuring Mid-Upper Arm Circumference (1 hour) Lesson 8 – Standardisation Exercise (3 hours)
Break		
Late Morning	Lesson 4 – Measuring Weight - Hanging Scales (2 hours)	Lesson 8 – Standardisation Exercise continued Closing
Lunch		
Early Afternoon	Lesson 5 – Measuring Weight - Standing Scales (2 hours)	
Break		
Late Afternoon	Lesson 6 – Measuring Length and Height (2 hours)	

Steps for Anthropometric Surveys*

1. Define survey objectives
2. Budget for the survey
3. Choose the survey design
4. Plan for personnel, facilities and equipment
5. Select the sample
6. Develop the questionnaire
7. Pre-test the questionnaire
8. **Train personnel**
9. **Standardise the anthropometric technique**
10. Interview
11. Supervise the data collection
12. Edit and code the interviews
13. Tabulate the data
14. Analyse and report the survey results

Procurement List

- Equipment bag
- List of assigned households and their addresses (or location)
- Map of the area
- Log book
- Pre-numbered questionnaires for assigned households
- Spare questionnaires
- Waterproof envelopes for blank and completed questionnaires
- Weighing scale*
- Scale hooks
- Piece of rope for scales
- Storage box for scales
- Height/length measuring board*
- Sliding head/foot pieces
- Clipboard
- Stapler and box of staples
- Pencils and pencil sharpener
- Eraser
- Pens
- Spare paper
- Spare alkaline AA batteries

* Cogill, Bruce. *Anthropometric Indicators Measurement Guide.* Food and Nutrition Technical Assistance Project, Academy for Educational Development, Washington, D.C., 2003. Online at: http://www.fantaproject.org/publications/anthropom.shtml, accessed December 14, 2011

Welcome and Introduction

How Can We Use Anthropometric Information?

Assessment:

a) To know whether there is current or potential risk of malnutrition in an individual child;
b) To identify the presence and severity of a nutrition problem in a community.

Targeting:

a) To identify need;
b) To prioritise resources;
c) To screen individuals for programme services.

a) To track individual growth patterns;
b) To show programme performance.

Evaluation:

a) To evaluate and measure changes in nutrition over time;
b) To demonstrate programme impact on individuals and on the community.

Advocacy:

a) To advocate for increased programmes and services to address child malnutrition (such as increased funding for salaries, supplies and primary health and nutrition services.

What Is Anthropometry?

Define Anthropometrics

Why do we weigh and measure children under 5 years of age?

The three main reasons for focusing on this age range are:

- Children under 5 grow very rapidly; this is especially true for the period from birth to two years of age. This growth includes physical growth as well as mental development.
- How well children grow in their first five years will influence how healthy they are for the rest of their lives, how well they will be able to fight infections and illness and how well they will learn in school. This information will be used to determine nutritional status.
- The nutritional status of children under 5 is a reflection (sometimes called a proxy indicator) of the nutrition of the whole community.

What do the measurements tell us about the community's nutritional status?

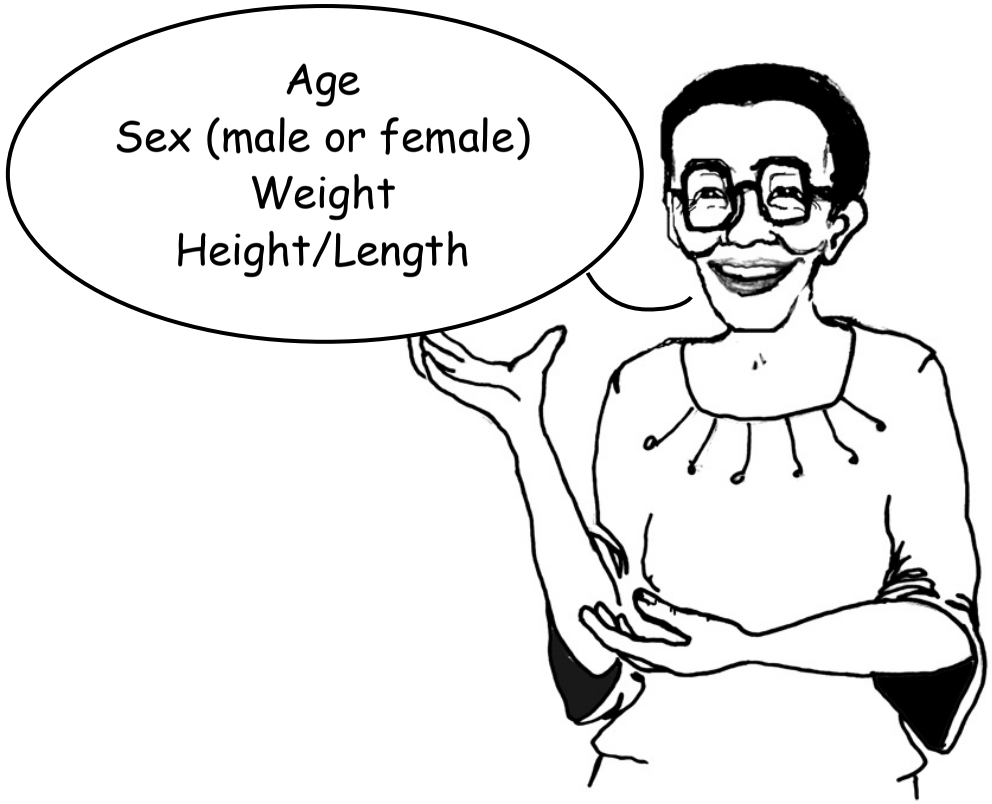
a) We can combine the growth information from all the children to see whether the rate of malnutrition in a community is low, medium or high (i.e. assessment).

b) A high level of malnutrition means we need to start or strengthen nutrition interventions (i.e. targeting).

c) Medium or high levels of malnutrition indicate that there may be problems in the community (for example, lack of access to care, clean water, healthy food) (i.e. targeting).

d) By measuring the level of malnutrition in a community at regular intervals, we can see how well our nutrition interventions are working (i.e. monitoring, evaluation).

Four Key Measurements for Calculating Anthropometric Indices



Three Indices Used To Assess the Nutritional Status of Children

1. _____

2. _____

3. _____

What are Anthropometric Measurements?

Wasting (low weight-for-height/length)

- identifies children who are 'wasted' or thinner than a healthy child of the same height/length.
- describes children who have stopped growing and may be losing weight
- reflects recent, short-term (acute) malnutrition
- is useful for individual assessment, as well as community assessment, especially in an emergency situation.
- may be influenced by annual seasons and times of food insecurity

Stunting (low height/length-for-age)

- identifies children who are 'stunted' or shorter than expected for a healthy child of the same age
- growth in height slows when a child is undernourished
- a child who is stunted has been undernourished for a long time, so we call that chronic undernutrition
- measuring changes in a child's height is difficult to do accurately, and changes take a long time to happen
- measuring stunting is best for assessing the nutrition situation in a community

Underweight (low weight-for-age)

- identifies children who are 'underweight' or weigh less than expected for a healthy child of the same age.
- describes a child who may weigh less because the child has lost weight, has not grown normally in height, weight, or both.
- measuring the rate of increase in weight is a good way to monitor individual children because it is easy and weight changes quickly so that action can be taken to prevent worsening undernutrition.
- measuring underweight is less useful than stunting or wasting for understanding nutrition in a community because one cannot know if the undernutrition is acute or chronic.

(Continued on next page)

(continued) What are Anthropometric Measurements?

Mid-upper arm circumference (MUAC)

MUAC is relatively easy to measure and is a good predictor of risk of death. It is used for rapid screening of recent undernutrition in children (6-59 months of age), and is used for screening in emergencies, but not usually in evaluations. In areas of severe food insecurity and where there are weak growth monitoring and promotion programmes, it should be used for screening registered children.

Oedema

There is another method that we can use to identify malnutrition in children. It is to check to see if the child has oedema. Oedema is when there is excessive amounts of fluid in the body tissues. It happens when a child is severely malnourished.

When do we measure oedema?

We check for oedema in children (6-59 months) when conducting surveys that include weighing and measuring children. These surveys can be in emergency settings for surveillance or screening purposes and in development settings.

Oedema is a rare event, but we need to note it when we measure children because it affects the child's weight (that is the child weighs more, but it is not a healthy weight). Children with oedema are automatically considered "wasted" or severely malnourished.

Determining the Presence of Oedema

To check for oedema, apply moderate thumb pressure to the top of both feet for three seconds. The thumbs may leave a pit (indentation) in the foot after the thumb is lifted. If the pit remains in BOTH feet for several seconds, the child has oedema due to malnutrition. This should be confirmed by a second person who repeats the test.

It is important to test both feet because if there is oedema only in one foot, it is not a nutritional problem, but if it is in both feet, it shows a severe problem. Bilateral oedema means that oedema is present in both feet. The child with bilateral oedema needs immediate attention because they are at risk of dying from malnutrition.

If there is oedema in just one foot, or not at all, we record N in the oedema column of the data collection form. If bilateral oedema is diagnosed by the process described above, then we record Y on the data collection form.

When Do We Conduct Anthropometric Surveys?

Baseline assessment:

Annually/semi-annually throughout project implementation:

Midterm evaluation:

End of project evaluation:

Information about Sex and Age of Children Under 5

Children 0 - 59 months

Remember to:

1. Record the Date of Birth (dd/mm/yy) and the sex (M or F) of the child.
2. Record the child's height/length to nearest 0.1 cm, weight to 0.1 kg and MUAC to 0.1 cm or colour.
3. Record the date of measurement.

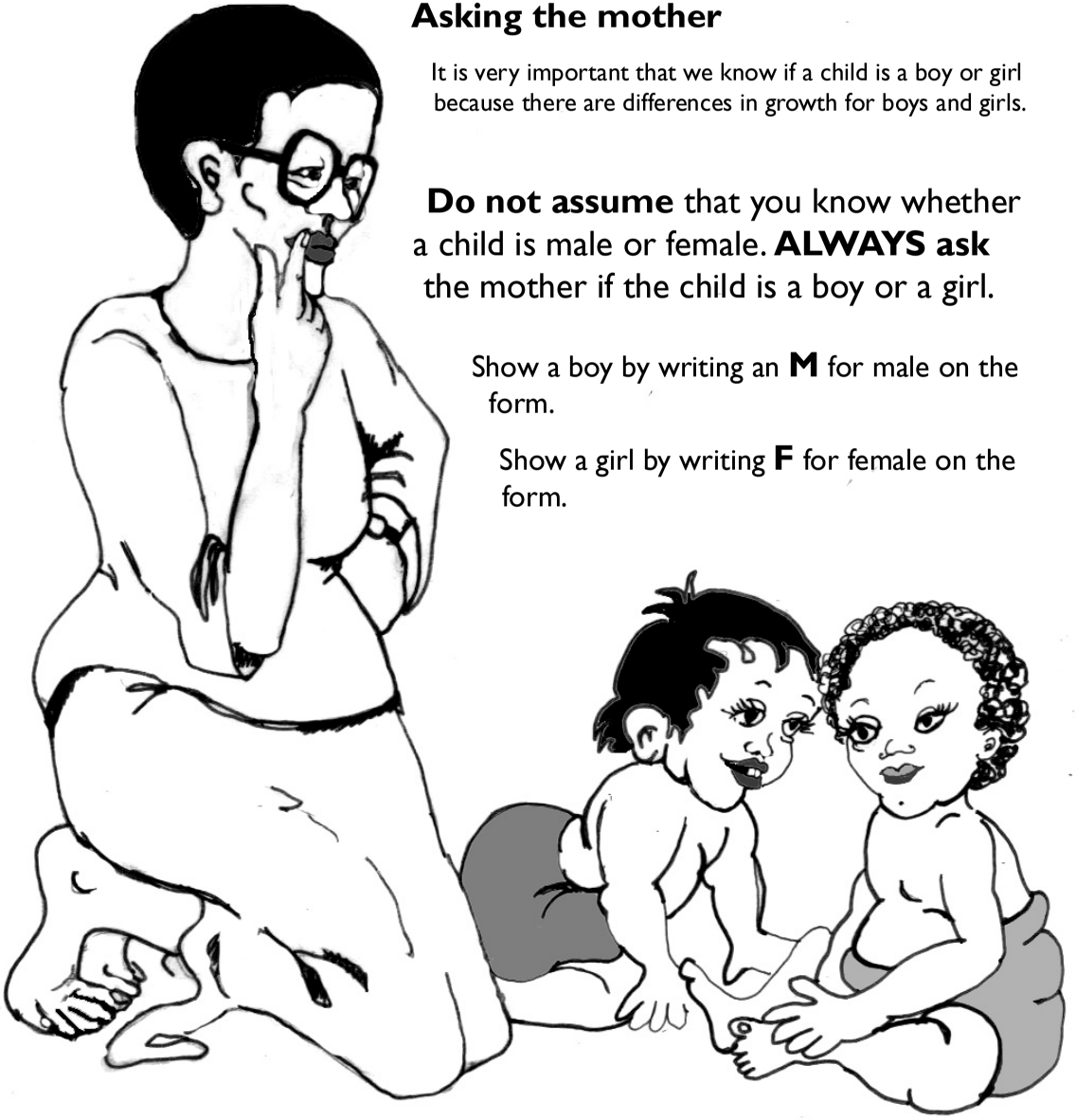
Data Collection Form

ADP/Programme: Date of Measurement (dd/mm/yy): Cluster #:

Community: Name of Data Collector: Team #:

Child ID Number	Child's First Name	Child's Last Name	Check Sex Male or Female		Date of Birth dd/mm/yy	Check Only if Date is Approx Or Unknown		Weight in KG to One Decimal	Length/ Height in CM to One Decimal	Check Length or Height		MUAC in Millimeters or Color	Oedema Presence Yes "Y" No "N"	
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N
			M	F		A	U			L	H		Y	N

Is the Child a Boy or a Girl?



Asking the mother

It is very important that we know if a child is a boy or girl because there are differences in growth for boys and girls.

Do not assume that you know whether a child is male or female. **ALWAYS ask** the mother if the child is a boy or a girl.

Show a boy by writing an **M** for male on the form.

Show a girl by writing **F** for female on the form.

Determine the Child's Date of Birth

Birth record

Ask the mother to show you the record of the child's date of birth. If the date of birth is not recorded on the child's health or immunisation card, or if the child does not have a card, ask the mother to tell you the child's date of birth.

Always record the date of birth as well as the child's current age on the Data Collection Form. Date of birth is sometimes written DOB.

In the DOB column, write the correct year, month and day according to the format used, e.g. dd/mm/yy.

When the exact DOB is unknown, estimate the DOB using a community timeline. If DOB is estimated, check Approximate Date on the form. If you are unable to estimate the date, check Unknown Date on the form.

Information about Sex and Age of Children Under 5

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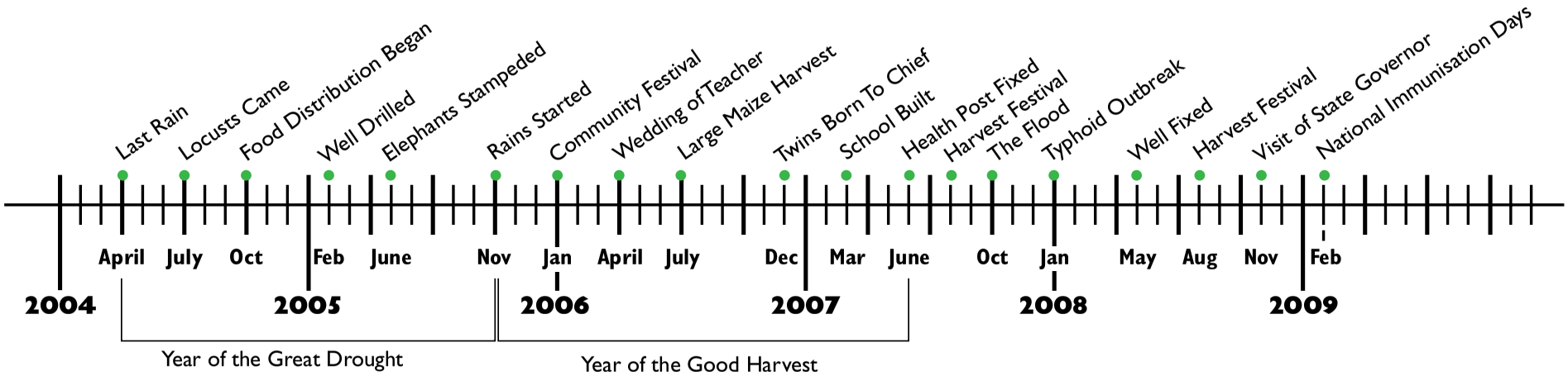

If the mother does not know the child's precise year and month of birth, use a community timeline.

Estimating Date of Birth

Information about Sex and Age of Children Under 5

May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04
Nov 04	Dec 04	Jan 05	Feb 05	Mar 05	Apr 05
May 05	Jun 05	Jul 05	Aug 05	Sep 05	Oct 05
Nov 05	Dec 05	Jan 06	Feb 06	Mar 06	Apr 06
May 06	Jun 06	Jul 06	Aug 06	Sep 06	Oct 06
Nov 06	Dec 06	Jan 07	Feb 07	Mar 07	Apr 07
May 07	Jun 07	Jul 07	Aug 07	Sep 07	Oct 07
Nov 07	Dec 07	Jan 08	Feb 08	Mar 08	Apr 08
May 08	Jun 08	Jul 08	Aug 08	Sep 08	Oct 08
Nov 08	Dec 08	Jan 09	Feb 09	Mar 09	Apr 09

Estimate Age for Participation in Survey

To help you calculate the age of a child in months, use the table:

Put a small tick (√) in the birth month.

Put a small x in the current month.

Count the number of full months starting with the month after the tick (√).

Exercises:

1. A boy was born May 3, 2005. The date of the survey measurement is December 15, 2008. What is the boy's age in months?

2. The date of the survey measurement is March 28, 2008. There is no record of the child's birth date, but the grandmother says she will be two years old next week. What is the child's age in months?

3. A small girl is identifed to be part of a survey measurement on May 29, 2008. Her birth date is recorded as July 15, 2007. What is the child's age in months?

Information about Sex and Age of Children Under 5

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Recording Numbers Clearly

CORRECT	INCORRECT
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
0	6

1 – Draw the number 1 as a single vertical line.

2,3 – Write the numbers 2 and 3 without extra loops.

4 – Leave the number 4 open. A closed 4 can look like a 9.

5 – Don't close the 5. A closed 5 can look like a 6.

6 – Be careful that the circle on the 6 does not look like a 0.

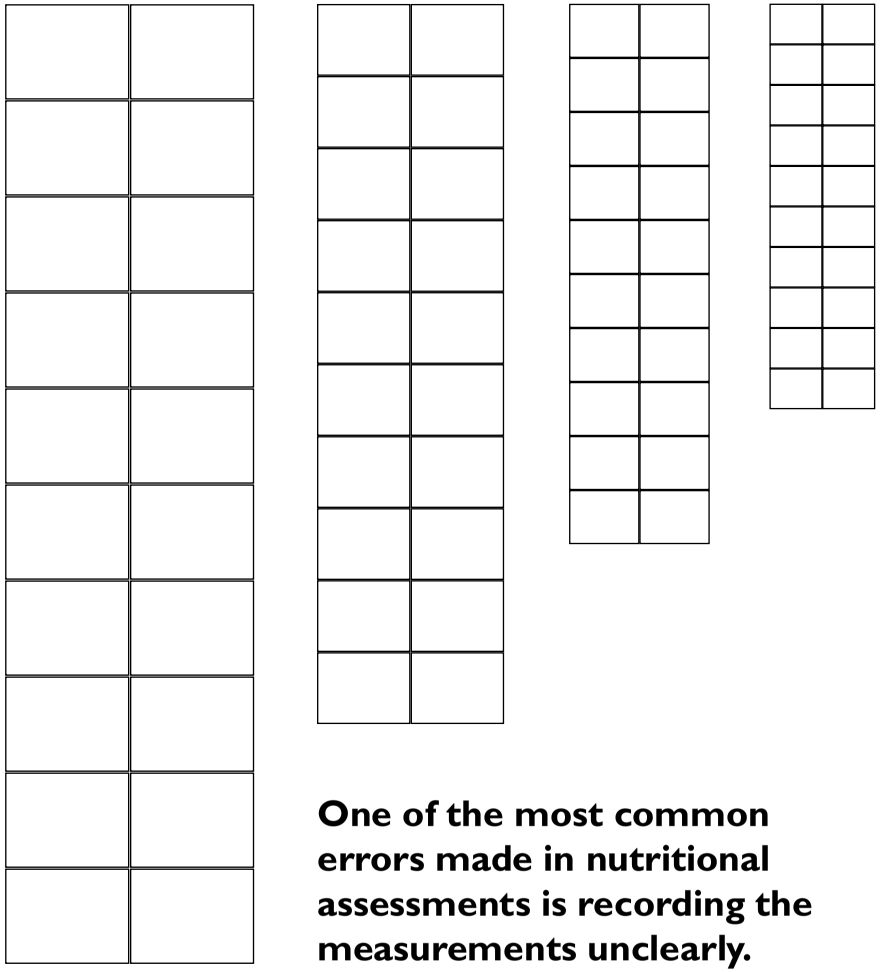
7 – Make a small horizontal line to cross the 7. This will distinguish it from a 1.

8 – Make two circles to draw the number 8 so that it does not look like a 0. Don't separate the two circles.

9 – Close the circle on the number 9 so that it does not look like a 4.

0 – Put a diagonal line through the 0 so that it is easy to identify and does not look like a 6.

Practise the Numbers in Different Sized Boxes



One of the most common errors made in nutritional assessments is recording the measurements unclearly.

Record Numbers Clearly on Sample Recording Form

Circle the errors you find on this form.

Children 0 - 59 months

Remember to:
1. Record the Date of Birth (dd/mm/yy) and the sex (M or F) of the child.
2. Record the child's height/length to nearest 0.1 cm, weight to 0.1 kg and MUAC to 0.1 cm or colour.
3. Record the date of measurement.

Data Collection Form

ADP/Program: Central — Date of Measurement (dd/mm/yy): 2089/03/15 — Cluster #: 4

Community: Dawn — Name of Data Collector: Julia — Team #: 9

Child ID Number	Child's First Name	Child's Last Name	Check Sex Male or Female	Date of Birth dd/mm/yy	Check Only if Date is Approx Or Unknown	Weight in KG to One Decimal	Length/ Height in CM to One Decimal	Check Length or Height	MUAC in Millimeters or Color	Oedema Presence Yes "Y" No "N"
	Cristy	Dawn	M G	2/03/08	A U	6.9		L H		Y N
	Ryan	Gamagan	M F	2007/3/16	A U	18.9		L H		Y N
	Maria	Bernardo	M G	08/14/29	A U	11.6		L H		Y N
	Jenen	Pangani	M F	26/12/05	A ✓ U	9.7		L H		Y N
	Kiera	Bybbs.	M G	06/16/19	A ✓ U	10.2		L H		Y N
			M F		A U	1442		L H		Y N
			M F		A U			L H		Y N
			M F		A U			L H		Y N
			M F		A U			L H		Y N
			M F		A U			L H		Y N
			M F		A U			L H		Y N
			M F		A U			L H		Y N
			M F		A U			L H		Y N
			M F		A U			L H		Y N

Measuring Weight - Hanging Scales

Weight is the measurement most commonly used to evaluate nutritional status of children.

The actual weight of a child can vary for different reasons. For example, weight can be affected by :

1. The clothes a child is wearing
2. Food/drink the child has recently consumed.
3. Incorrect calibration of the scales.
4. Incorrect placement of the scales.
5. Use of poor quality equipment.
6. Improper weighing technique.

Measuring children is not for the faint hearted!

Excerpts were taken from F. Savage King and A. Burgess, Nutrition for Developing Countries, 2nd ed. (Oxford: Oxford University Press, 1993).

Calibration

To 'calibrate' means to use known weights to see if the scales are reading correctly.

At the beginning of each day's weighing session, you should weigh two or three known weights on the scales to make sure the scales are still accurate.

For example, you can weight a five kilogram bag of grain or sack of rice that has been purchased from a store and make sure the scales read five kilograms. Make sure you do this with two or three known weights to ensure the scales are accurate.

Zeroing

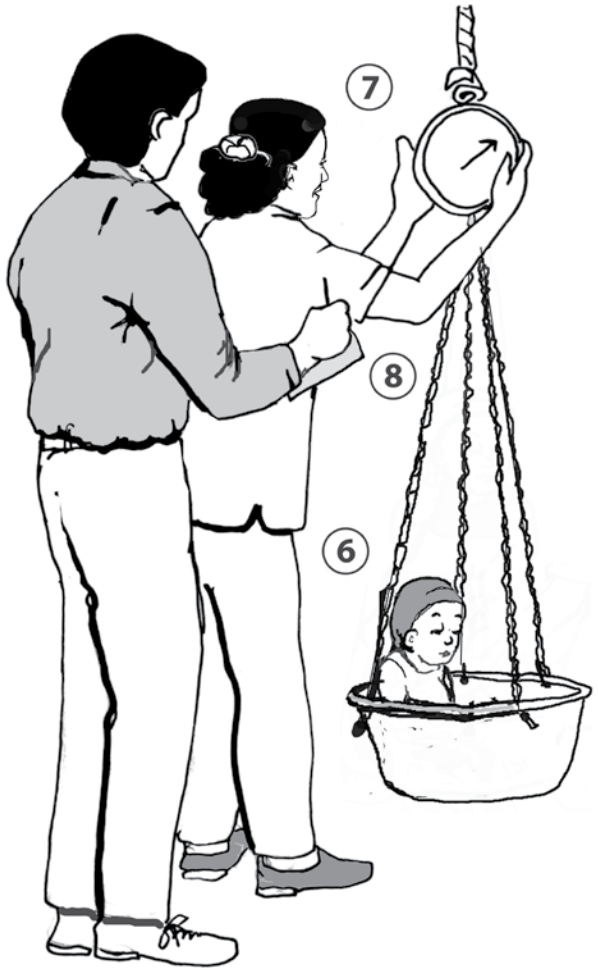
To make sure that the weighing you do is accurate, you must check the scales before you weigh each child and ensure that the needle on the scales points to zero (this is called 'zeroing' the scales).

To repeat, before you weigh a child, you must check that the needle on the scales points to 'zero' with the weighing basket or sling, but no child.

If you don't include the weighing basket or sling when zeroing the scales, then this extra weight will be added to the weight of the child and the weight recorded will be incorrect.

If the needle does not point to zero, adjust the scales using the dial or screw on the scales so the needle points to zero.

Measuring Weight With Hanging Scales



PREPARE THE SCALES

1. Hang scales from a strong support, such as a tree.
2. Set scales at eye level.
3. With weighing basket or sling attached, adjust the scales to zero.

PREPARE THE CHILD

4. Mother assists measurer to remove the child's outer clothing.
5. Place the child in basket or sling.

MEASURE CHILD'S WEIGHT

6. Support the child while attaching basket or sling to the scales.
7. Hold the scales steady and read the weight numbers aloud.
8. The measurer checks that the measurement is recorded correctly and then the assistant takes a second reading from the scale after checking for correct positioning. If the second reading is different from the first, only the average of the two readings is recorded on the form, unless the difference is greater than 0.5 kg. In this case, take a third reading.

Introduction to Standing Scales

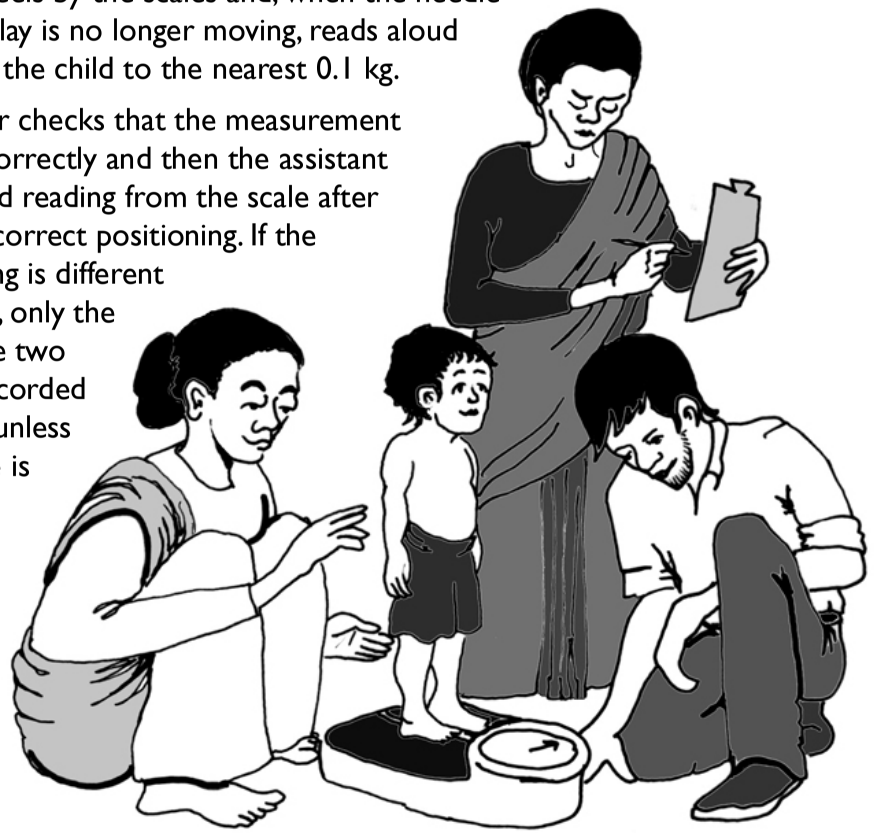
Use hanging scales whenever possible to weigh children under 5, but if they are not available, use standing scales.

Using standing scales requires an extra calculation.

1. Weigh the mother and child together.
2. Weigh the mother alone.
3. Find the weight of the child by subtracting the weight of the mother alone from the weight of the mother and child together.

Measuring Weight of Children Older than 2 Years

1. Set scales on smooth, hard surface, in good light. Scales should be out of direct sunlight because heat may affect the readings.
2. Measurer zeros the scales.
3. Ask the mother to remove the child's shoes and any outer clothing.
4. Child stands with feet at centre of scales.
5. Measurer kneels by the scales and, when the needle or digital display is no longer moving, reads aloud the weight of the child to the nearest 0.1 kg.
6. The measurer checks that the measurement is recorded correctly and then the assistant takes a second reading from the scale after checking for correct positioning. If the second reading is different from the first, only the average of the two readings is recorded on the form, unless the difference is greater than 0.3 kg. In this case, take a third reading.



Measuring Weight - Standing Scales

Measuring Weight of Children Under Two Years or Children Who Cannot Stand Well Alone

1. Set scales on smooth hard surface in good light.
2. Zero the scales.
3. Mother removes child's outer clothes.
4. Mother holds child and stands on centre of the scales.
5. Measurer reads aloud the weight of mother and child.
6. The assistant switches positions with the measurer and reads aloud a second reading. The assistant averages the two readings and puts the information on the official form.

7. Mother stands on scales alone.
8. Measurer reads the weight of the mother alone.
9. The measurer checks that the measurement is recorded correctly and then the assistant takes a second reading from the scale after checking for correct positioning. If the second reading is different from the first, only the average of the two readings is recorded on the form, unless the difference is greater than 0.3 kg. In this case, take a third reading. Measurer calculates weight of child on. Measurer calculates weight of child on form (weight of child = weight of mother+child minus weight of mother alone). Measurer checks information for accuracy.

Length or Height?

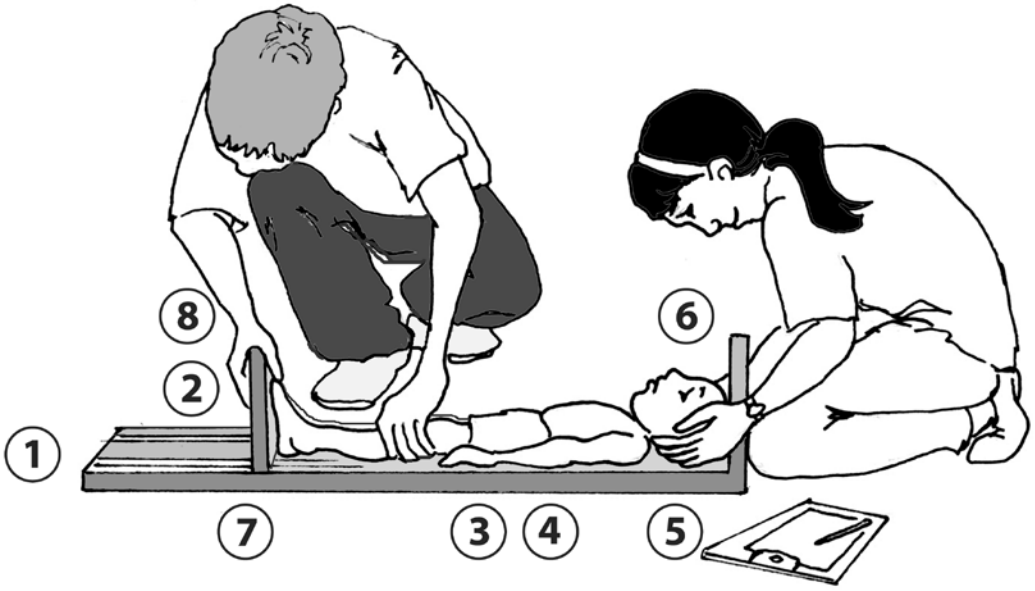
• Length = measurement of a child lying down.

• We use the length measurement for children under 2, any child who appears to be less than 80 centimetres tall, or any child who cannot stand well on their own.

• Height = measurement of a child standing up.

• We use the height measurement for children 2 years or older who can stand well alone.

• The same board is used for both measurements. It is called a length board when measuring length and a height board when measuring height.

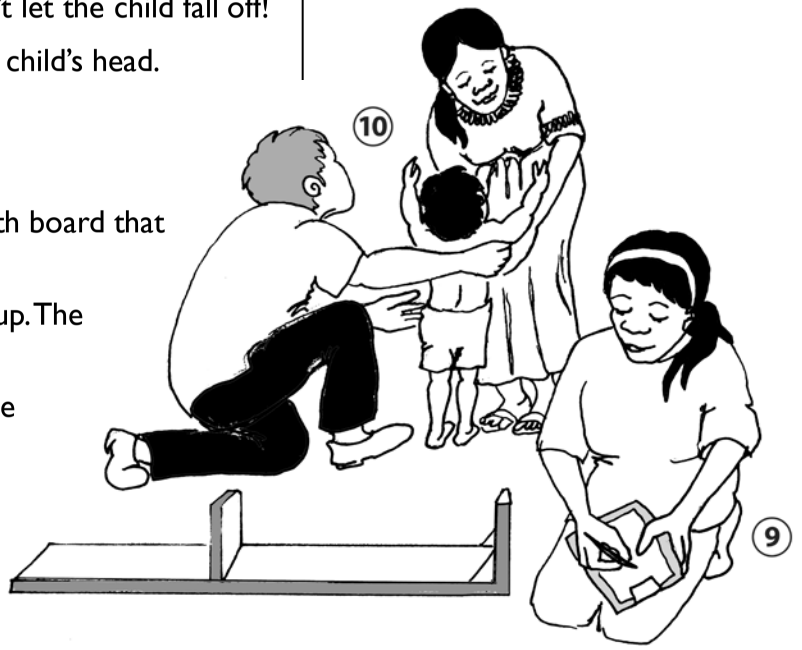


Measuring Length

1. Place the length board on flat ground or a low, flat surface. Don't let the child fall off!
2. Ask the mother to remove the child's shoes and anything on the child's head.
3. Lay the child down on its back on the length board.
4. The child's body should be completely flat on the board.
5. The top of the child's head should be against the end of the length board that does not move.
6. The assistant holds the child's head so that the child's eyes look up. The assistant should look directly into the child's eyes.
7. Press gently on the child's knees to straighten them and move the footpiece so the child's feet are flat against it.
8. Quickly read aloud the length measurement, before the child moves.

Record the Measurement

9. The measurer checks that the measurement is recorded correctly and then the assistant takes a second reading from the scale after checking for correct positioning. If the second reading is different from the first, only the average of the two readings is recorded on the form, unless the difference is greater than 1.0 cm. In this case, take a third reading.
10. Gently help the child to get up off the board and return to his or her mother.



How to Measure Height

This is the proper positioning of the height board, the measurer and the assistant.

1. Place the height board on flat ground and against a wall or tree. The board cannot move.

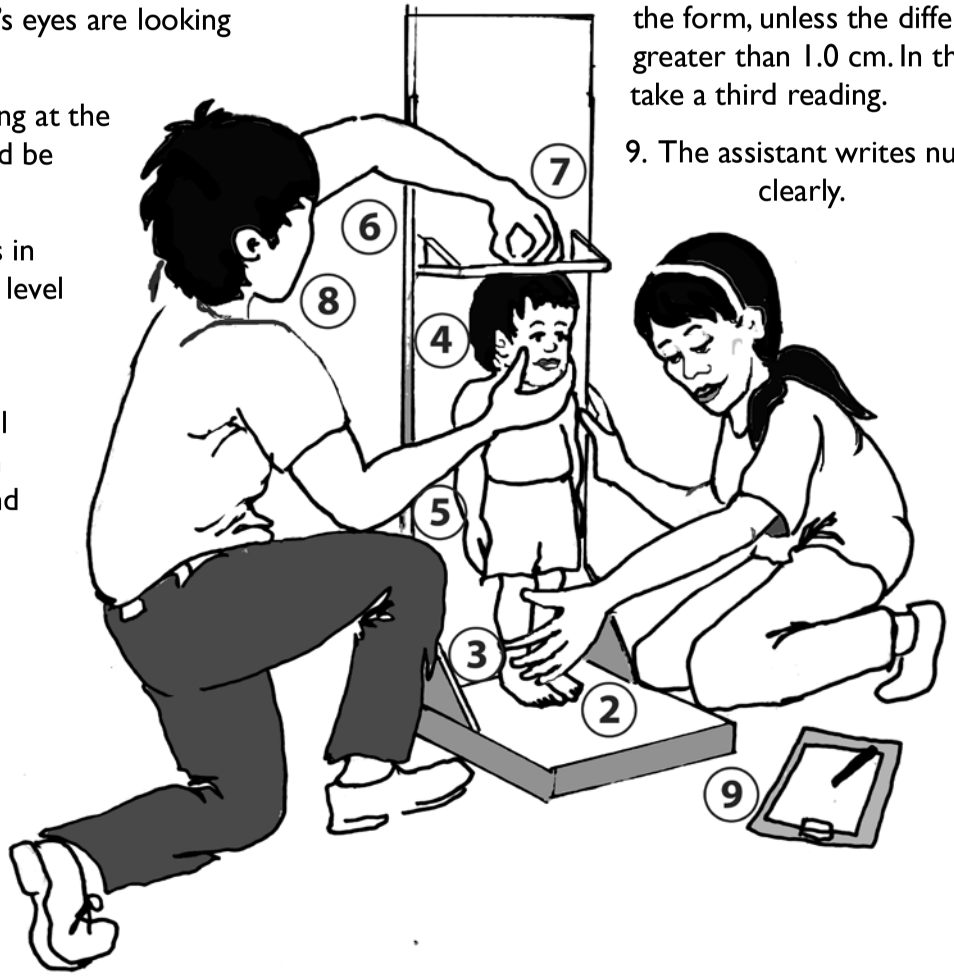
Measuring Height of Children Two Years or Older

How to Place the Child Against the Height Board

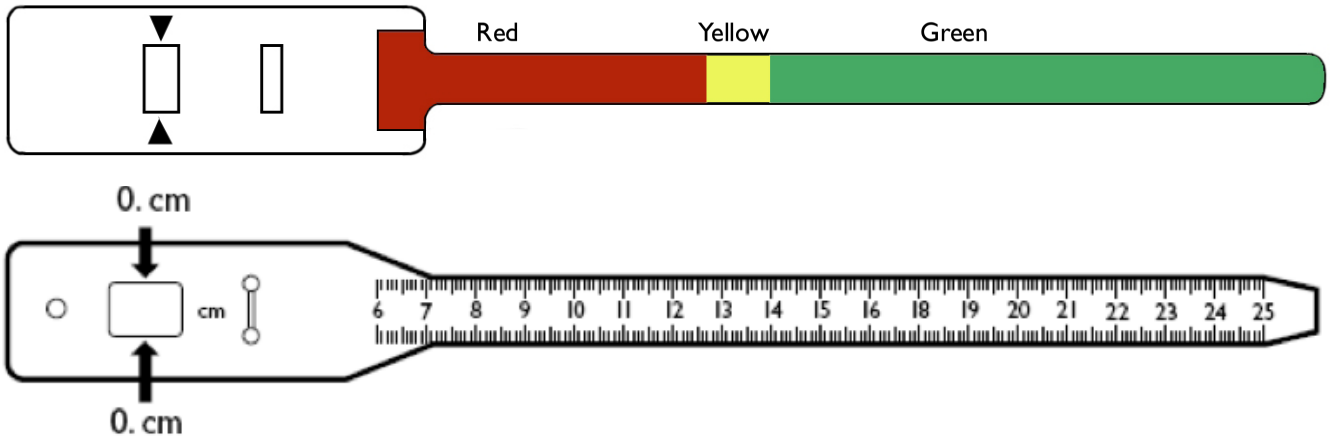
2. The child must be barefoot with nothing on his or her head.
3. Stand the child on the platform at the base of the height board with his or her body firmly against the back of the board.
4. Lift the child's chin so the child's eyes are looking straight ahead.
5. The arms should be hanging at the child's sides. The child should be standing on both feet.
6. The measurer squats in front of the child at eye level with the child.
7. Slide the moveable headpiece down until it touches the crown of the child's head and hold firmly.

Record the Measurement

8. The measurer checks that the measurement is recorded correctly and then the assistant takes a second reading from the scale after checking for correct positioning. If the second reading is different from the first, only the average of the two readings is recorded on the form, unless the difference is greater than 1.0 cm. In this case, take a third reading.
9. The assistant writes numbers clearly.



What is correct? Incorrect?



MUAC is a simple and easy body measurement that is often used for screening in emergency situations and is also used in nutrition surveys in development contexts.

MUAC helps us to determine the level of malnutrition in large groups of people quickly.

MUAC is based on the fact that a small or decreasing arm circumference signals the loss of muscle mass. (*Circumference* means 'outside edge of a circle'). Muscle mass is known to be important in maintaining body functions and in fighting infections.

MUAC is a good predictor of immediate risk of death. This is why we usually use MUAC in emergency situations, for a quick assessment of nutritional status.

MUAC is not used to measure malnutrition in children under six months because we don't have established cut-off levels for this age group.

MUAC can be used with children and adults to find the recent undernutrition rates in a population.

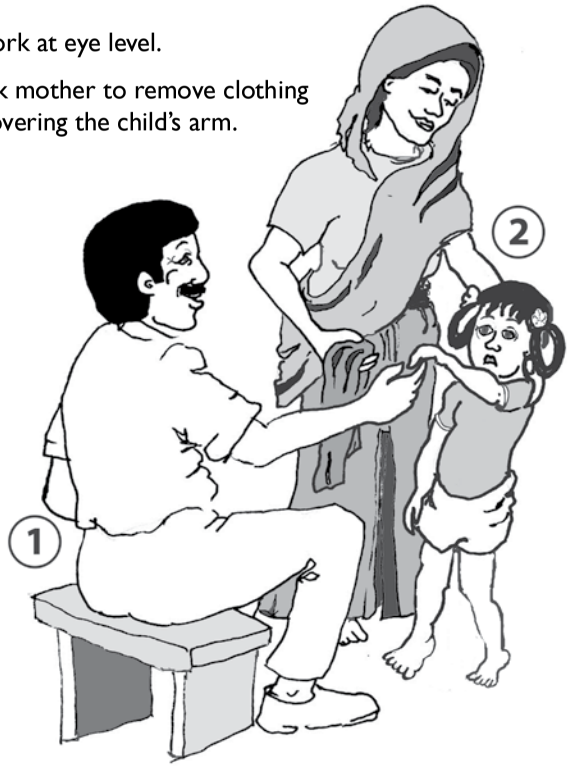
MUAC should be used to identify acute malnutrition and to estimate beneficiary numbers for emergency nutrition programmes in nutrition surveys.

MUAC Cut-off Points

- Below 11.5 (red) for severe malnutrition; needs immediate medical attention
- 11.5 - 12.4 cm (yellow) for moderate malnutrition
- A measurement of 12.5 cm or greater (green) is considered a normal mid-upper arm circumference.

The cut-off point of 11.0 cm is still used in CMAM programmes because this was the WHO recommendation in 2007 and there are high caseloads even with this lower cut-off. In 2009, WHO recommended increasing the cut-off point to 11.5 cm because evidence shows that children with mid-upper arm circumference less than 11.5 cm are at greater risk of death than those above this cut-off.

1. Work at eye level.
2. Ask mother to remove clothing covering the child's arm.



Mid-Upper Arm Circumference (MUAC)

3. Locate the tip of the child's shoulder with your fingertips.

4. Bend the child's elbow so the arm makes a right angle.

5. Estimate where the middle of the upper arm is between the shoulder tip and the elbow. Mark this as the mid-point.

6. Straighten the child's arm.

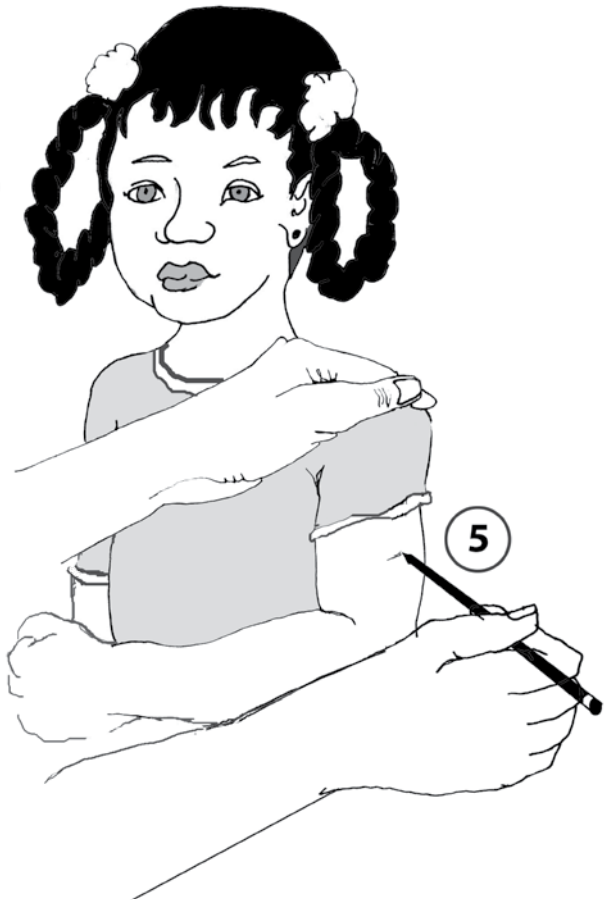
7. Wrap the MUAC tape around the child's arm at the mid-point mark you have just made. Insert the end of the tape through the thin opening at the other end of the tape.

a) Keep the colours or numbers on the tape right side up so that you can see them, and be sure that the tape is flat against the skin.

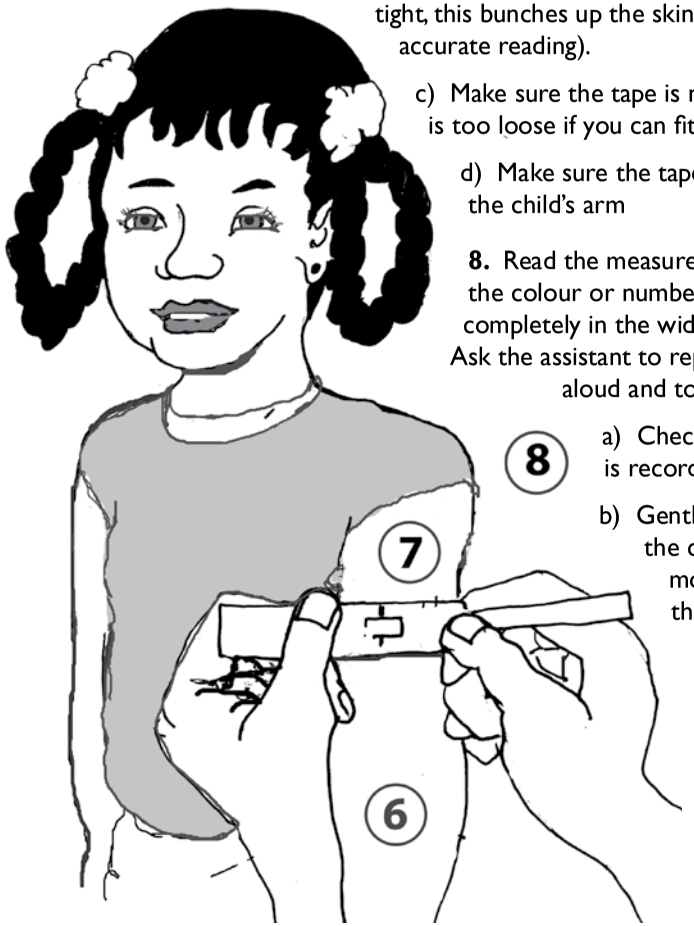
b) Make sure the tape is not too tight (if the tape is too tight, this bunches up the skin and we do not get an accurate reading).

c) Make sure the tape is not too loose (the tape is too loose if you can fit a pencil under it)

d) Make sure the tape is horizontal around the child's arm



8. Read the measurement aloud (either the colour or number which shows most completely in the wide window on the tape). Ask the assistant to repeat the measurement aloud and to record it on the form.



a) Check that the measurement is recorded correctly.

b) Gently remove the tape from the child's arm. Thank the mother and the child for their cooperation.

Standardisation Exercise

Common Errors	Solution
1. All Measurements	
Restless child	Postpone measurement. Involve parent in procedure.
Inaccurate reading	Training and retraining stressing accuracy.
Recording	Record results immediately after taking measurements and confirm record.
2. Length/Height	
Incorrect method for age	Use length only when child is <2 years old [or unable to stand properly].
Foot wear/headgear	Remove.
Head not in correct plane, child not straight, knees bent, or feet not flat on floor	Correct technique with practise and regular retraining. Provide adequate assistance. Calm the child.
Child not straight along board and foot not parallel with movable board	Parent or assistant should be present. [Move head board to compress hair.]
Sliding board not firmly against heels/head	Correct pressure should be practised. [Move head board to compress hair.]
3. Weight	
Scale not calibrated to zero	Recalibrate after every measurement. [Zero after every measurement, recalibrate at the start of each weighing session with a known weight.]
Child wearing heavy clothing	Remove or make allowances for clothing.
Child moving or anxious	Wait until child is calm or remove cause of anxiety.
4. MUAC	
Child not standing in the correct position	Position subject correctly.
Mid arm point incorrectly marked	Measure mid-point carefully.
Examiner not level with subject, tape around the arm not at mid point, tape too tight/too loose	Correct techniques with training, supervision and retraining. Take into account cultural practices for example, wearing of arm tapes.

This chart is adapted from Appendix 2, page 39, 'Sources of error in taking anthropometrical measurements' in: Food Security Analysis Unit for Somalia (FSAU). Nutrition: A Guide to Data Collection, Analysis, Interpretation and Use. (Nairobi; FSAU, 2005).

These common errors are controlled by:

- Learning and applying correct measuring techniques.
- Taking care to read the measurements correctly.
- Recording the measurements correctly and clearly so that someone else can easily read the numbers.
- Being patient with the measurement process, and being willing to do the job correctly.
- If a long time has passed since you measured children, review the technique with someone who has experience and who can guide you.

Five Things To Remember

There are five things to remember about gathering this kind of information from children.

Be respectful! It is important to be respectful and gentle with mothers and their children during the whole process of weighing and measuring.

Be consistent and accurate and precise in taking measurements.

Be careful! Be sure to record the information neatly on the correct forms.

Be patient! Getting precise data requires willingness, patience, and great care in measuring.

Be appropriate! Always use good quality measuring equipment.

Standardisation Exercise

Form 1 Weight Standardisation

Name of Participant: _____

Date of Measurement: _____ /_____ /_____ (yy/mm/dd)

Name of Child	Age in Months	No.	My Measure	Standard Measure	Difference Sign (+, -)	Size of Difference (L, M, S)
		1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				
		9				
		10				

Size of Differences:

Number of Large Differences	(0.3 kg or more)	Box 1
Number of Medium Differences	(0.2 kg)	Box 2
Number of Small Differences	(0.0 - 0.1 kg)	Box 3

Differences:

Number of positive signs (+) _____ Number of negative signs (-) _____

Form 2 Height/Length Standardisation

Name of Participant: _____

Date of Measurement: _____ /_____ /_____ (yy/mm/dd)

Name of Child	Age in Months	No.	My Measure	Standard Measure	Difference Sign (+, -)	Size of Difference (L, M, S)
		1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				
		9				
		10				

Size of Differences:

Number of Large Differences	(1.0 cm or more)	Box 1	
Number of Medium Differences	(0.6 - 0.9 cm)	Box 2	
Number of Small Differences	(0.0 - 0.5 cm)	Box 3	

Differences:

Number of positive signs (+) _____ Number of negative signs (-) _____

Form 3 MUAC Standardisation

Name of Participant: _____

Date of Measurement: _____ /_____ /_____ (yy/mm/dd)

Name of Child	Age in Months	No.	My Measure	Standard Measure	Difference Sign (+, -)	Size of Difference (L, M, S)
		1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				
		9				
		10				

Size of Differences:

Number of Large Differences	(0.5 cm or more)	Box 1	
Number of Medium Differences	N/A	Box 2	N/A
Number of Small Differences	(0.0 - 0.5 cm)	Box 3	

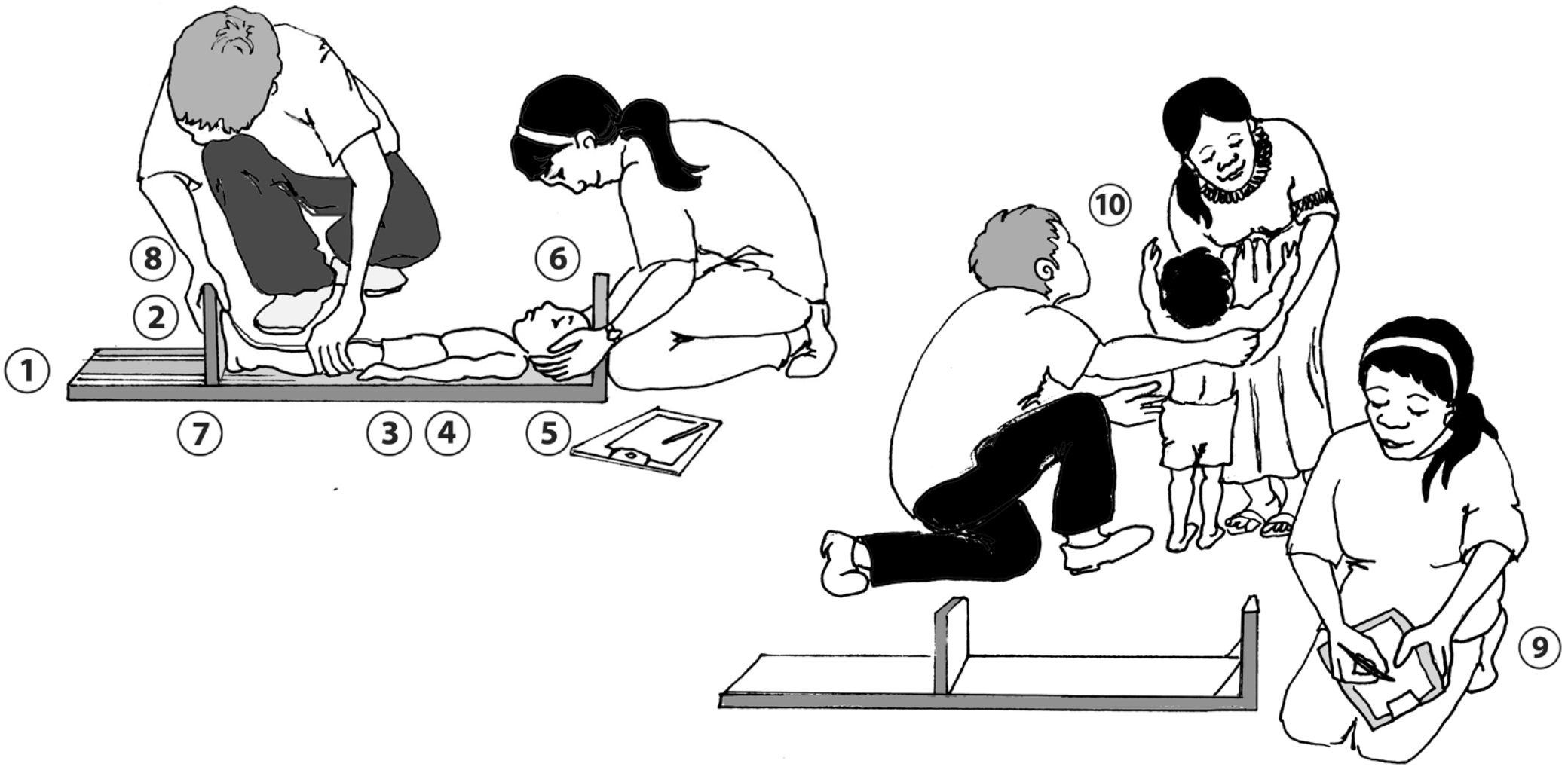
Differences:

Number of positive signs (+) _____ Number of negative signs (-) _____

Reminder for Measuring Weight With Hanging Scales

Reminder for Measuring Weight with Standing Scales

Reminder for Measuring Length of Children Under 2 Years



Reminder for Measuring Height of Children 2 Years and Older

Reminder for Measuring MUAC