

# Nutrition Toolkit

# MEASURING AND PROMOTING CHILD GROWTH

Facilitator's Manual

Version 2, August 2011





# Measuring and Promoting Child Growth Tool

*A Module of the  
Nutrition Toolkit*

MPCG

## Facilitator's Manual

Version 2, August 2011

Nutrition Centre of Expertise

World Vision International, Global Health and WASH

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## Acknowledgements

The Measuring and Promoting Child Growth Tool, 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 measure child growth (anthropometry).

Many people contributed to the final version of the Measuring and Promoting Child Growth Tool. We want to thank all those who helped make this tool a reality by developing the concept, writing and reorganising the text, providing technical feedback on the accuracy and flow, editing, illustrating, and testing the tool in project sites.

**Miriam Yiannakis** of World Vision's Nutrition Centre of Expertise (NCOE) provided overall leadership to this project. **Naomi Klaas** (consultant) was the lead author.

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The following individuals were involved in field testing an earlier draft of the tool in Indonesia:

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**Sigit Sulisty, Markus Puthut Harmiko, Candra Wijaya, and the entire team in Alor Area Development Programme** (World Vision Indonesia)

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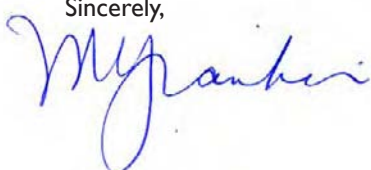
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Illustrations are by **Beth Fellows** and graphic design and layout by **Perry D'Elia** (consultants). Content editing was done by **Loria Kulathungam** (NCOE) and **Kila Reimer** (consultant) with copyediting by **Joan Laflamme** (consultant) and publishing coordination by **Marina Mafani** (WVI Global Publishing).

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We hope that the Measuring and Promoting Child Growth Tool will enhance your efforts to build capacity in field staff so they will be able to respond quickly and appropriately to cases of malnutrition among children in the communities in which they live and work. Ultimately, we want to see children grow and develop as they should so they can reach their full potential as children, and later on in life, as adults.

Sincerely,



Miriam Yiannakis  
Technical Specialist, Capacity Building  
Nutrition Centre of Expertise  
World Vision International



Carolyn MacDonald  
Nutrition Director and NCOE Lead  
Nutrition Centre of Expertise  
World Vision International



# Welcome to the Nutrition Toolkit

These training materials have been thoroughly researched and widely reviewed by technical leaders in nutrition, as well as field-based staff. They apply the latest principles of adult learning methodology to enhance each participant's learning experience.

These training materials support World Vision's Health and Nutrition 7-11 Strategy. It's a one stop complete kit that reduces your preparation time. You can download in part or the entire set, whenever you need them.

## Measuring And Promoting Child Growth

**What's Included:** Facilitator's Manual, Participant's Workbook, Visuals Package, Standard Data Forms, Resource Materials.

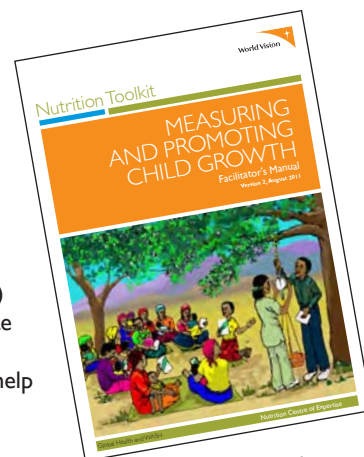
**Purpose:** Train field-level staff and volunteers to measure children accurately and understand the data for improvement of child growth and nutrition.

**Length of Training:** Three-day face-to-face training (11 lessons)

**What a Participant Will Learn:** 1) Proper technique for weighing and measuring children under five; 2) Proper technique to find out a child's exact age; 3) How to clearly record information on appropriate forms; 4) How to interpret the meaning of the data gathered in order to accurately determine child nutritional status; 5) How to counsel caregivers about nutrition; 6) How to apply the information to help make decisions about when interventions are needed to improve child growth.

**For Detailed Lesson Outline:** go to the Read Me First Document of the Facilitator's Manual

**Download at:** [wvcentral.org](http://wvcentral.org).



## Measuring Child Growth For Surveys

**What's included:** Facilitator's Manual, Participant's Workbook, Visuals Package, Standard Data Forms, Resource Materials

**Purpose:** Train field-level staff and volunteers to collect accurate anthropometric data in a survey context.

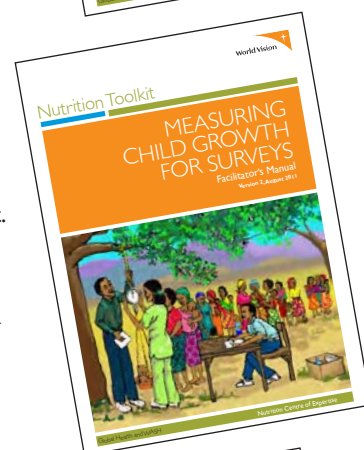
**Length of Training:** One-day face-to-face training (8 lessons)

**What a Participant Will Learn:** 1) Proper technique for weighing and measuring children under five; 2) how to clearly record information on appropriate forms; 3) How to plan for anthropometric data collection

**Current Status:** Technical Review and Field Testing; Available FY11.

**For Detailed Lesson Outline:** go to the Introduction of Measuring Child Growth for Surveys

**Download at:** [wvcentral.org](http://wvcentral.org).



## Reducing Childhood Anaemia

**What's Included:** Facilitator's Manual, Participant's Workbook, Visuals Package and Lesson 1 Character Cards

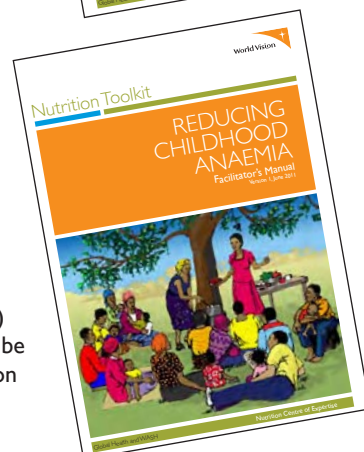
**Purpose:** Train field-level staff and volunteers on the problem of child anaemia and how to address it in their community.

**Length of Training:** Three-day face-to-face training (5 lessons)

**What a Participant Will Learn:** 1) to assess whether child anaemia is a problem in their community; 2) to understand the causes, consequences and context of anaemia; 3) to know how child anaemia can be addressed through addressing dietary and physiological factors for anaemia; 4) to counsel caregivers on how to prevent anaemia in children at different life stages.

**For Detailed Lesson Outline:** go to the Introduction in the Facilitator's Manual.

**Download at:** [wvcentral.org](http://wvcentral.org).



## Reducing Maternal Anaemia

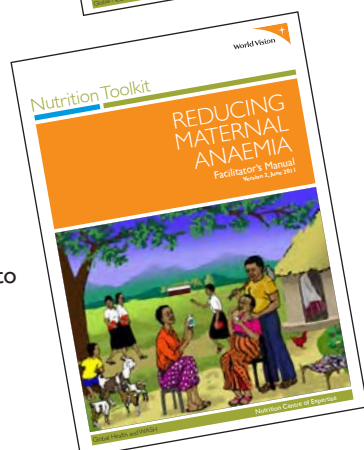
**What's Included:** Facilitator's Manual, Participant's Workbook, Visuals Package

**Purpose:** Train field level staff and volunteers on the problem of maternal anaemia and how to address it.

**Length of Training:** One-day face-to-face training (4 lessons)

**What a Participant Will Learn:** 1) what maternal anaemia is, its causes and how to prevent it; 2) how to determine and plan the interventions needed in their community to address maternal anaemia.

**Current Status:** Available January 2012.



## Reducing Childhood Stunting

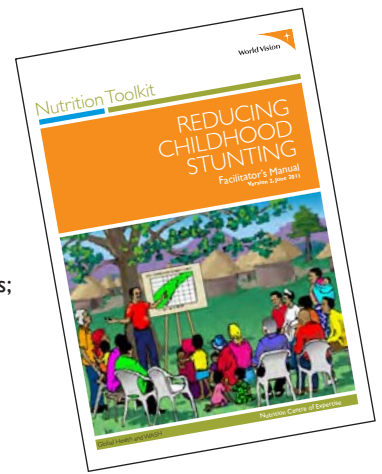
**What's Included:** Facilitator's Manual, Participant's Workbook, Visuals Package, Job Aids

**Purpose:** Train field level staff and volunteers from various sectors on the problem of childhood stunting and how to address it together in the community.

**Length of Training:** Four-day face-to-face training (8 lessons)

**What a Participant Will Learn:** 1) the problem of stunting and its consequences; 2) addressing stunting requires all sectors to play their part; 3) key interventions to reduce stunting from before conception to the time a child is two years old; 4) to counsel effectively on these key interventions; 5) to engage the community to address stunting.

**Current Status:** Available January 2012.



## Complementary Tools for the 7-11

### Community Health Worker/Timed and Targeted Counselling (CHW/ttC)

**What's Included:** Introduction, CHW Programming Standards, Facilitator's Manual for Training CHWs in Timed and Targeted Counselling, CHW Workbook for Timed and Targeted Counselling for Health and Nutrition, CHW Job Aids: Illustrated Story Books and Photo Food Cards, Household Handbooks.

**Purpose:**

- Assist 7-11 projects in developing standards and structures to effectively support CHW programming.
- Guide facilitators in training CHWs in Timed and Targeted Counselling.
- Provide CHWs with the reference materials and job aids needed to effectively carry out household level counselling.
- Provide households with reminder tools in support of the new practices they are exposed to through CHW counselling.

**Length of Training:** Three face-to-face training modules (10 days + 5 days + 5 days = 20 days total)

**What a Participant Will Learn:** 1) the key behaviours from pregnancy through the first two years of life for reducing maternal and child mortality and malnutrition; 2) to counsel and negotiate with families on the practice of these behaviours.

**For Detailed Lesson Outline:** go to the Introduction to CHW/ttC Programming.

**Download at:** [wvcentral.org](http://wvcentral.org).



### 7-11 ADAPT (Analyse, Design, Agree, Plan Tool)

**What's Included:** Guidebook, workbook and reference book.

**Purpose:**

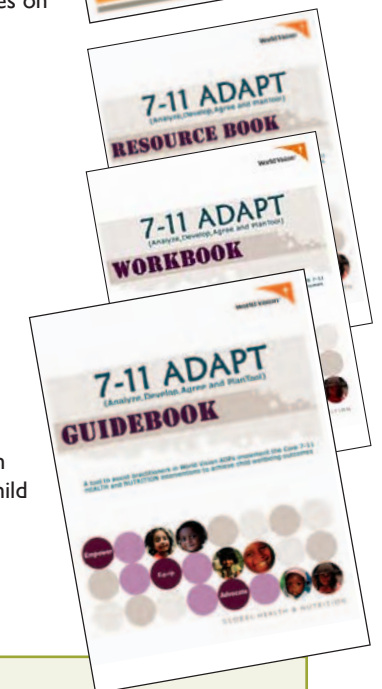
- Provide a process for field level staff (assisted by technical specialists) on how to analyse and use health and nutrition data to design and plan long-term (non-emergency) health and nutrition programmes, e.g. design or re-design of area development programmes (ADPs)
- Assist in how to design a 7-11 programme for your specific area

**Length of Training:** varies on context (five stages in ADAPT process)

**What a Participant Will Learn:** 1) how to collect data; 2) to identify nutrition and health concerns in the primary focus area; 3) to assess underlying health and nutrition factors affecting mother and child health; 4) to assess the environment; 5) to review gaps and prioritise interventions for health and nutrition programming.

**For Detailed Lesson Outline:** go to the Introduction of the 7-11 ADAPT Guidebook.

**Download:** at [wvcentral.org](http://wvcentral.org).



## Here's What's Coming

The NCOE is currently developing tools to enable distance learning for nutrition. The following modules will be developed into e-learning options beginning in FY12:

- Measuring and Promoting Child Growths
- Reducing Childhood Anaemia
- Reducing Maternal Anaemia
- Reducing Childhood Stunting
- Community Nutrition Basics
- PD/Hearth Methodology

Stay connected with the NCOE to be involved in the development or roll out of this new learning opportunity!



## Measuring Child Growth ('Anthropometrics')



Workbook  
Page 1

**Proper measurement of child growth** is an important part of assessment and evaluation surveys (including World Vision Child Well-Being Outcomes), 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. Of course we also obtain and use this information to do routine monitoring of children in order to support the healthy growth of the individual child. The Measuring and Promoting Child Growth module of the Nutrition Toolkit is designed to increase factual knowledge, understanding and practical skills of people responsible for measuring child growth.

**There are several different tasks involved in monitoring child growth.**

These include taking accurate measurements of height, weight and size of the upper arm. Other tasks are collecting accurate information about the age and sex of children; recording this information; calculating the results of the data; and interpreting the data. The process of growth monitoring is not complete without counselling for caregivers about the growth of their children. It is also important to group the data into a 'big picture' that helps us to see if there is widespread malnutrition within a community.

**Anthropometrics** is a long word that means 'measurement of human beings'. We measure the rate that children grow to understand a child's nutritional status. If a child is growing at a normal rate, he or she is almost certainly well nourished. A child who is not growing at the normal rate is probably not well nourished. Parents may not know if a child is growing at the normal rate, and they need help to find out. The only way for parents and nutrition workers to be certain about how a child is growing is to measure a child regularly (i.e. anthropometry).

This module of the Nutrition Toolkit will help you to understand how to collect and how to use anthropometric information to monitor the growth of young children in your development projects. Lessons will show the practical steps for correctly measuring height, weight, upper-arm size and age of children. In order to ensure the best learning environment, we recommend keeping the number of participants to approximately 20.

My name is  
Anna Thropometri. You  
will see me in many lessons  
sharing some important  
teaching points for you to  
pass along to participants.





**Purpose of Module:** This module outlines a three-day workshop for teaching community health and nutrition workers how to monitor child growth. It includes 11 lessons. Participants will learn the following:



- Basic principles of anthropometrics:
  - what to measure (height, weight, age, upper-arm size),
  - how these are measured,
  - how to interpret the measurements, and
  - how to use the data.
- The equipment, methods and skills required for measuring and recording child growth accurately.
- Accurate calculation and interpretation of nutritional status from collected data (weight-for-age; weight-for-height; height-for-age; mid-upper arm circumference (MUAC)).
- How to combine and calculate data about individual children to provide a picture of community-level nutritional status.
- Basic nutrition counselling skills that guide the interaction between health workers and caregivers of children who are not growing well.
- How to define the types and levels of malnutrition that require programming action.
- Ideas and techniques about teaching anthropometry by the good example of learning facilitators.

**Each lesson has the same format and includes the following information:**

- **TIME:** An estimate of the amount of time required to teach the lesson. The actual time will vary depending on the number of participants and whether or not this is the first time for them to learn about the topic.
- **PURPOSE:** A general statement about what topics or content the lesson covers.
- **COMPETENCIES:** A list of knowledge, skills and attributes that participants will acquire as a result of completing the lesson.
- **PREPARATION:** Arrangements and materials that the learning facilitator can prepare in advance of the session.
- **GRAPHICS:** Visual tools designed to aid teaching including overhead transparencies, PowerPoint, posters, pictures. If you do not have PowerPoint, use an overhead projector to show the slides. If you do not have an overhead projector, ensure that you have an alternate way to display the information on the slides (e.g. make a poster). Computer files can be enlarged and printed on a large-format printer/plotter.
- **PARTICIPANT'S WORKBOOK PAGE NUMBER:** Reminds the learning facilitator to inform participants about what page of the Participant's Workbook to look at.
- **CLOSING:** A quick summary conducted before participants leave for the day. It is a way to review the key points and contents of the day.

## Icons Identify Elements in a Lesson

The following set of icons is designed to guide you step by step through the lesson.



**Minutes**

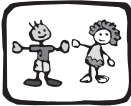
### Time

A picture of a clock indicates how long it takes to teach the lesson or a session within the lesson.



### Activity

A person juggling indicates that it is time for facilitator and/or participants to do an activity.



### Role Play

This picture of two puppets means that it is time for participants to conduct a role play.



### Questions

The picture of a big question mark indicates that a question is posed to the group – group will either provide answers in the large group, discuss in small groups, or vote as the directions request.



### Important to Remember

The picture of a star indicates that there is a point that is important to remember.



### Refer to Participant's Workbook

A picture of a finger pointing in a book indicates that there is something to be done in the Participant's Workbook.

### Learning Facilitator’s Checklist of Downloadable Files (Version 2)

MPCG Lessons 1-11 V2.zip	Name of File To Download
<p><b>Lessons 1-11</b> – PDF format when zip file is opened</p> <ul style="list-style-type: none"> <li>Lesson 1 – Overview and Introduction</li> <li>Lesson 2 – What Is Anthropometry?</li> <li>Lesson 3 – Information about Sex and Age of Children Under 5</li> <li>Lesson 4 – Hanging Scales</li> <li>Lesson 5 – Standing Scales</li> <li>Lesson 6 – Measuring Length and Height</li> <li>Lesson 7 – Mid-Upper Arm Circumference</li> <li>Lesson 8 – Standardisation Exercise</li> <li>Lesson 9 – Improving Individual Child Growth</li> <li>Lesson 10 – Counselling</li> <li>Lesson 11 – Population Nutritional Status</li> </ul>	<p>MPCG_FacilitatorManual_V2.pdf</p>
MPCG PDF Slidedecks.zip	Name of Files In Zip File
<p><b>Three PDF Slidedecks</b></p> <p>Presentations are divided into the lessons taught each day.</p>	<p>MPCG_SlidedeckDay_1_V2.pdf                      MPCG_SlidedeckDay_2_V2.pdf                      MPCG_SlidedeckDay_3_V2.pdf</p>
MPCG Forms and Counselling Cards .zip	Name of Files In Zip File
<p><b>Standardisation Exercise Forms</b></p> <p>All forms are pdf files.</p>	<p>MPCG_Standardisation_Form1_V2.pdf                      MPCG_Standardisation_Form2_V2.pdf                      MPCG_Standardisation_Form3_V2.pdf</p>
<p><b>Data Collection Form</b></p>	<p>MPCG_DataCollectionForm_V2.pdf</p>
<p><b>Counselling Cards</b>                      (Malawi Infant and Young Child Feeding National Counselling Cards)</p>	<p>MPCG_CounsellingCards_V2.pdf</p>

### Participant’s Checklist of Downloadable Files (Version 2)

Participant’s Workbook, Forms and Counselling Cards.zip	Name of Files In Zip File
<ul style="list-style-type: none"> <li>Standardisation Exercise Forms</li> <li>Data Collection Form</li> <li>Counselling Cards</li> <li>Participant’s Workbook</li> </ul>	<p>(3 forms as above)                      (as above)                      (as above)                      MPCG_ParticipantWorkbook_V2.pdf</p>

**CLICK HERE TO DOWNLOAD**

We welcome your feedback and suggestions for improving this tool. Please contact NCOE at [nutrition\\_coe@wvi.org](mailto:nutrition_coe@wvi.org).



Minutes

## Purpose of Lesson I

1. To introduce the topics that will be covered during this three-day training; to introduce the schedule; to describe the flow of events; to allow introduction of all participants.
2. To explain logistics for the three-day training, including daily schedule, meal times, accommodation details and use of facilities.
3. To describe the interactive nature of this training and clearly state the expectation for participants to be active during the training time.

## Competencies

1. Know the names and some details about the learning facilitator, training staff and other participants.
2. Understand the logistical arrangements for the training.
3. State the general topic of the training.
4. Understand and describe expectations for participation.

## Preparation

1. Gather basic supplies such as whiteboard markers, permanent markers, flip-chart paper, overhead projector, whiteboard, masking tape, etc. Make sure that you can put flip-chart paper up on the walls.
2. Prepare a materials pack for each participant. The pack should contain the training schedule, a Participant's Workbook and a pen. Include a name card in the packet for each participant to complete during the introductory exercise. The pack should also contain any hand-outs that you will use during the course of the training.
3. Know your facility well so you can clearly explain where the washrooms and exits are, where people are to go for meals, etc.
4. Neatly write out a simple agenda on a piece of flip-chart paper and post it before participants arrive.

## Graphics

- Slide 1 Workshop Purpose
- Slide 2 Skills to Learn
- Slide 3 Training Schedule



## 1.1 The workshop opening

The learning facilitator welcomes everyone and introduces any guests or speakers. Guests might include community leaders, government officials, organisational members, etc. The guests will then give brief remarks (as appropriate in your context).

## 1.2 Learning facilitator introduction

The learning facilitator introduces himself or herself by name and position within the organisation. Inform the group that this will be a very participatory and interactive training event, so the participants should expect to be active!

## 1.3 Participants introduce themselves

Explain that we will take about 10 minutes for all the participants (including guests and the learning facilitator or other training staff) to introduce themselves. First, divide into pairs (groups of two). Each person will ask his or her partner the following four questions. At the end of the five minutes, each person will briefly introduce his or her partner to the group.



### Ask

1. *What is your name?*
2. *What is your primary work responsibility?*
3. *Why are you interested in learning how to weigh and measure children?*
4. *What is your favourite food?*

Instruct participants to take the name card out of their packet and use a marker to write their name on that card in large letters. Tell participants they should wear the name tag during the whole training time.

## 1.4 Training site and logistics

- a) Explain the training facility to participants – tell them where the toilets are located, where they can get water to drink, where all the exits are in case of a need to leave quickly, etc.
- b) Explain the system for snacks and meals; explain the details of accommodation; explain the details of per diem (if that is appropriate to your country); inform them about who they are to ask if they have any questions.
- c) Explain the contents of the participant packet.
- d) Discuss behavioural guidelines for the workshop. For example, it is important for participants to arrive early so that the training can start on time, or cell phones need to be turned off so others are not distracted. These basic guidelines should be decided by the group and posted so that they are clearly visible and participants can be held accountable to comply. The participants should decide on consequences for not complying. You could suggest the ‘punishment’ be a fun activity such as singing a song in front of the group. Alternatively, the group could decide on a positive reward system that will motivate members to participate fully.
- e) Ask if there are any questions.

## 1.5 The overall workshop plan

### Slide 1 – Workshop Purpose



**Workbook**  
Page 2

Ask three different people to read the purpose statements aloud, one by one.

#### **Purpose 1**

To train participants to weigh and measure children accurately; and to calculate and record growth accurately.

#### **Purpose 2**

To train participants to interpret child nutritional status and community nutritional status accurately.

#### **Purpose 3**

To increase participants' understanding of the purpose and importance of counselling caregivers and to build skills for appropriate counselling.

### Slide 2 – Skills to Learn



**Workbook**  
Page 2



Ask six participants to read aloud each of the six skills that will be taught and demonstrated during the workshop.

**Skill 1.** We will learn the technique for weighing and measuring children under 5.

**Skill 2.** We will learn the technique for finding out a child's exact age.

**Skill 3.** We will learn how to record information clearly on appropriate forms.

**Skill 4.** We will learn to interpret the meaning of the data gathered in order to determine a child's nutritional status accurately.

**Skill 5.** We will learn how to counsel caregivers about nutrition.

**Skill 6.** We will learn how to use the information to help us make decisions about when interventions are needed to improve child growth.

Remind participants that the training will be very participatory. We will learn about why it is necessary to weigh and measure children; we will practise how to weigh and measure children; and we will discuss what that information means for individual children and for our communities. Each participant will practise weighing and measuring in order to gain confidence in the skills. The more you fully participate in the training, the more you will enjoy it (and benefit from it).

**Slide 3 – Training Schedule**



**Workbook  
Page 2**

- Refer participants to the overview of the training schedule.
- Tell participants that being on time for sessions is important.
- Clarify what time the workshop will start each day and what time it will finish each day.

Empower  
Change  
Abolish

DI SLIDE 3

World Vision

**Training Schedule**

	Day 1	Day 2	Day 3
<b>Morning</b>	Lesson 1 – Welcome and Introduction (60 min) Lesson 2 – What is Anthropometry? (60 min)	Lesson 6 – Measuring Length and Height (2 hours)	Lesson 9 – Individual Child Growth (2 hours)
<b>Break (15 minutes)</b>			
<b>Morning</b>	Lesson 3 – Information About Sex and Age of Children Under 5 (90 min)	Lesson 7 – Mid-Upper Arm Circumference (60 min) Lesson 8 – Standardisation Exercise (60 min)	Lesson 10 – Counselling (2 hours)
<b>Lunch</b>			
<b>Afternoon</b>	Lesson 4 – Hanging Scales (2 hours)	Lesson 8 – Standardisation Exercise (2 hours)	Lesson 11 – Population Nutritional Status (60 min)
<b>Break (15 minutes)</b>			
<b>Afternoon</b>	Lesson 5 – Standing Scales (2 hours)	Lesson 8 – Standardisation Exercise cont'd (2 hours)	Closing

Global Health & WASH  
Nutrition Centre of Expertise

	Day 1	Day 2	Day 3
<b>Morning</b>	Lesson 1 – Welcome and Introduction (60 min) Lesson 2 – What is Anthropometry? (60 min)	Lesson 6 – Measuring Length and Height (2 hours)	Lesson 9 – Individual Child Growth (2 hours)
<b>Break (15 minutes)</b>			
<b>Morning</b>	Lesson 3 – Information About Sex and Age of Children Under 5 (90 min)	Lesson 7 – Mid-Upper Arm Circumference (60 min) Lesson 8 – Standardisation Exercise (60 min)	Lesson 10 – Counselling (2 hours)
<b>Lunch</b>			
<b>Afternoon</b>	Lesson 4 – Hanging Scales (2 hours)	Lesson 8 – Standardisation Exercise (2 hours)	Lesson 11 – Population Nutritional Status (60 min)
<b>Break (15 minutes)</b>			
<b>Afternoon</b>	Lesson 5 – Standing Scales (2 hours)	Lesson 8 – Standardisation Exercise cont'd (2 hours)	Closing

**1.6 Closing**

Ask participants to volunteer to share one thing they remember about another participant (such as favourite food, organisation, etc.).

Tell the group to clap twice together if the information is correct and to clap once if the information is not correct.

Dismiss the workshop after reminding participants what time the next day's session begins.



## Purpose of Lesson 2

1. To understand *anthropometrics* and related terms.
2. To know key reasons for focusing on children under 5.
3. To learn the type of information required for calculating child nutritional status.
4. To understand the importance of accurate measuring and accurate recording of data.
5. To increase understanding of the ways that the information (also called *data*) we collect can be used.
6. To know points in a project life when anthropometric information is useful.

## Competencies

1. Define *anthropometrics* in simple language.
2. State three reasons why we focus on children under 5 for weighing and measuring.
3. Describe the four key pieces of information required to calculate child nutritional status.
4. Clearly record child measurement data on proper forms.
5. Explain at least three ways to use the information about children's weight/height.
6. Identify at least three times in a project cycle when child growth information should be collected.

## Preparation

1. Have two 3x5 cards (7.62x2.7 cm) ready for each participant.
2. Supplies and materials: flip-chart paper/frame, masking tape, permanent markers.
3. Be sure to have several red markers and green markers because participants must write on the cards with red and green markers.
4. Neatly write out a simple agenda on a piece of flip-chart paper and post it on the wall before participants arrive.

## Graphics

- Slide 4 What Information Do We Need to Gather?  
Slide 5 How Can We Use Anthropometric Information?  
Slide 6 What Are Z-Scores?  
Slide 7 Statistics Work for Everyone  
Slide 8 When Do We Take Anthropometric Measurements?

## 2.1 Defining anthropometrics



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

We are going to determine whether children under 5 are growing well.

**Ask:** *Why do you think that we focus on children under 5 years old?*  
Allow a short time for discussion.



**Answer:** 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 old. 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, and how well they will be able to fight infections and illness.
- Growth during this early period of a child's life will also affect how well a child learns in school in later years and how much strength he or she will have as an adult.



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Page 3**

We can summarise by saying: we measure how well a child is growing from birth to five years because this is a critical period of growth with long-term consequences for mental and physical health. We measure children's growth by gathering their height, weight, age and sex information.

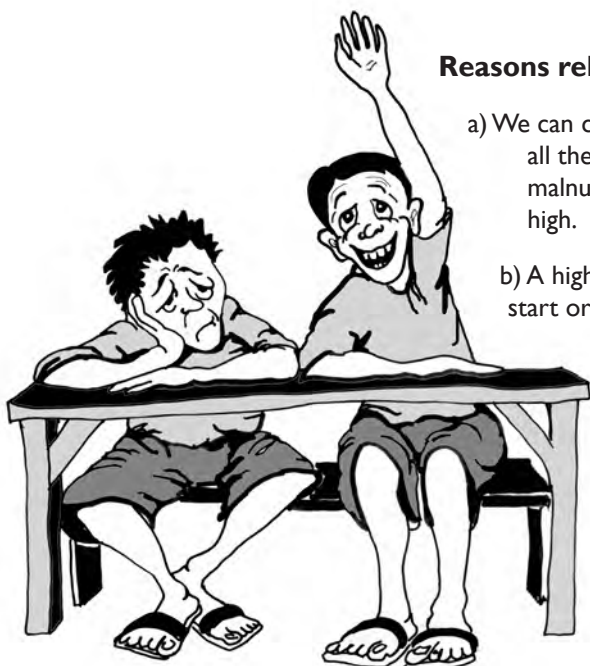
The process of weighing and measuring is called anthropometrics.



### Reasons relating to the individual child:

- a) We compare a child's weight and height and age to healthy children's growth patterns to tell us how well that child is growing. When a child does not gain weight or height at the same rate as healthy children, he or she is considered malnourished.
- b) The measurement information lets us know if the child is well nourished or malnourished.
- c) We want to find out if the child is not growing well so that we can take action to correct it because:
  - Children who don't grow normally do not develop to their full potential.
  - Poor nutrition affects a child's ability to think and grow.
  - Poor nutrition also makes a child weak and can cause a child to get sick often.





### Reasons relating to the community:

- 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.
- b) A high level of malnutrition means we need to start or strengthen nutrition interventions.
- c) Medium or high levels of malnutrition indicate that there may be problems in the community (e.g. lack of access to care, clean water, healthy food).
- d) By measuring the level of malnutrition in a community at regular intervals, we can see how well our nutrition interventions are working.

That is why it is important for us to know how well our children are growing.

## 2.2 How do we determine if a child is malnourished?



**The brainstorm question:** *What are some of the things we could measure or observe to determine if a child is malnourished?*

As participants provide answers, write them down on the flip-chart.

**Correct answers:** Healthy appearance, bright eyes, energetic, active and playful, good appetite, grows well, colour of hair, blood tests, medical check-up, etc.

These are some interesting ideas we have. Sometimes it is easy to tell if a child is well nourished just by looking at a child; however, there are many times that you cannot tell if a child is well nourished just by looking at him or her. In order to avoid making mistakes, we must collect other information about the child.

### Slide 4 – What Information Do We Need To Gather?



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We need several different pieces of information in order to calculate whether or not a child is growing well.

- Age (knowing the date of birth allows us to calculate the age of the child in terms of months)
- Sex (male or female)
- Weight
- Height
- MUAC (an acronym for Mid-Upper Arm Circumference) is a way to measure the nutritional status of children. It is mainly used as a rapid screening tool in food crisis situations, not for routine measurement of child growth.



All of this information must be recorded neatly and accurately on forms that are prepared ahead of time. This information allows us to calculate the nutritional status of the child by comparing it to the information from other healthy children of the same sex and age. We will learn about each of these pieces of information throughout the training.

## 2.3 What are anthropometric measurements?\*

### Slide 5 – What Are Z-Scores?

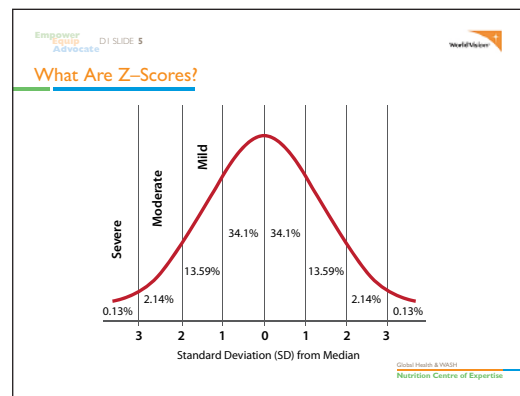


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**Page 4**

Now we are going to explain the terms used in anthropometric measurements. We use the term Z-score to identify the category of malnutrition (mild, moderate or severe) and we use the terms wasting, stunting and underweight to describe the type of malnutrition.

#### Z-Scores

Z-scores are commonly used in anthropometry to evaluate growth measurements. A Z-score refers to how far and in what direction an anthropometric measure deviates from a standard healthy reference called the median (meaning ‘middle’ value). Thus you will often see Z-scores referred to as standard deviations or SD. Negative Z-scores mean that the growth of a child is less than that of the reference healthy population. Negative Z-scores are used to classify children into categories of malnutrition.



#### Wasting (low weight-for-height/length or WHZ)

Wasting (weight-for-height/length less than -2 SD from reference) identifies children who are ‘wasted’ or thinner than expected for a healthy, well nourished child of the same height/length. These children have not only stopped growing but have probably also lost weight. Wasting reflects recent, short-term (acute) malnutrition or illness. It is a sign that a child is undernourished and not growing now. Something can probably be done to help the child recover. If the parents can improve the child’s nutrition, the child can recover from wasting.

Measuring thinness or wasting enables health and nutrition workers to find out quickly if a child is undernourished. It is not only useful for screening or assessing individual children, but it is also useful for assessing the nutritional status of a community in an emergency situation. The proportion of wasted children in an area may vary by the season due to annual periods of food insecurity or seasonal illness. We will discuss what actions can be taken in a community when wasting levels are high. Wasting is addressed through treatment and preventive nutrition activities.

#### Stunting (low height/length-for-age or HAZ)

Stunting (height/length-for-age less than -2 SD from reference) identifies children who are ‘stunted’ or shorter than expected for a healthy child of the same age. If children are undernourished, their growth in height slows

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

down. Children who are undernourished for a long time are shorter than they should be. Children whose height is less than -2 SD from the median are stunted. We refer to this as 'chronic' or 'long-term' undernutrition.

Measuring the rate at which children increase in height is not a good way to monitor individual children's growth because:

- It is difficult to measure accurately.
- Height changes slowly. It may take six months to be sure that a child's height has increased. So it takes a long time to find out that a child's height has **not** increased and that the child is **not** growing. Parents and health workers want to know more quickly than that if a child is not growing so that they can do something about it sooner.
- Children who are undernourished may lose weight, but they do not become shorter. So if we only measure height, we do not find out that a child has lost weight.

Assessing height-for-age is useful when we want to:

- **Assess the nutritional status of a population** (when we do a survey of a community, for example). Children's heights are an indicator of chronic malnutrition in the community and tell us if they have been undernourished in the past or continue to be undernourished. This helps us to find which areas are most undernourished.
- **Measure changes in the nutritional situation of a community.** It tells us whether, over a period of time, the nutrition situation is improving or getting worse. This is useful for our programme managers and planners, who have to decide how to use funds and other resources, and for people who evaluate the effects of development projects.

Therefore, we will focus on the use of stunting for assessing community nutrition status and measuring changes. Also, stunting does not vary by seasons over the year.

## Underweight (low weight-for-age or WAZ)

Underweight (weight-for-age less than -2 SD from reference) identifies children who are 'underweight', that is, they weigh less than a healthy, well nourished child of the same age. An underweight child is less than -2 SD below the median reference weight for a child of the same age. This may be because the child has not grown normally in height, weight, or both, or because he or she has lost weight.

Measuring the rate at which children increase in weight is a very good way to monitor individual children's growth because:

- It is fairly easy to measure accurately.
- Weight changes quickly, and a child who is undernourished or ill may lose weight. So, weighing a child once every month can alert a parent or health worker that a child is not growing, providing an opportunity for something to be done about this.

Underweight is **less useful than stunting or wasting for assessing growth in populations**, because it reflects both stunting and wasting, and cannot distinguish between the two. Therefore, if a population has a high rate of underweight, we do not know if the reason is a **recent** lack of food or illness in the population (i.e. wasting) or **long-term** undernutrition (i.e. lots of children who have not achieved normal heights).

## Slide 6 How Can We Use Anthropometric Information?



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### 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; and
- c) To screen individuals for programme services.

### Monitoring:

- 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 services).

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DI SLIDE 6

World Vision

### How Can We Use Anthropometric Information?

**Assessment** – to identify the severity of a nutrition problem in a community; to know whether there is present or potential risk of malnutrition in an individual child.

**Evaluation** – to evaluate and measure changes in nutrition over time and to demonstrate programme impact on the community and individuals.

**Targeting** – to identify need, prioritise resources and screen individuals for programme services.

**Monitoring** – to track individual growth patterns and programme performance.

**Advocacy** – to advocate for increased programmes and services to address child malnutrition (such as increased funding for salaries, supplies and primary health services).

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## Slide 7 – Statistics Work for Everyone



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Show the participants the 'Statistics Work for Everyone' cartoon. Have a discussion about the story in this cartoon and find out the opinions and experiences of the participants regarding using child growth data to advocate for change in health services.

## Slide 8

### When Do We Take Anthropometric Measurements?



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#### Baseline assessment

- At the beginning of a project, information about child growth will help us see if a community is healthy or malnourished. If malnourished, we see how serious the problem is.
- It will also help us to identify specific needs and specific target groups that require intervention.
- Recording anthropometric information at the starting point of a project gives us baseline information with which to compare results and progress in the future.

#### During project implementation

- Tracking individual children's growth on a regular basis and following up with the family any time a child is not growing well is an important intervention for preventing malnutrition.
- Ongoing information may also be collected at the community level during the course of implementation to check if expected changes are actually happening or not.
- This information is used to guide us in making project decisions as well as to enable us to follow up with specific children who need more attention and support.

#### Midterm evaluation

- Multi-year programmes often have anthropometric measurements gathered again halfway through the life of the project.
- This mid-point information is used to assess program effectiveness and will help in redesign of the program.

#### End of project evaluation

Measurements are taken at the end of a project and compared with previous data to determine what changes ('impacts') have happened and what further interventions may be required.

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#### When Do We Take Anthropometric Measurements?

1. Baseline assessment
2. Midterm evaluation
3. End of project evaluation
4. Throughout project implementation

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## 2.4 Participants' weighing and measuring experience

### Weighing and measuring experience

Give each participant two of the small cards. Ask each to write a red "X" on one card and a green "✓" on the other card.

When the learning facilitator asks the question listed below, participants raise the appropriate card to indicate their response: (X for no) and (✓ for yes). Ask for comments where appropriate.



**Note to Learning Facilitator:** If you cannot make cards, you can use an alternate way for participants to indicate 'yes' or 'no'. For example, raising two hands could mean 'yes' and raising one hand 'no'. Or they could stand to say 'yes' and remain seated to indicate 'no'.





**Ask**

1. Have you ever weighed and measured children to find out if they are growing properly?
2. Have you ever discovered from weighing and measuring that a child who looked healthy was actually malnourished?
3. Have you ever used weight and height information to help design a project?
4. Have you ever used weight and height information to explain malnutrition?



Divide into groups of three and ask participants to talk about one experience they have had with weighing and measuring children.

Tell them that they can talk about an experience with their own children, or an experience in a development project setting, or as part of their work as a medical officer, etc.

If participants have never weighed/measured children before, ask how they determined if children were growing well or not.



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**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.



## 2.5 Closing

Do a quick test on how well participants have achieved the six learning competencies listed at the beginning of this lesson.

Do this by asking for a different volunteer to answer each question. Do not let them look at their workbook.

If the participant answers correctly, give him or her a reward such as a piece of candy or have the whole group clap their hands.



## Ask

1. Who can define 'anthropometrics' in simple language?
2. Who can explain why it is important to measure the growth of children under 5 years of age?
3. Who can describe all four of the measurements required to determine child growth?
4. Who can tell us what happens if we do not clearly record the data on our forms?
5. Who can list at least three ways to use information about child growth?
6. Who can define stunting?
7. Who can define underweight?
8. Who can define wasting?



**Note to Learning Facilitator:** Sometimes people will give an answer that is not correct. It is important that you address incorrect answers in a polite and gentle way. Making participants feel bad or ignorant might discourage them and other participants from actively participating in future. However, you must be sure that you have given out correct information.

For example, if someone gives a wrong answer, you could say something like this: "Thank you for your thought. What does anyone else think on this point?"

Then allow for some discussion.

As a concluding remark on the point make sure the correct answer is clear.

For example, you could say: "Although you may have heard that the colour of a child's eyes indicates whether the child is growing well, this is not the case. Using information about weight and height is the clearest way to know if a child is growing well. There are some other indicators of poor growth too, such as the colour of a child's hair, but this is more complicated and requires more technical skills to determine."

As in any workshop or teaching setting, wrong answers need to be addressed in a way that encourages learning and maintains everyone's dignity.





**Minutes**

## Purpose of Lesson 3

1. Identify key information required to calculate child nutritional status.
2. Learn the tools to determine a child's date of birth and age in months accurately.
3. Develop skills in writing standard forms of numbers that are easy to read.

## Competencies

1. Accurately collect sex and age information about a child from his or her caregiver.
2. Determine a child's age in months, based on birth date and measurement date.
3. Write numbers clearly.
4. Record accurately and clearly on form the date of birth, sex of child and age of child in months.

## Preparation

1. Practise telling the introduction story until you feel comfortable telling it, or adapt a similar story.
2. Materials and supplies: bring extra pens, paper, flip-chart paper, large markers of four different colours, masking tape.
3. Write out the main points of the agenda for the day on flip-chart paper and post it in a place where all can see it.

## Graphics

- Slide 9 Data Collection Form
- Slide 10 Is the Child a Boy or a Girl?
- Slide 11 Community Events Timeline
- Slide 12 Months in Five Years
- Slide 13 Recording Numbers Clearly
- Slide 14 Record Numbers Clearly on Sample Recording Form

## 3.1 Important pieces of information

In order to use weight and height measurements to know whether a child is growing well or not, it is very important that we know two other pieces of information.

- First, we must know the **sex of the child**: is the child a boy or a girl?
- And second, we must know the **child's age**. For this we need two pieces of information: the child's date of birth (the day, month and year the child was born), and the date the growth measurement takes place.

### Slide 9 – Data Collection Form



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DI SLIDE 9

## Data Collection Form

**Children 0 - 59 months**      **Remember to:**

1. Record the date of birth (year/month/day) 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.

ADP/Program: \_\_\_\_\_ Date of Measurement (yy/mm/dd): \_\_\_\_\_

Community: \_\_\_\_\_ Name of Data Collector: \_\_\_\_\_

No.	Name of Mother	Name of Child	Date of Birth yy/mm/dd	Age in Months <sup>a</sup>	Sex M/F	Child's Length/ Height (cm)	Child's Weight (kg)	MUAC (cm or colour)	STANDING SCALE ONLY Use these two columns with young children who cannot stand.	
								only for 6-59 months	Mother's Weight (kg)	Mother's/Child's Weight (kg)

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Here is an example of the Data Collection Form that we will use to record all the information that we will collect. As we go through this training, we will learn how to fill in the columns on this form.

Take three minutes to review the form so that you know what information is required.

Be sure to write the name of the child and the name of the mother in the local language.

## 3.2 Determining if the child is male or female

### The Story of Carmine

A man named Carmine was working with people from a culture and country that was quite different from his own.

He communicated often with these people, but only by e-mail; he had never talked to them directly or met any of them in person.

One day Carmine went to visit the people in their country.

When he arrived at the airport, he looked around to see if anyone had come to meet him.

After a long time passed, he finally approached a small group of people who seemed to be waiting for someone.

He asked if they were looking for Carmine.

The people were surprised.

They said: "Yes, we are looking for Carmine, but we were expecting a woman not a man!"

They all had a good laugh and went to look for Carmine's luggage.



**Ask:** *Is it always possible to know whether a person is male or female by the person's name?*

**Answer:** No

**Ask:** *What are some names in your country or culture that are used for both boys and girls?*

Give two or three minutes for participants to answer and discuss.

### Slide 10 – 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.



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#### Is This a Boy or a Girl?



Always ask the mother!  
Always record whether a child is  
**M** (male) or **F** (female)

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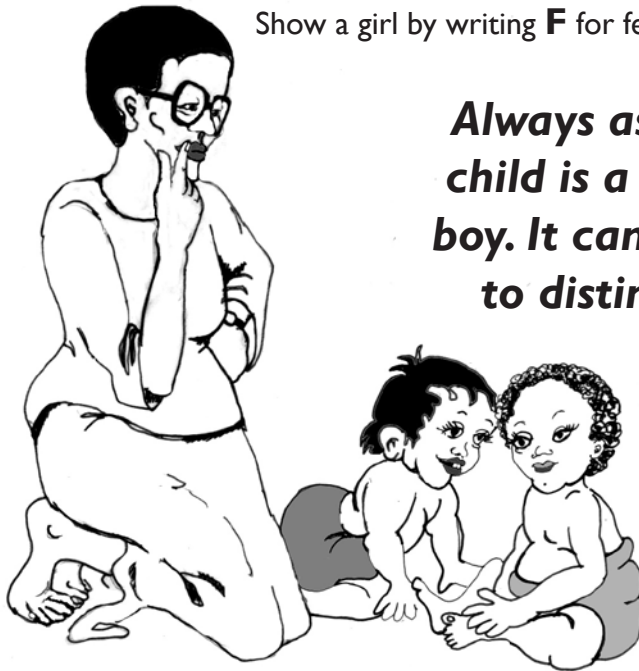
Show a boy by writing an **M** for male on the form.



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

**Always ask if the child is a girl or a boy. It can be hard to distinguish!**



### 3.3 Determine the child's age



#### 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 growth monitoring or immunisation card, or if the child does not have a card, ask the mother to tell you the child's date of birth.



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Always record the date of birth 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.

#### Estimating date of birth

*We estimate a child's date of birth when the child does not have a written record of the date of birth.*



If the child does not have a growth monitoring card, ask the mother to tell you the child's date of birth. If she does not know, ask the midwife or traditional birth attendant when the child was born. If the child's precise year and month of birth are not known, help the mother estimate the birth date. This can be done by a variety of methods, including the following.



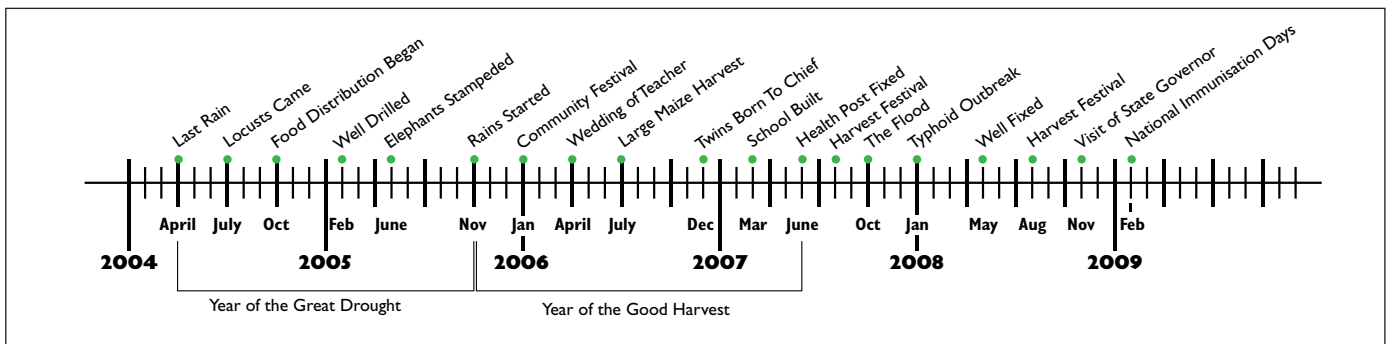
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It can be useful to compare the child with other children in the village, or we can estimate the age by using a local events calendar. A timeline of community events is developed with the community before starting an actual weighing and measuring activity. To establish a local events calendar for estimating children's birth dates, ask the community members and

leaders what important events have happened in their community over the last five or six years. This list should include things like harvests, disasters, drought, floods, festivals, major political events such as elections, and so forth.

Draw a line down the middle of two flip-chart papers and put them together. Along this line, which we call a 'timeline', put these events in correct order. Use both pictures and words to show a particular event. Post this timeline on the wall of the health centre or location where the weighing and measuring will take place.

## Slide 11 – Community Events Timeline



Ask questions to help the mother relate the birth of her child to these events. For example: Was the child born during the big flood? Was the child born around the time of the harvest festival?

Write the word 'estimate' in the observation column to show that you have estimated the child's age.



### Role play a talk with mother to determine date of birth

Divide into pairs to practise estimating date of birth.

One person in the pair takes the role of the health worker and the other person takes the role of the mother.

The health worker talks with the mother about the child's age. The mother does not know exactly the year or month in which her child was born. So the health worker and mother must work together to determine when the child was born in relation to important community events.

**Note to Learning Facilitator:** The participants will need to establish a sample timeline for the community for the role play. Tell them that it can just be a quick and simple timeline for the purpose of this exercise.

After five minutes, ask one pair to volunteer to demonstrate its dialogue for the whole group.

### 3.4 Calculate age in months



We are going to practise calculating a child's age in months, using the difference between the date of birth and the date of measurement.



Then the age in months information will be used in combination with the weight and/or height of the child to determine how well the child is growing. We do not need to calculate the age in months if we are using the data for a survey. This is because the age in months will be calculated by the data analysis software.

#### Demonstrate an age in months calculation

##### Example for Child 1:

Today is August 15, 2008.  
A child was born on August 15, 2006.

##### Ask:

1. How many full years has the child lived?

**Answer:** 2 full years

2. How many months are there in one year?

**Answer:** 12 months

3. How old is the child in months?

**Answer:** 12 months/year  $\times$  2 years = 24 months.

Therefore the child's age in months is 24 months.

##### Example for Child 2:

The child's date of birth is August 15, 2006. It is now January 15, 2009.

##### Ask:

1. How many full years the child has lived.

**Answer:** 2 full years

2. How many full months past the full year the child has lived.

**Answer:** 5 months

3. How old is the child in months?

**Answer:** 12 months/year  $\times$  2 years = 24 months + 5 months = 29 months.

Therefore the child's age in months is 29 months.

## Slide 12 – Months in Five Years Chart



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### Months In Five Years

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

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

Put a small x in current month.

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

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**To help you do the calculations, a chart like the one above may be helpful.**

It is easy to calculate the child's age in months if you use a chart like this one.

In the last cell is the month and year of the weighing and in the first cell you put the month and year of a child who would be exactly five years old. Then, to find the age in months of a child, you find the month the child was born and count the number of full months after the child's birth month to find the age in months.

Using a chart set up like this it is also easy to see if a child is too old to participate in the weighing and measuring. For example, if you are measuring a child in April 2009 and the child was born in February 2004, you can easily see that the child is too old because the birth month will not appear on the chart.

Let's try this out:

If you are weighing children under five years old in April 2009 and a child comes that was born in August 2006, is the child eligible to be weighed? Check if the child's birth month is on the chart.

**Answer:** Yes, it is.

**Question:** What is the age of the child?

**Answer:** 32 months.



**Note to Learning Facilitator:** We can keep the explanation simple with no calculations. People soon figure out quick ways to count the months – like saying 24 months for 2 years and just counting on from there. If you know the month and year that a survey will take place, give the data collectors the calendar counter in a laminated form, so that they use it for every child during the survey. It will have to be adapted for each survey to ensure that the month and year of the measurement session is accurate.



Divide into pairs. Participants have 10 minutes to work on the following three calculations.

**For each question, calculate the child's age in months.**



1. A boy was born May 3, 2005. His mother brought him to be weighed on December 15, 2008.

**Ask:** What is the child's age in months?

**Answer:** 43 months



2. A grandmother brings a young girl into the health clinic on 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.

**Ask:** What is the child's age in months?

**Answer:** 24 months

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3. A small girl is brought to the health post for immunisation on May 29, 2008. Her birth date is recorded as July 15, 2007.

**Ask:** What is the child's age in months?

**Answer:** 10 months

After the 10 minutes are over, ask pairs to volunteer their answers.

**Ask:** How many got it right?

Ask if they had trouble with the exercise.

What was difficult for them?

Is there a common mistake that participants are making?

### 3.5 Accurate recording



Tell participants to work individually for this exercise.

Each participant divides a piece of paper into four squares and labels the squares from 1 to 4. As you read aloud each equation, participants write the equation in the appropriate square.

**Square #1.**  $10 + 5$

**Square #2.**  $25 - 5$

**Square #3.**  $463 - 1$

**Square #4.**  $978 + 10$

When all have completed this task, the participants pass their papers to the person on their left.

Ask four participants to volunteer to read aloud one of the equations written on the paper they now have.

After each equation is read out, the learning facilitator asks someone to give the correct answer.

Then participants write the answer on the paper they have.

Display a slide with the completed equations. Ensure that the numbers are formed correctly and clearly.

**The correct answers are:**

#1.  $10 + 5 = 15$

#2.  $25 - 5 = 20$

#3.  $463 - 1 = 462$

#4.  $978 + 10 = 988$

Ask participants to compare how the numbers are written on their papers.

We are interested in how the numbers are formed and whether or not the numbers are written clearly.

**Discussion:** *Do people write numbers in exactly the same way? Are the numbers always clear? What is not clear?*

## 3.6 Common mistakes



**Inform the group:**

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

It is as important to record measurements accurately and neatly as it is to learn the technique of measuring.

### Slide 13 – Recording Numbers Clearly



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Have participants take turns, and read aloud the instructions on the slide, one by one.

- 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 five 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.

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



## 3.7 Using the Recording Form

### Slide 14 – Record Numbers Clearly on Sample Recording Form



Workbook Page 13

Ask participants to work alone on this exercise. Allow about five minutes.

Instruct participants to use a pencil to circle anything on the form which is not clear or that they have questions about. Also, they should circle any mistakes they see.

Then discuss their responses.



**Ask:** Can you think of what could happen if we do not record the data clearly?

**Possible answers:**

- We cannot use the data so we do not accurately know the child's nutritional status.
- We might not identify a child who is not growing well.
- We waste time and resources.
- It is not respectful of the busy mothers who take their time to come.

## 3.8 Closing



Divide participants into two groups.

Post the competencies list for this lesson.

Instruct each group that every member of the group must be in agreement on the answer before someone from their group stands up to answer to the whole group. The spokesperson can stand up as soon as the group knows the answer.

Then, one by one, go through the list of competencies.

You cannot proceed to the next question until the correct answer has been explained.

Rather than having just the learning facilitator say whether the answers are correct or not, tell participants that each group can encourage and correct the other because that will also contribute to their learning.

World Vision

DI SLIDE 14

### Record Numbers Clearly on Sample Recording Form

1. Record the Date of birth (year/month/day) and the sex (M or F) of the child.  
2. Record the child's height/length in 0.1 cm.  
3. Record the date of measurement.

ADP: Shining Hope Date of Measurement: 2019/03/15  
 Community: Rising Sun Facilitator: Julia Feliciano

No.	Name of Mother	Name of Child	Date of Birth (yy/mm/dd)	Age in Months	Sex M/F	Weight (kg)	Child's Height/Length (cm)	HMIC (on or colour)	Weight Mother+Child	Weight Mother
	Diaz, Terna	Diaz, Cristy	21/03/08	9	Girl	10.4				
	Gonzalez, Gisela	Gonzalez, Ryan	20/07/10	24	M	12.8				
	Bonifacio, Maria	Bonifacio, Julia	08/19/09		F	11.6				
	Teodoro, Sabina	Teodoro, Renz	26/12/05	39		9.7				
	Pangan, Ann	Pangan, Jemer	06/10/10	28	M	10.2				
	Bylot, Kiera	Bylot, L.	07/06/11	33	F	14.2				

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Hours

### Purpose of Lesson 4

1. To demonstrate proper procedures for weighing children under 5 using hanging scales.
2. To explain 'calibration' and 'zeroing' in simple terms so participants will understand why they are important.

### Competencies

1. Install hanging scales properly.
2. 'Calibrate' and 'zero' scales, and explain why these steps are important.
3. Weigh children under 5 using hanging scales.
4. Record weight data on official forms.

### Preparation

1. Prepare one set of the following equipment for every three participants (for example, if you have 12 participants, you will need four sets of equipment):
  - Salter hanging scales
  - Rope
  - 1 kilogram, 5 kilogram and 10 kilogram weights
  - Doll, sack containing grain (corn or rice) or a heavy rock
  - Weighing basket or sling
  - Lightweight cloth or gown for small child
2. Write the main points of the day's agenda on flip-chart paper and post it in a place where all can see it.



Measuring children is not for the faint hearted!

### Graphics

- Slide 15 What Is Your Experience Weighing Children?
- Slide 16 Procedure for Measuring Weight with Hanging Scales
- Slide 17 Data Collection Form
- Slide 18 Illustrations of Eight Steps

**Note to Learning Facilitator:** Use the same scales for all children. If using hanging scales, then use the hanging scales for all children. If using standing scales, then use standing scales for all children (see Lesson 5 for weighing technique using standing scales).

## 4.1 Introduction to measuring weight



Workbook  
Page 14

Weight is the measurement most commonly used by the Ministry of Health 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

There are eight steps required for properly weighing children. We will explain these steps one by one.

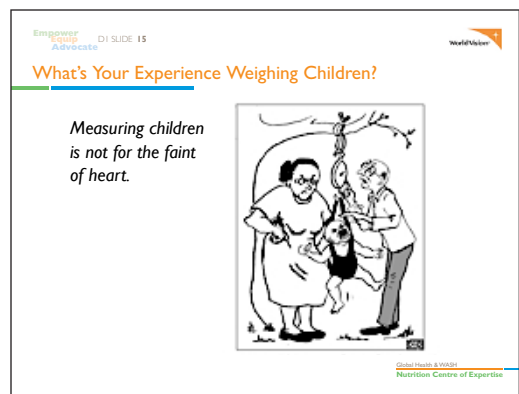
## 4.2 Sharing experiences

### Slide 15 – What Is Your Experience Weighing Children?



Workbook  
Page 14

Ask participants if any have experience weighing children. Ask those who have experience to share some details with the group.



## 4.3 Setting up hanging scales\*



Show the hanging scales to participants. Pass them around the room so that each person can clearly see the scales. Inside is a spring which is attached to a needle. The weight of the child stretches the spring and moves the needle. The needle points to a number on a dial; this is the weight of the child. There is a hook at the top of the scales by which you hang the scales on a tree or post. There is another hook below the scales from which you hang the child, in a small seat, basket, his own carrying cloth or weighing pants.

Hanging scales are sometimes called Salter Scales.

The hanging scales are made especially to weigh children under 5. These scales are durable, cheap and easy to move around.

Whatever type of scales is used, it is important to always store the scales properly. When not in use, the scales must be covered and kept safely in a cupboard to minimise dust and the chance of damage.

### How to hang the scales

Ask two participants to help hang the scales. Give them clear instructions.

Ensure that the scales are hanging freely, yet securely, from a tree or post. If no tree or post is available, then the scales can be hung on a pole that is held by two people.

The scales should be set at the eye level of the person who will read the measurement.

## Calibration

Ask if anyone knows what *calibration* means?

**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 weigh 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. If the weight does not read accurately, you need to 'zero' the scales. See the following.

## 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.



Workbook  
Page 14

## 4.4 Procedure to weigh a child using hanging scales

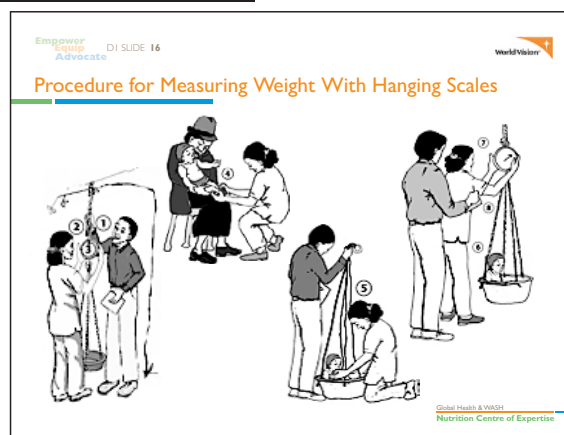


This demonstration should be done with a doll or sack of corn to represent a child. It is easiest to weigh children with two people: one person to assist the mother in placing child in the scales and read the measurement, and one person to record the weight.

### Slide 16 – Procedure for Measuring Weight with Hanging Scales



Workbook  
Page 15



## Prepare the scales

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



## Prepare the child

The learning facilitator acts as the health worker or measurer. Ask one participant to volunteer to be the mother and a second participant to volunteer to be the recorder.

You can use a doll or a sack of grain to take the place of a child for this demonstration.



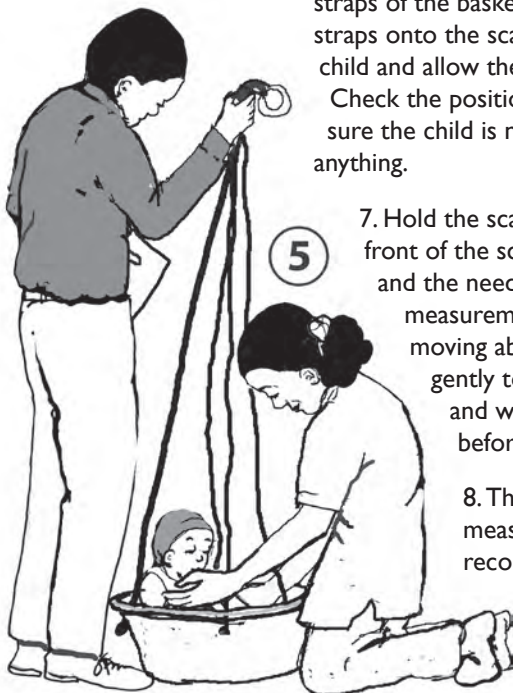
4. Ask the mother to hold the child, while removing the child's outer clothing. Do not remove the child's underpants. If the mother does not want the child to be without a covering, give her a lightweight cloth to cover the child.

## Measure the child's weight

5. Place the child in the basket or sling and ensure that it is secure.

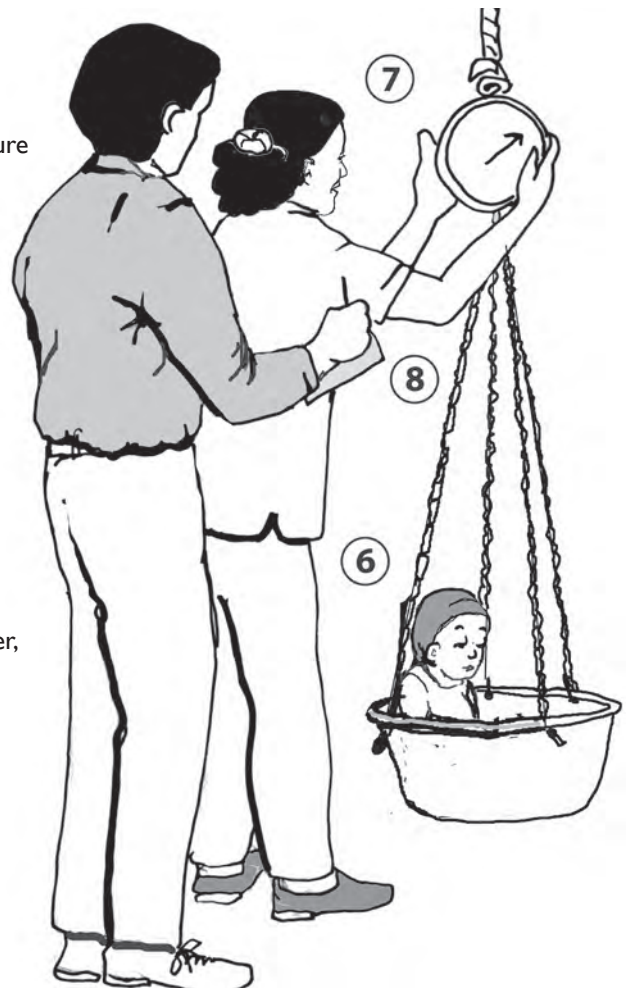
6. Carefully lift the child up by holding the straps of the basket or sling. Hook the straps onto the scales. Gently let go of the child and allow the child to swing freely.

Check the position of the child to make sure the child is not touching or holding anything.



7. Hold the scales steady. Stand directly in front of the scales. When the child is still and the needle is steady, read aloud the measurement to 0.1 kg. If the child is moving about, ask the mother to talk gently to the child to calm him or her, and wait until the needle is steady before reading the measurement.

8. The assistant repeats the measurement aloud and then records the weight immediately.





## 4.5 Recording weights

### Slide 17 – Data Collection Form



**Workbook  
Page 8**

Tell participants they must record the information neatly, clearly and accurately.

Include date of weighing, date of birth and sex of the child, as well as weight information.

Participants will use this form to record weights in the practise exercise.

Empower Equip Advocate DI SLIDE 17  
Data Collection Form

World Vision

Children 0 - 59 months

**Remember to:**  
1. Record the date of birth (year/month/day) 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.

ADP/Program \_\_\_\_\_ Date of Measurement (yy/mm/dd) \_\_\_\_\_  
Commenter \_\_\_\_\_ Name of Data Collector \_\_\_\_\_

No.	Name of Mother	Name of Child	Date of Birth (yy/mm/dd)	Age in Months*	Sex (M/F)	Child's Length (Height) (cm)	Child's Weight (kg)	MUAC (cm or colour) only for <math>6-59</math> months	STANDING SCALE ONLY (Use these two columns with young children who cannot stand)	
									Height (cm)	Weight (kg)

\* Not necessary when collecting data for surveys.

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## 4.6 Review the eight steps

### Slide 18 – Illustrations of Eight Steps



**Workbook  
Page 15**

Before the session prepare eight cards with the numbers 1 to 8 written on them (1 number per card).

Tell participants that the purpose of this exercise is to review all the steps required to weigh a child.

Participants randomly select one card (not all participants will be able to have a card).

Then, one at a time the participants with cards explain in detail what that step is.

#### The answers for the key steps are:

1. Hang scales from strong support.
2. Set scales at eye level.
3. Check to see needle is at zero before child is put on scales.
4. Mother assists the health worker or measurer to undress the child.
5. Mother and health worker place the child into the basket or sling.
6. Support the child while attaching the basket or sling to the scales; then make sure the child swings freely and does not touch anything.
7. Health worker holds scales and reads measurement aloud when needle is steady.
8. The assistant repeats aloud the measurement and then records it clearly on the form.





## 4.7 Practise weighing



Divide the participants into groups of three, with one participant acting the role of the mother, one the role of the health worker or measurer, and one the role of the recorder. Each participant should have a chance to act the role of the health worker or measurer.

One at a time, each group will correctly hang, calibrate and zero the scales; practise weighing a doll (or items such as a rock or sack of grain); and record the information on the sample data collection sheet Slide 17. Tell the other groups to watch carefully and discuss if they see any errors. During this time it may be helpful to have Slide 17 – Procedure for Measuring Weight with Hanging Scales displayed on one wall so that the learning facilitator can refer to it to correct any errors the participants make. Participants should refer to the slide only if they are unsure about one of the steps.

## 4.8 Problem-solving exercise

Ask the participants to think about and then discuss various situations that may cause problems while measuring children. The following questions can be used as prompts for the discussion. The group should decide what is a locally appropriate solution to each problem.



**Ask:**

1. *What if there is nowhere to hang the scales, or nowhere to hang scales so they are at eye level?*
2. *What if the child isn't still?*
3. *What if there is no assistant available?*
4. *What other problem do you (the participants) think could arise, and what should be done to address it?*

## 4.9 Closing

Ask participants to close their notebooks. Then ask them to call out step-by-step instructions for the whole process.

The learning facilitator acts out what participants say, exactly as instructed. The learning facilitator should very deliberately do only what the participants say to do.

Suggest that participants take time to review these eight steps each time they go to the field, before they actually start the weighing process.



Hours

## Purpose of Lesson 5

To demonstrate proper procedures for using standing scales to weigh children under 5.

## Competencies

1. Place standing scales properly.
2. Calibrate and zero standing scales.
3. Weigh children under 5 years accurately using standing scales.
4. Record weight data neatly, clearly and accurately.

## Preparation

**1. Equipment needed** (one set of equipment is needed for every four people in the class)

- UNICEF standing scales
- A set of common bathroom scales (not good quality)
- Standard weights (3 kg, 5 kg and 10 kg)
- Doll, sack of grain or a heavy rock (to practise weighing)
- Lightweight cloth or gown for small child

**2. Materials and supplies**

- Nine cards, each with a number from 1 to 9 written on it.
- Cards with a red X, one for each participant; cards with a green ✓, one for each participant.
- Masking tape
- Pencils, recording forms, paper

3. Write the main points on flip-chart paper and post it in a place where all can see it.



When did you last weigh yourself?

## Graphics

Slide 19 Data Collection Form

Slide 20 Review the Steps to Weigh Using Standing Scales



**Note to Learning Facilitator:** Normally you use just one method of weighing the children – either standing scales or hanging scales. Standing scales can be used to weigh older children. Standing scales can also be used to weigh young children if the mother is there to hold the child. Hanging scales can be used for the whole age range (0-5). Weighing is done in a basket or sling or different size weighing pants depending on the size of the child.

### 5.1 Standing scales



Weight is the measurement most commonly used by the Ministry of Health to assess child nutritional status.

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.



**Ask:**

1. *When was the last time you weighed yourself?*
2. *Why did you do that?*
3. *Do you think the weight was accurate? Why or why not?*

### 5.2 Introduction to standing scales



**Workbook  
Page 16**

Today, we are using standing scales to measure children’s weight. These are recommended by UNICEF and WHO. Electronic standing scales are very accurate, but they are also more expensive than regular household scales.

We can use standing scales if we do not have hanging scales to weigh children under 5 years. Using standing scales for children who are not able to stand without assistance requires an extra calculation.

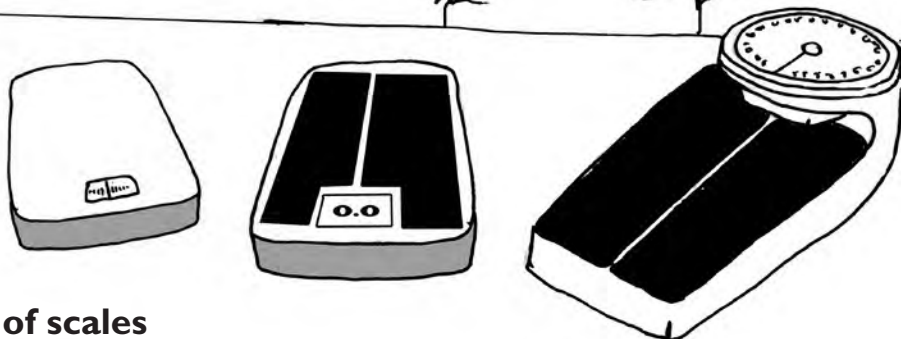


1. First, calibrate and zero the scales.
2. Weigh the mother and child together.
3. Weigh the mother alone.
4. Find the weight of the child by subtracting the weight of the mother alone from the weight of the mother and child together.

We can use standing scales if we do not have hanging scales to weigh children under 5. Using standing scales with small children requires an extra calculation when weighing children who are unable to stand without assistance.



Workbook  
Page 16



## 5.3 Accuracy of scales

Compare the two scales (good quality standing scales and common bathroom scales).

**Ask:**

1. Which scales do you think will give the most accurate reading?
2. Who would like to try them both so you can compare the scales?

**Ask for volunteers:** Weigh participants who have volunteered, and compare the weights from the two scales.

3. Is the weight the same on both scales?
4. Can you measure on both scales to 0.1 kg?

Now move the scales to several varied locations and reweigh at each new location. For example, place the scales on a flat hard floor, on rough ground like sand or gravel, on a slope, and so on.

5. Are the weights the same at different locations?

**Purpose of comparison:** To demonstrate that with common bathroom scales, often the weight changes each time the scales are used or moved. Common bathroom scales do not give accurate or consistent measurements. Therefore, we must not use common bathroom scales.

Some standing scales are digital and have digital numbers; some are analogue (a needle points to the numbers). The key thing is that you must use good quality standing scales.



**Note to Learning Facilitator:** It is recommended that you use good quality electronic scales. In order to find recommendations for good quality scales, contact the local UNICEF office or other large NGO.



## 5.6 Demonstration and practise weighing child older than 24 months



Ask a participant to volunteer to act as the child to be weighed.

The learning facilitator will take the role of the reader.

Ask another participant to take the role of the recorder/assistant. Give the recorder a pencil and recording form.

Then demonstrate in the following order:

1. Set scales on smooth, hard surface, in good light. Scales should be out of direct sunlight because heat may affect the readings.

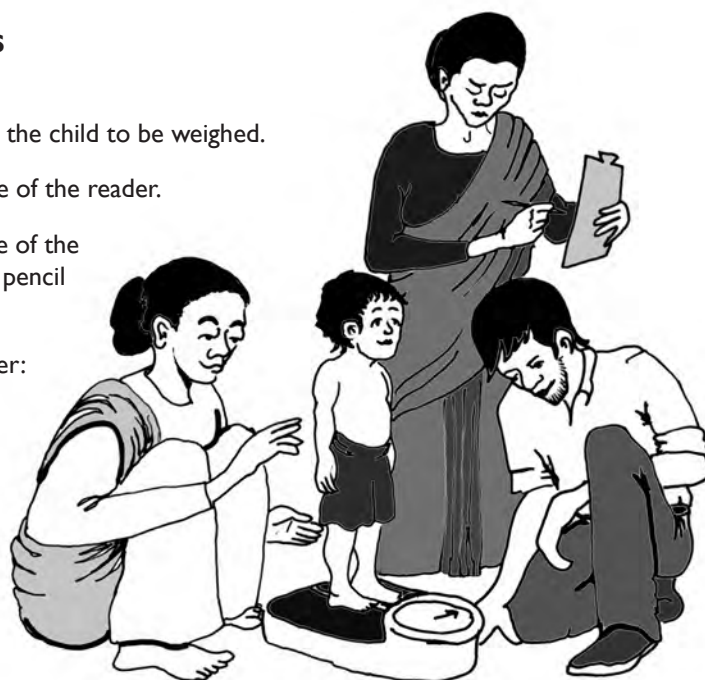
2. Reader zeros the scales.

3. Ask volunteer playing role of the child to remove his or her shoes and any sweaters or jackets, with assistance if necessary.

4. Child stands with feet at centre of scales.

5. Reader 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. Recorder stands behind the reader and repeats the weight aloud before writing it on the form. Reader checks the accuracy of the information on the form.



Workbook  
Page 17

## 5.7 Demonstration and practise weighing child younger than 24 months.

Ask a participant to volunteer to act as the mother.

Use a doll (or sack of grain or a rock) to represent a child.

The learning facilitator will take the role of the reader.

Ask another participant to act as the recorder. Give the recorder a pencil and recording form.







Then demonstrate in the following order:

1. Set scales on smooth hard surface in good light. Scales should be out of direct sunlight because the heat may affect the readings.

2. Zero the scales.

3. Mother removes child's outer clothes.

4. Mother holds child and stands on centre of the scales.

5. Reader kneels by scales and, when the reading is steady, reads aloud the weight of mother + child, to the nearest 0.1 kg.

6. Recorder stands behind reader and repeats the weight aloud before writing it on the form.

7. Mother steps off scales, gives the child to another person to hold, and then stands on the scales alone.

8. The reader reads aloud the weight of the mother alone.

9. Recorder repeats the weight aloud and records the mother's weight on the form. Recorder does the calculation on the sheet. Reader checks the accuracy of the information and calculation.

**Note:** The mother's weight is recorded only to be able to calculate the weight of the child by subtracting the mother's weight from the weight of the mother + child together.

For example:

Weight of mother + child = 59.6 kg

Weight of mother only (without the child) = 52.1 kg

Weight of child (59.6 – 52.1) = 7.5 kg

Now ask the participants to calculate the actual weight of the 'child' that was just weighed.

**Discuss their answers.** Are participants correct in their calculations? If not, why not? Answer any questions.



**Workbook**  
Page 17

## 5.8 Review the steps

### Slide 20 – Review the Steps to Weigh Using Standing Scales



Show this slide for the entire exercise.

Have nine cards, each with one number from 1 - 9 written on it.

One by one, the participants select a card.

Each participant then explains in detail the step on the card he or she has drawn.



**Note to Learning Facilitator:** *The previous two pages list the steps.*

## 5.9 Practise

Divide the participants into working groups of three people.

Tell each group to practise the series of steps you just demonstrated. They should take turns acting the part of the mother, the reader, and the recorder.

When you give these instructions, say clearly the list of steps one more time.

After they have practised one or two times, come back together as a group to discuss any challenges or questions.

## 5.10 Problem-solving exercise



Ask the participants to discuss various situations that may cause problems while measuring children. The following questions can be used as prompts for the discussion. The group needs to decide what is a locally appropriate solution to each problem.

### Ask

1. What if the ground is not level or there is a sandy surface?
2. What if there is no one to hold the child when the mother is weighed alone.
3. What if digital scales need batteries?
4. What other problem do you (the participants) think could arise, and what should be done to address it?

### 5.11 Closing



The learning facilitator gives each participant a card with a red X and a card with a green ✓.

The learning facilitator explains that he or she will conduct the weighing exercise again, but this time the participants hold up the red X card (if there is a mistake) or green ✓ card (if the step is done correctly) after each step to show whether they know if it has been done correctly or incorrectly.

Discuss together what mistakes the learning facilitator made. Then discuss what the learning facilitator measured correctly.

Ask two participants to volunteer to demonstrate the weighing technique; the other participants should rate their demonstration with the red and green cards as they did in the previous exercise with the learning facilitator.

When completed, discuss what was done correctly and what mistakes were made.



Hours

## Purpose of Lesson 6

1. To explain and demonstrate the difference between length and height measurements.
2. To introduce the skills required for accurately measuring the length and height of children.

## Competencies

1. Distinguish between length and height and the use of each type of measurement.
2. Demonstrate accurately how to measure recumbent (lying down) length of children under 2.
3. Demonstrate accurately how to measure standing height of children 2 – 5 years of age.
4. Record accurately and clearly the height and length of children on an official form.

## Preparation

Ensure that you have overhead projector to show slides or have posters of the slides to display.

Write out a simple agenda and post it in the meeting room.

Equipment needed: one set of measuring board and sticks for every four participants.

- Height/length boards
- Several sticks of different length: half of the sticks should be more than 85 cm and half should be 40 – 85 cm
- Doll or sack of grain
- Choose several appropriate locations for the length and height board

## Graphics

Slide 1 Height Differences

Slide 2 & 3 Measuring Length of Children Under 2 Years

Slide 4 Review the Steps to Measure a Child's Length

Slide 5 Measuring Height of Children Over 2 Years

Slide 6 Review the Steps to Measure a Child's Height

Slide 7 Data Collection Form

Slide 8 Review – Correct or Incorrect?



## 6.1 Sharing traditional sayings about height

**Ask** participants to share quotes or traditional sayings about height. Have two or three of your own examples ready in case participants cannot think of any.

**Example:**

‘There is no such thing as a little country. The greatness of a people is no more determined by their numbers than the greatness of a person is by height’. (Victor Hugo)

‘No persons are so tall that they need never stretch, and none so small that they need never stoop’. (Danish Proverb)

‘Which of you by worrying can add a single centimetre to your height?’ (Matthew 6:27, paraphrased)

### Slide 1 – Height Differences



**Workbook  
Page 18**



Children less than 24 months old (under 2 years) may not be able to stand up very well by themselves, so we measure their height lying down. This measurement is officially called ‘recumbent length’. Usually we just say ‘length’.

Children older than 24 months who are able to stand well on their own without assistance are measured in the standing position. This measurement is officially called ‘standing height’. Usually we just say ‘height’.

The same board is used for both measurements. When the board is lying down flat, we call it a ‘length board’. When the board is standing up, we call it a ‘height board’.



## 6.2 Measuring children with a length board



Pass the board around so that participants can see it and examine it while you are explaining it.

- a) The board has a fixed platform on the bottom where the child’s head can rest and a foot board which can be moved up and down so that it can lie flat against the bottoms of a child’s feet.
- b) There is a metre tape with increments in centimetres fixed along one side of the board.
- c) Proper placement of the board is important to ensure that the data will be valid.
- d) To measure length, the board is laid down horizontally on a flat surface so the child can lie down on it.

**Ask:** *When do we measure length?*

**Answer:** When a child is under 2 years, or when a child cannot stand well without help.

Ask a participant to volunteer to act as the assistant. Ask a second person to volunteer to act as the mother. Use a doll or a sack of grain as the child. Then conduct the demonstration below.

## Proper placement of the length board.

### Slide 2 – Measuring Length of Children Under 2 Years



Workbook  
Page 18

1. Place the length board on flat ground or a low, flat surface. Be sure it is secure so the child will not fall off.


### Correct technique of measuring with a length board

2. Ask the mother to remove the child's shoes and any hat or hair ornament.
3. Ask the mother to lay the child down on its back on the length board.

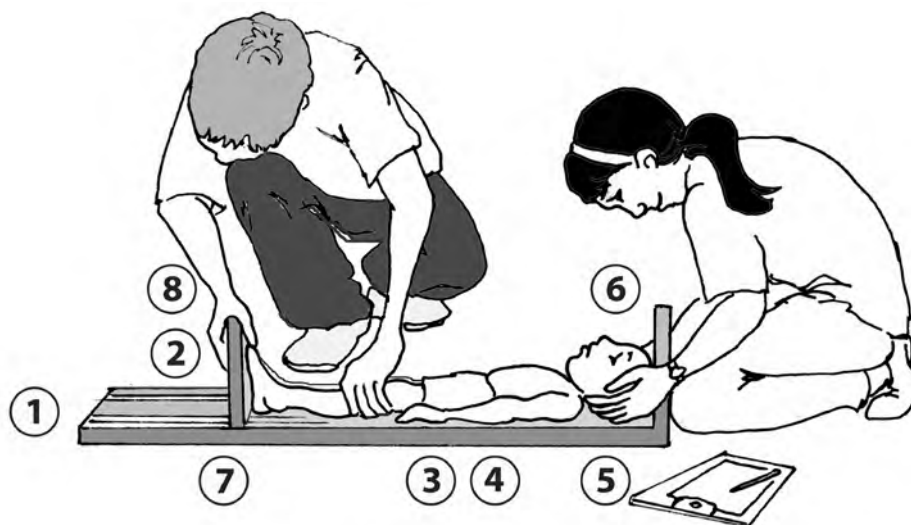
Empower People Advocate D2 SLIDE 2 HealthWatch

#### Measuring Length of Children Under 2 Years

1. Place the length board on flat ground or a low, flat surface. Be sure it is secure so the child will not fall off.
2. Ask the mother to remove the child's shoes and any hat or hair ornament.
3. Ask the mother to lay the child down on their back, on top of the length board.
4. Ensure that the child's head, shoulders, back, buttocks and heels are flat against the length 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 will hold the head of the child so that the child's eyes look upwards. The assistant's head should be directly over that of the child's and he or she should look directly into the child's eyes.
7. The measurer presses gently on the child's knees with one hand to straighten them and as quickly as possible moves the mobile footpiece on the length board with their other hand so that the feet of the child are pressed flat against it.
8. Quickly read the measurement aloud without moving the child or the mobile foot piece. This is the length of the child.



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4. Ensure that the child's head, shoulders, back, buttocks and heels are flat against the length 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 will hold the head of the child so that the child's eyes look up. The assistant's head should be directly over the child's head, and he or she should look directly into the child's eyes
7. The measurer presses gently with one hand on the child's knees to straighten them. At the same time, the measurer quickly moves the moveable foot piece with his or her other hand so that the child's feet are pressed flat against it.

### Recording the length measurement

8. Quickly read the measurement aloud without moving the child or the moveable foot piece. This is the length of the child.



## Slide 3 – Measuring Length of Children Under 2 Years

9. The assistant repeats the number aloud and then writes it down. The measurer checks that the measurement is recorded correctly.
10. When the numbers have been recorded, gently help the child to get up off the board and return to his or her mother.



Workbook  
Page 18



Empower Equip Advocate D2 SLIDE 3

**Review the Steps to Measure a Child's Length**

9. The assistant will repeat the measurement aloud and then write it down. Ensure the measurement is recorded correctly.
10. When the numbers have been recorded, gently help the child to get up off the board and return to his/her mother.

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## 6.3 Review the steps to measure a child's length

### Slide 4 – Review the Steps to Measure a Child's Length



For this demonstration, the learning facilitator will go step by step through the process of measuring the length of a stick that represents a child. The learning facilitator should do some steps correctly and some steps incorrectly.

Ask participants to stand if they think that something has been done incorrectly. A person who stands must give an explanation of the error and then explain the correct way to do that step.

Empower Equip Advocate D2 SLIDE 4

**Review the Steps to Measure a Child's Length**

Global Health & WASH  
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## 6.4 Measuring children with a height board



Pass the board around so that participants can see it and examine it while you are explaining it.

- The board has a fixed platform on the bottom that the child can stand on and a headpiece which can be moved up and down so that it can lie flat against the top of a child's head.
- There is a metre tape with increments in centimetres fixed along one side of the board.
- Proper placement of the board is important to ensure that the data will be valid.
- To measure height, the board is placed vertically so the child can stand on the fixed platform at the bottom.

**Ask:** When do we measure height?

**Answer:** When a child is older than 24 months and able to stand well without help.

For the next series of activities, ask a participant to volunteer to act as assistant. Ask another participant to act as the mother. Use a stick as the child.

### Proper placement of the height board

#### Slide 5 – Measuring Height of Children Over 2 Years



Workbook  
Page 19


- Place the height board on flat ground against a wall or tree that is upright. Ensure that the board will not move.



Empower Equip Advance D2 SLIDE 5

World Vision

### Measuring Height of Children Over 2 Years



- Place the height board on flat ground and against a wall or tree that is upright. Ensure the board will not move.
- The child must be barefoot and not be wearing a hat or anything else on the head. Ask the mother to remove these items.
- Stand the child on the platform at the base of the height board, heels together and knees straight, heels, calves, thighs, trunk and buttocks are touching the back of the board.
- Lift the child's chin so their eyes are looking straight ahead.
- The arms should be hanging at the sides. The child's weight should be distributed evenly on both feet.
- The measurer's shoulder should be in front of the child and so that she/he is eye-level with the child's head.
- Gently and firmly slide the mobile headpiece until it touches the crown of the child's head. Hold it firmly there.
- Read the measurement indicated by the headpiece out loud.
- The assistant will repeat the measurement out loud and then write it down. The measurer ensures that the number is written correctly and neatly.

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### Correct technique of measuring with a height board

2. The child must be barefoot and not have anything on top of his or her head (such as a hat or hair ornament). Ask the mother to remove these items.
3. Stand the child on the platform at the base of the height board, heels together and knees straight. Heels, calves, thighs, trunk and buttocks should touch the back of the board. The child's feet should be flat against the base of the board (i.e. no tiptoes).
4. Lift the child's chin so the child's eyes are looking straight ahead.
5. The arms should be hanging down at the child's sides. The child's weight should be distributed evenly on both feet.
6. The measurer squats down right in front of and at eye level with the child (that is, looking into the child's eyes). The measurer can gently hold the child's head in position.
7. The assistant can gently and firmly slide the moveable headpiece down until it touches the crown of the child's head.

### Recording the height measurement

8. The measurer reads aloud the measurement indicated by the headpiece.
9. The assistant repeats the measurement aloud and then writes it down. The measurer checks that the number is written correctly and neatly.

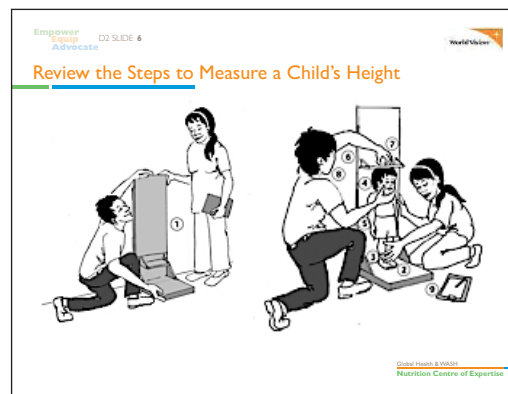


## 6.5 Review the steps to measure a child's height

### Slide 6 – Review the Steps to Measure a Child's Height

Have two participants volunteer to come to the front of the room. Together they demonstrate the proper technique for measuring length and then height. The participants sitting down must watch to see if the correct procedure is being used. After the pair finishes the demonstration, the participants can comment on what they saw and provide suggestions on how to improve the technique.

After the first pair finishes and all comments have been heard, another pair can try to demonstrate the correct procedure.



### Slide 7 – Data Collection Form



Workbook  
Page 8

**Ask:** What is important to remember when you are writing information on the form?

**Answer:** 1. Be clear and be neat.

2. Always ask a mother what sex the child is.

Ask if anyone has questions.

## 6.6 Practise measuring height and length



Divide participants into groups of three to practise taking heights or lengths of 'stick' children (children will be represented by sticks prepared ahead of time).

There will be three different examples, and the groups must decide whether to measure length or height, depending on the situation:

**Example 1:** A child is one year old.

**Example 2:** A child is three years old but cannot stand up by herself.

**Example 3:** A child is five years old.

As the learning facilitator reads out each example, groups prepare their board accordingly and conduct a measurement. Each participant should take a turn being the measurer, with the other two participants being the recorder/assistant and child's mother.

Record height or length on Workbook page 8 Data Collection Form (same as Slide 7).

The learning facilitator should walk around the room observing the groups to encourage the participants and to correct the technique where required.

## 6.7 Problem solving

### Slide 8 – Review – Correct or Incorrect?



Workbook  
Page 20



#### Discuss the two photos.

Allow five minutes for participants individually to write what they think is correct and incorrect in each picture.

#### Ask:

*In measuring LENGTH, what is correct?*

#### Answers:

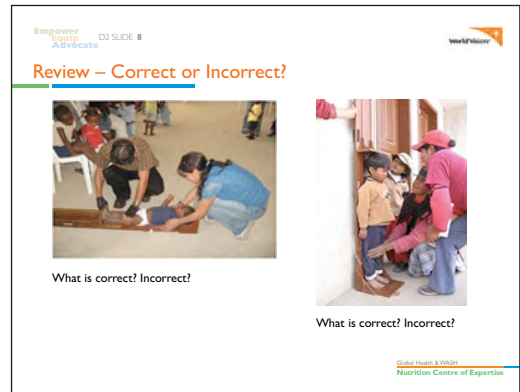
- There are two people taking the measurement.
- One person is holding the foot board.
- Measurer is holding the child's legs properly.
- Child's feet are flat against foot board.

#### Ask:

*What is not correct?*

#### Answers:

- Assistant is not holding the child's head.
- Child is not looking straight up into assistant's eyes.
- There is no paper on which to record information.





**Ask:**  
In measuring *HEIGHT*,  
what is correct?

**Answers:**

- The board is supported against a wall.
- There are two people taking the measurement: a measurer and an assistant.
- The child is barefoot.
- The child's knees are being held firmly in place.



**Ask:**  
What is not correct?

**Answers:**

- The child is looking down rather than at the person measuring.
- The child's head is not being held.
- The measurer is standing too high and is not at eye level with the child.
- The assistant is not holding the head piece gently and level on the child's head.
- There is no paper on which to record the measurement.

## 6.8 Closing



**Ask**  
Ask one volunteer to explain the difference between length and height. If the answer is correct, all participants clap twice. If the answer is not correct, ask another participant to give the answer.

Ask one volunteer to give an example of an important lesson learned today and something the participants will need to remember when they go to the field to measure children.





Minutes

## Purpose of Lesson 7

1. To define MUAC.
2. To demonstrate how to take MUAC measurements.
3. To explain how the information is used for programming.

## Competencies

1. Explain MUAC in simple language.
2. Explain when it is appropriate to use MUAC to measure nutritional status.
3. Demonstrate how to measure a child's MUAC accurately.
4. Interpret MUAC readings and explain their implications.

## Preparation

1. Prepare a short story about an emergency situation when taking MUAC was required.
2. Write the main points of the agenda for the day on flip-chart paper and post the paper in a place where all can see it.

## Equipment needed

MUAC bands (one band for each participant)

**Note:** A simple tape measure made of non-stretch material can be used if MUAC bands are not available; however, MUAC bands are always preferable.

## Graphics

- Slide 9 Data Collection Form  
Slide 10 Review Steps 1 – 5 in Measuring MUAC  
Slide 11 Review Steps 6 – 8 in Measuring MUAC



### 7.1 What is Mid-Upper Arm Circumference (MUAC)?



Tell a short story of a refugee or emergency food situation when:

- There were many needy people.
- Immediate action was needed.
- Response time was critical.



**Ask:** *What can we do that will give us a quick assessment of nutritional status in a community?*

**Answer:** Mid-Upper Arm Circumference (or MUAC) is a measure often used in these situations.

**Ask:** *Has anyone in the group ever conducted this kind of assessment before? If yes, ask the person (or persons) to briefly describe the experience.*



**Workbook**  
Page 21

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.

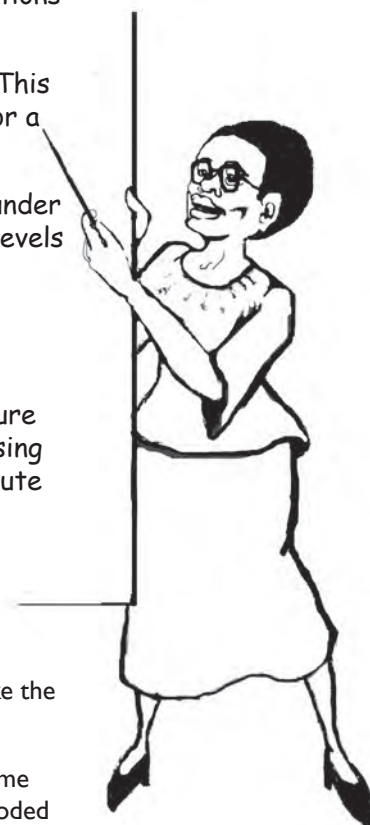
MUAC is based on the fact that a small or decreasing arm circumference signals the loss of muscle mass. ('Circumference' means 'outside edge of a circle'.) Muscle mass is known to be important in maintaining body functions and in fighting infections.

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.

For monitoring growth we use weight and age. To measure stunting we use height and age. Wasting is measured using weight and height. MUAC should be used to identify acute malnutrition and to estimate beneficiary numbers for emergency nutrition programmes in nutrition surveys.



## 7.2 Demonstrate correct technique of MUAC band



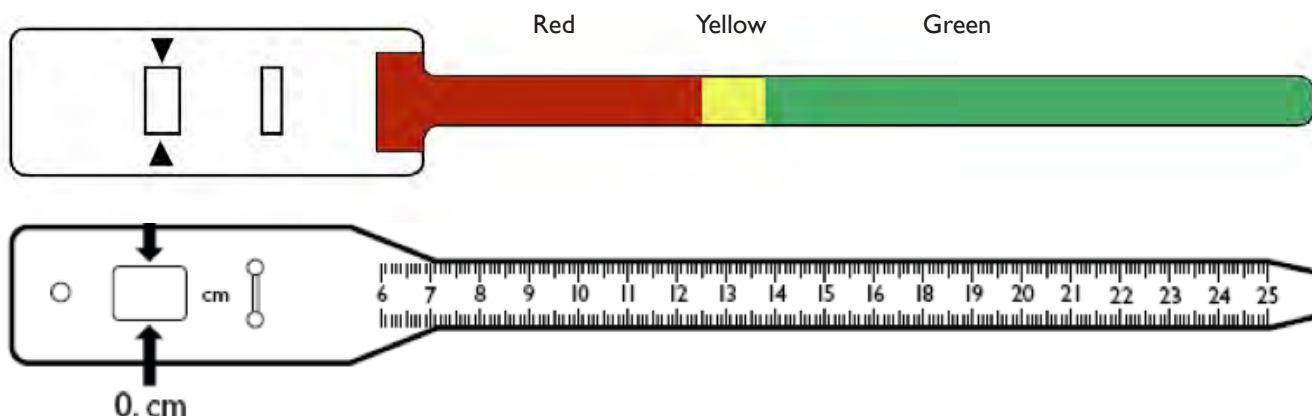
We measure upper-arm circumference with special bands or tapes like the ones pictured below.

Different types of MUAC bands are available. Some have numbers, some have numbers and colours, and some have colours only. Use colour-coded bands when available because this makes measuring MUAC simpler.



**Workbook**  
Page 21, 22

When measuring MUAC, we must get some extra information about the child from the mother, the same way we do when measuring weight and height. We must write down the child's name, sex, date of birth, mother's name and, when required, an identification number.





Ask for a volunteer to take the role of the child in your demonstration of how to take the MUAC measurement.

1. Work at eye level. Sit down when that is possible.

2. Ask the mother to remove any clothing that covers the child's arm.

Then we find the mid-point of the child's upper arm by doing the following steps.

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

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

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

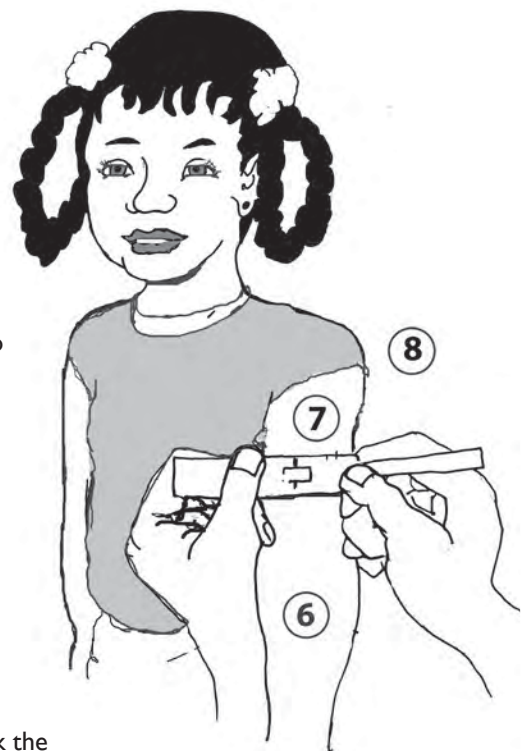
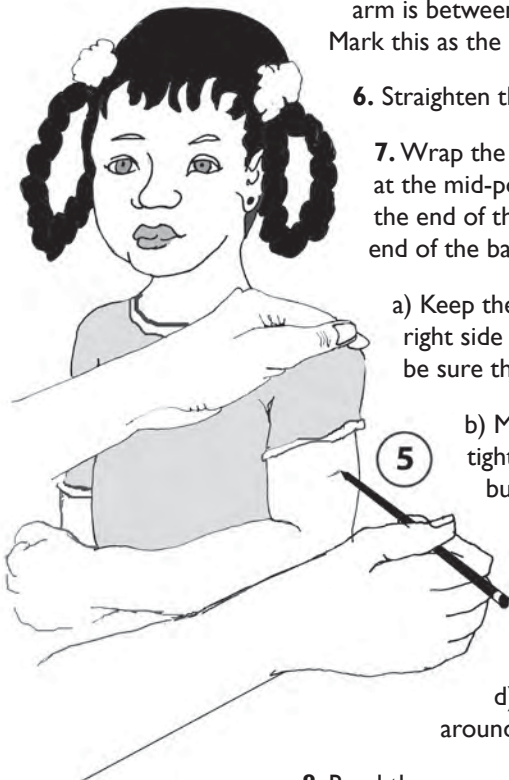
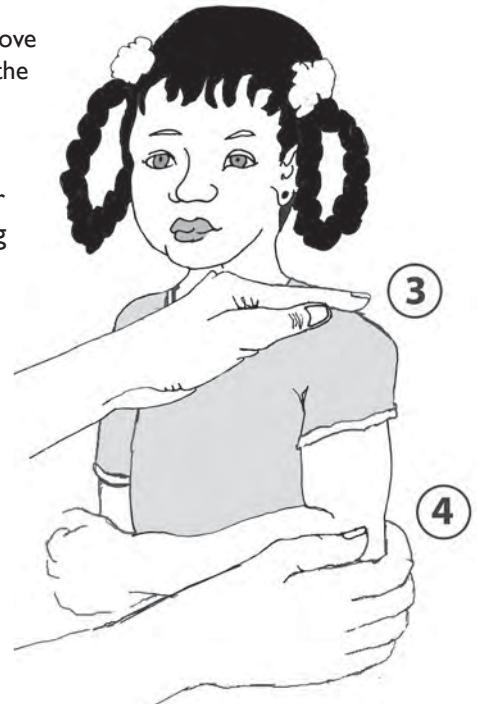
c) Make sure the band is not too loose (the band is too loose if you can fit a pencil under it)

d) Make sure the band 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 band). Ask the assistant to repeat the measurement and to record it on the form.

a) Check that the measurement is recorded correctly.

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



**Workbook**  
Page 21-22

## Slide 9 – Data Collection Form



Workbook  
Page 8

**Note:**

As with height and weight measurements, you can write the names of mother and child in the local language, or write the identification number on the form. Ensure that the MUAC measurement is recorded clearly to avoid mistakes.

## 7.3 Review the steps

### Slide 10 – Review Steps 1 – 5 in Measuring MUAC



Workbook  
Page 21-22

1. Work at eye level. Sit down when that is possible.
2. Ask the mother to remove any clothing that covers the child's left arm.
3. Locate the tip of the child's shoulder with your fingertips.
4. Bend the child's elbow to a right angle.
5. Place a mark on the child's arm halfway between the shoulder tip and the elbow.

### Slide 11 – Review Steps 6 – 8 in Measuring MUAC

6. Straighten the child's arm.
7. Wrap the MUAC band around the child's left arm at the mid-point mark you have just made. Insert the end of the band through the thin opening at the other end of the band.
  - a) Keep the colours or numbers on the band right side up so that you can see them, and be sure that the band is flat against the skin.
  - b) Make sure the band is not too tight (if the band is too tight, this bunches up the skin and we do not get an accurate reading).
  - c) Make sure the band is not too loose (the band is too loose if you can fit a pencil under it).
  - d) Make sure the band 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 band). Ask the assistant to repeat the measurement and to record it on the form.
  - a) Check that the measurement is recorded correctly.
  - b) Gently remove the band from the child's arm. Thank the mother and the child for their cooperation.



### 7.4 Practise taking a MUAC reading

Divide the group into pairs.

Each person should take the MUAC reading of his or her partner and record the measurement on the form on page 8 of the Participant's Workbook (Slide 9).

Then switch so that everyone has the experience of being measured and of measuring.

The Learning Facilitator goes to each pair and observes. Be encouraging, but correct technique when necessary.

### 7.5 Interpreting MUAC



**Workbook**  
**Page 21**

We use a 'cut-off point' of 11.5 cm to identify severely malnourished children. Any child whose MUAC measurement is below 11.5 cm (red) is considered severely malnourished and at risk of death, and requires immediate medical attention.

Those children with MUAC between 11.5 cm and 12.4 cm (yellow) are classified as moderately malnourished.

A child whose MUAC is 12.5 cm or greater (green) is classified as having a normal mid-upper arm circumference.



**Note to Learning Facilitator:** *The cut-off point of 11.5 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 smaller mid-upper arm circumference than 11.5 cm are at greater risk of death than those above this cut-off.*

### 7.6 Closing



**Ask:** Ask participants to define MUAC. What does this acronym mean?

**Answer:** Mid-Upper Arm Circumference

**Ask:** Ask participants under what circumstances should they use MUAC?

**Answer:** Emergency situation where there are many needy people, immediate action is needed, or response time is critical.

Ask participants to tell you how to interpret MUAC readings.

**Ask:** What are the cut-off points for moderate malnutrition?

**Answer:** Between 11.5 cm and 12.4 cm; yellow colour

**Ask:** For severe malnutrition?

**Answer:** 11.5 cm or below; red colour

• Source: WHO child growth standards and the identification of severe acute malnutrition in infants and children: Joint statement by the World Health Organization and the United Nations Children's Fund, 2009.



**5**  
**Hours**  
 (1 hour  
 preparation,  
 4 hours for  
 standardisation)

### Purpose of Lesson 8

1. To build confidence, consistency and accuracy in measuring children.
2. To identify participants who can measure children accurately and consistently.

### Competencies

1. Consistently and accurately weigh and measure children.

### Preparation

*This lesson involves volunteers from the community (mothers with their children under 5) for a standardisation exercise (or health fair). This exercise will allow workshop participants to practise weighing and measuring children and to compare their results with a set of known results to determine if the results are accurate and consistent (called standardisation).*

#### 1. Find volunteer mothers with children under 5 years.

You will need one measuring station for every two participants, and one volunteer mother with her child for each station (e.g. if there are 12 participants, you will need six stations.) If there is not enough room for the number of stations you require, or if there are too many participants, then participants may wait and take turns to do the measuring. If there is an odd number of participants, then form one group of three participants.

**Note:** The exact numbers of mother/child volunteers you need to recruit, and the number of stations you have will depend on how many participants attend and how much space you have to work with.

- a. Find an appropriate number of mothers with a child under 5 who will come to a half-day practice session and allow their children to be weighed and measured. Be sure there are also at least two children under 2 so participants can practise measuring child length.
- b. Tell the mothers that the exercise will take a half-day.
- c. Instruct each mother to come with only one child and to bring the child's Growth Chart or Road to Health Card. Inform the mothers that each child will be weighed and measured several times.
- d. Inform the mothers that they will be asked to give the same information over and over again, because this is part of the training for your staff. This is a tiring process for the mothers and the children.
- e. Be very specific about the date, where the mothers and children are to go and the time they are expected to arrive at the location.

#### 2. Location

- a. Select a suitable location for the standardisation exercise. It should be big enough to accommodate all the people involved; if possible, it should be inside a building and not outside in the heat and weather.
- b. The site must have toilet facilities that are easily accessible because so many children and mothers will participate.
- c. You need enough space to set up several stations (one for each pair of participants). There should be enough distance between stations that participants cannot see or overhear each other's results.
- d. Make sure you have enough equipment for the number of stations.
- e. You will also need space and supplies to set up a play station for the children with toys and materials like crayons and paper to keep children busy.

**3. Incentives and transport for mothers and children**

- a. Supply snacks and drinks for the mothers and children.
- b. Supply small incentives for the mothers, and have them ready before the mothers and children arrive. The incentives will depend on your context. Some examples are soap, an inexpensive market bag or other small items.
- c. Also, it might be necessary to arrange transport for the mothers and children; or you may be required to pay a per diem, depending on the regular practices in your country.

**Materials and Supplies**

- Sticky notes (or small cards and masking tape)
- Pens and markers
- MUAC bands (one or two for each station) - if participants have completed Lesson 7 on Measuring MUAC.
- Scales (one for each station). Provide hanging or standing scales, depending on which the programme will be using.
- Height/length boards (one for each station).
- Recording forms for each participant (Slide 8.3)
- Toys, paper, crayons (items for the children to play with while they are waiting)
- Snacks and drinks for mothers and children

**Graphics**

Slide 12 Common Errors in Measuring

Slide 13 Five Things to Remember

Slide 14 Data Collection Form

Slide 15 Form 1 Weight Standardisation

Slide 16 Form 2 Height/Length Standardisation

Slide 17 Form 3 MUAC Standardisation



## 8.1 Correct techniques for measuring children

In order to determine if children are growing adequately it is important to know and practise the correct techniques for accurately weighing and measuring children.



Divide participants into groups of two or three people.

Give each group a different colour set of sticky notes or cards.

Tell the group to list as many possible measuring and weighing errors as they can think of and write one idea on each sticky note or card.

Give them three minutes to do this.

After three minutes ask each group to share two errors that have not been mentioned by other groups.

Go around the groups until no new errors are mentioned.

Give a cheer for the group who identified the most errors.

**Slide 12 – Common Errors in Measuring**



**Workbook  
Page 23**

Common Errors	Solution
<b>1. All Measurements</b>	
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.
<b>2. Length/Height</b>	
Incorrect method for age	Use length only when child is under 2 years old or unable to stand properly.
Foot wear/headgear	Remove.
Head or body 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.
<b>3. Weight</b>	
Scale not calibrated to zero	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.
<b>4. MUAC</b>	
Child not standing in the correct position	Position subject correctly.
Mid-point of mid-upper arm 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 bands.

Match the sticky notes with the errors listed on the slide. Are there any errors missed? Any extras? Propose solutions for any errors which are not on the slide. Ask participants if they have any ideas for additional solutions for the errors that are listed.

**Errors fall into three general categories:**

- Improper techniques when measuring weight, height or MUAC. This will give inaccurate data.
- Incorrectly reading the measurement.
- Incorrectly recording the measurement.

**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.



**Workbook  
Page 23**

## Slide 13 – Five Things to Remember



Workbook  
Page 24



**BE FRIENDLY:** Remember that each child is a special individual, not a project number. Be kind and friendly when you relate to the child and the mother.

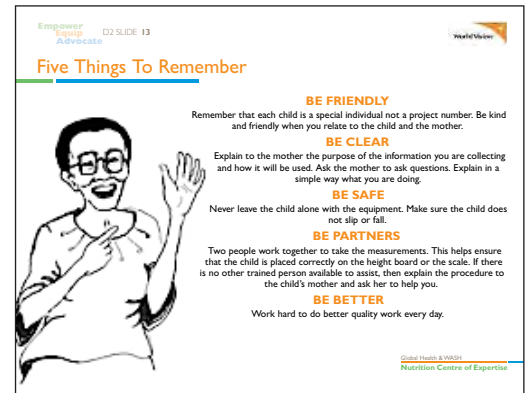
**BE CLEAR:** Explain in simple terms what you are doing. Ask the mother if she has any questions.

**BE SAFE:** Never leave the child alone with the equipment. Make sure the child does not slip or fall.

**BE PARTNERS:** Two people work together to take the measurements. This helps ensure that the child is placed correctly on the height board or the scales. If there is no other trained person available to assist, then explain the procedure to the child's mother and ask her to help you.

**BE BETTER:** Work hard to do better quality work every day.

► **Note to Learning Facilitator:** *To help participants remember these five points, you can ask them to hold up one hand and count off these points while saying them aloud, one on each finger as they see Anna doing in the slide.*



Be Friendly  
Be Clear  
Be Safe  
Be Partners  
Be Better

## 8.2 Standardisation Exercise

### Explanation of the Standardisation Exercise

1. Show the participants the place that the standardisation exercise will be held and assign locations for each station.
2. Divide participants into groups of two. Explain to the participants how the standardisation exercise works.
3. Assign a station to each pair of participants (they will set up the equipment for that station before the mothers and children arrive and start their measurements at that station when the exercise begins).
4. Mothers and children will arrive and be greeted. Each mother and child will be assigned to a station and each child will be given a number.
5. Each mother and child will stay at their station for the entire exercise.
6. The pairs of participants will rotate through the stations when the learning facilitator gives the signal.
7. At each station a pair of participants will measure the child's weight and height or length (and measure MUAC, if using that measurement)





**Workbook  
Page 8**

and then record the information on the recording form (Participant's Workbook page 8, Slide 14).

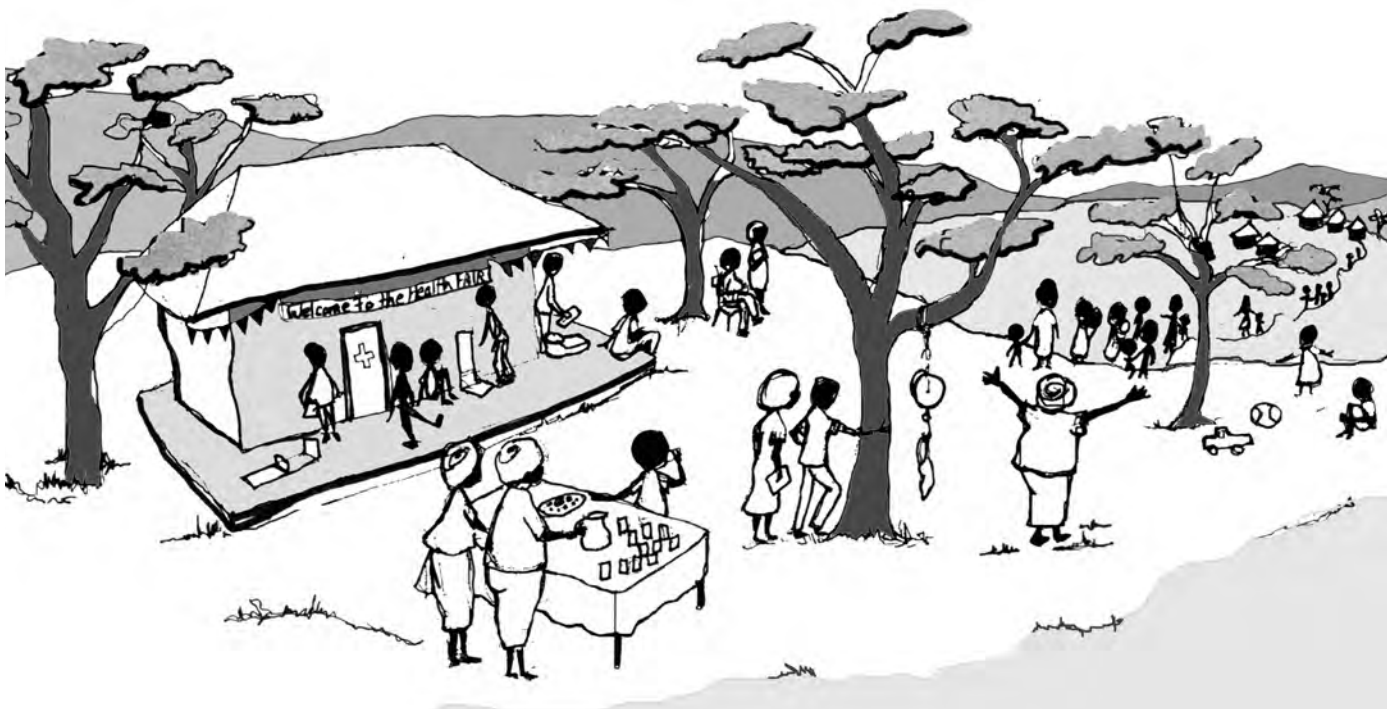
8. Participant pairs will then move on to the next station to measure the next child.
9. Participants should exchange roles within their pairs so each participant has a chance to weigh and measure children.
10. After both participants have a chance to weigh and measure children, the participants will hand in their forms to the learning facilitator and use a new form to repeat the same measurements again. This will show how consistent and reliable their own measurements are when they compare their first and second measurements for the same child.
11. When all measuring is complete, mothers and children will be offered drinks and snacks and incentives will be given out, if this is being done. Mothers and children will then be free to leave or will be provided with transportation.

### Setting up the Standardisation Exercise



Before the volunteer mothers and children are scheduled to arrive, the learning facilitator works with participants to set up the standardisation exercise.

Each pair of participants sets up the measuring equipment in the station to which it has been assigned. The pair needs to hang and calibrate the scales and position the height/length board. Each station includes a weighing scale, height/length board, and MUAC bands (if MUAC is being measured). The set up will take at least a half-hour so make sure to allow enough time to have everything set up before the mothers and children arrive.







## Participant measure

Each mother and child pair will remain at its assigned station. Each pair of participants starts at the station that it has been assigned and carefully conducts the measurements and clearly records the results on the recording form in the correct column in ink.

The participant pairs remain at each station until the learning facilitator instructs them to move. Once the participant leaves that station, corrections are not allowed. Participants should check their results before leaving the station.

Only one pair of measurers should be with a child at any one time.

\*\*\*Talking within a group is allowed, but talking between groups is not allowed during this exercise.

Throughout the standardisation exercise, the learning facilitator moves around to observe the participants and what they are doing correctly or incorrectly in order to discuss the results of these observations later with the participants.

When the measurements are finished for a particular caregiver and child pair, the learning facilitator gives information to the caregiver about the growth of the child, based on the information collected from the Standard Measure. Once participant pairs are finished their measurements, they should observe the conversation between the learning facilitator and caregiver. The learning facilitator can do this on the first or second round of the exercise. It is important that every caregiver should know the nutritional status of his or her child before leaving.

Throughout the measuring exercise, children should be allowed to snack or breastfeed as needed for comfort and to avoid irritability. Once the measuring is finished, offer a snack to the mothers and children and thank them for coming. Give them the incentive, if applicable. Explain that they have helped prepare health workers with better skills and how this will help the whole community. The learning facilitator and a few participants should escort the mothers and children to the exit as a way of thanking them properly and making sure they leave safely.

### 8.3 Comparing results

The purpose of the three forms in this section is to facilitate group calculation of the standardisation exercise just completed. By comparing results, we see how accurately participants have done the weighing and measuring. These forms are only intended for this training exercise; They are not to be used as part of any routine weighing and measuring activities.

#### **Step 1: Record your measurement results (weight, height/length, MUAC).**

When the mothers and children have left, the learning facilitator meets with participants as a group to analyse the results of the exercise.

The learning facilitator should explain that each participant should write the weight measurements he or she took on Form 1 (Slide 15), the height/length measurements on Form 2 (Slide 16), and the MUAC measurements on Form 3 (Slide 17). The participants' measurements are recorded in the column 'My Measure'. They should only record the measurements that they

took themselves. Participants should be careful and check all their work as copying errors are quite common.

Once that is completed, the learning facilitator will show the group the 'Standard Measure', that is, the measurement that the learning facilitator took at the beginning of the exercise. The participants should record these measurements on their own forms, with the weights being recorded on Form 1 in the 'Standard Measure' column, the heights/lengths on Form 2 in the 'Standard Measure' column, and MUAC on Form 3 in the 'Standard Measure' column.

## Step 2: Compare your measure with standard measure.

Next, each of the participants should calculate the difference between 'My Measure' and 'Standard Measure' for each line on the form, and record the result in the 'Difference' column, using the corresponding + or - sign. If the participant's measurement is larger than the learning facilitator's measurement ('Standard Measure'), the sign is positive (+); if the participant's measurement is less than the learning facilitator's measurement, the sign is negative (-).

## Step 3: Identify differences.

Following this procedure, the participants should have all the columns filled. To identify whether the differences are Large (L), Medium (M), or Small (S) use the following cut-offs:

### Slide 15 – Form 1 Weight Standardisation



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If the difference is 0.3 kg or more, then the difference is considered large, and the participant should put an L in the 'Size of Difference' column.

If the difference is 0.2 kg, then the difference is considered medium, and the participant should put an M in the 'Size of Difference' column.

If the difference is 0.0 or 0.1 kg, then the difference is considered small (or no difference), and the participant should put an S in the 'Size of Difference' column.

When the participant is finished, each difference should be identified as L, M or S.

D2 SLIDE 15 World Vision

**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 (-) \_\_\_\_\_

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## Slide 16 – Form 2 Height/Length Standardisation



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If the difference is 1.0 cm or more, then the difference is considered large, and the participant should put an L in the 'Size of Difference' column.

If the difference is 0.6 – 0.9 cm, then the difference is considered medium, and the participant should put an M in the 'Size of Difference' column.

If the difference is 0.0 – 0.5 cm, then the difference is considered small (or no difference), and the participant should put an S in the 'Size of Difference' column.

When the participant is finished, each difference should be identified as L, M or S.

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### 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 (-) \_\_\_\_\_

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## Slide 17 – Form 3 MUAC Standardisation



### Note to Learning Facilitator:

The standardisation exercise only works this way if you are using the numbered MUAC bands. If you use the coloured MUAC bands, then you need foam covered cylinders of various circumferences. There should be a mix of different cylinders that would represent non-wasted, moderate and severely wasted children. Participants record only their colour result and compare it to the learning facilitator's colour result. They will not indicate whether the difference is L or S.



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### 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   
 Number of Small Differences (0.0 - 0.5 cm) Box 3

**Differences:**  
 Number of positive signs (+) \_\_\_\_\_ Number of negative signs (-) \_\_\_\_\_

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If the difference is 0.5 cm or more (when numbered MUAC bands are used), then the difference is considered large, and the participant should put an L in the 'Size of Difference' column.

If the difference is 0.0–0.5 cm, then the difference is considered small (or no difference), and the participant should put an S in the 'Size of Difference' column.

When the participant is finished, each difference should be identified as L or S.

**Step 4: Total your differences by size.**

Each participant then counts the number of large differences, medium differences and small differences (marked with an L, M or S) and records the totals in the corresponding boxes on the lower part of each form. Box 1 is for the total of large differences and Box 2 is for the total of medium differences. The total of all the small differences (which includes no differences) should be recorded in Box 3.

**Note to Learning Facilitator:** *If using coloured MUAC bands, skip this step.*

**Step 5: Add your differences by sign (positive or negative).**

Finally, each participant should calculate the total number of positive differences and negative differences and record the totals at the very bottom of the form. This will help identify ways to improve the technique.

**Note to Learning Facilitator:** *If using coloured MUAC bands,, the difference is considered positive if the participants identify the 'child' (i.e. cylinder) as more well-nourished than the learning facilitator's colour result. The difference is considered negative if the participants identify the 'child' as more wasted than the learning facilitator's colour result.*

**8.4 Interpretation of results**

The interpretation of the standardisation exercise results will be done by the participants with the learning facilitator's help. The purpose is to detect differences, identify their possible causes and correct them. To achieve this, it is important to consider the size of the differences between each measurement of the participant and the learning facilitator, as well as the positive or negative sign of the differences.

**Size of the differences**

The total number of the differences, according to size, has already been recorded in Boxes 1, 2, and 3 located at the bottom of each form as follows:

- large differences in Box 1
- medium differences in Box 2, and
- small differences (including the absence of differences) in Box 3.

As the number of differences in Box 1 and 2 decreases, especially in Box 1, the agreement between the participant's measurements and the learning facilitator's increases. This means there is better standardisation.

Large differences (Box 1) generally indicate carelessness in the reading or recording, or serious problems in the measurement technique.

Medium differences usually indicate problems in the measurement technique.

**Goal:** The goal is to obtain only small differences between the standard measure (learning facilitator's measurements) and the participant's result.

**Note to Learning Facilitator:** *The goal of the standardisation exercise with the coloured MUAC bands is to be able to accurately identify the 'child' (i.e. cylinder) as non-wasted, moderately or severely wasted. There should be no difference between the standard colour result (done by learning facilitator) and the participants' colour result.*

### What to do if you have not achieved this goal:

In cases where large or medium differences are found, the respective participant, with the assistance of the learning facilitator, should practise measurements again in order to identify and correct the causes of the inaccuracies. Any inaccuracies using the coloured MUAC will require the respective participant to repeat the exercise.

### Causes of the differences

For weight measurements, the most frequent causes for differences are:

- not adjusting the scales to zero before each weighing;
- reading the scales at an angle, instead of straight on;
- not facing the scales;
- reading the scales after incorrect measurement technique.

In height or length measurements, the most frequent causes for differences are:

- incorrect position of the child's head or feet;
- reading at an angle, instead of straight on;
- not facing the reading point of the measuring board;
- reading the scales after incorrect measurement technique.

In MUAC measurements, the most frequent causes for differences are:

- incorrect positioning of the MUAC band on the child's arm (i.e. not at the mid-point);
- MUAC band is too tight or too loose;
- reading the MUAC band at an angle, instead of straight on;
- reading the MUAC band after incorrect measurement technique.

## 8.5 Debrief the standardisation exercise with participants



### Ask

Ask the participants to share their experiences by asking these questions:

1. *What did you find satisfying in measuring the children?*
2. *What did you find difficult?*
3. *Did you observe any new errors to add to the list?*
4. *What did you learn?*
5. *How do you know if you are ready to weigh and measure children accurately?*
6. *If you are not ready, what steps need to be taken next?*

## 8.6 Closing

**Congratulate everyone!**

**You have now learned to weigh and measure children with proper technique. In the next lesson you will learn how to use this information to promote the growth of each child.**



Hours

## Purpose of Lesson 9

To determine how well children are growing as measured by weight and age on a Road to Health card.

## Competencies

1. Accurately plot child's weight on Road to Health card (or equivalent).
2. Accurately draw growth curves on Road to Health card.
3. Correctly interpret information from the growth curve on a Road to Health card.
4. Effectively counsel mothers about child nutritional status and options for addressing malnutrition.



**Note to Facilitator:** *The Road to Health card is used by the Ministry of Health in almost every country. It is generally called the Road to Health Card; however, in places where it is called something different, use the local name. Or you could say it the long way: 'the card the Ministry of Health uses to measure the growth of children'.*

## Preparation

### Materials and Supplies

- Pencils (enough for all participants)
- Sticky notes of different colours
- Two small cards (or sheets of paper) for each participant. One card should have a red X written on it and one should have a green ✓ written on it.
- Obtain copies of a Road to Health card used by your Ministry of Health, one card for each participant.

## Graphics

- Slide 1 Road to Health Card
- Slide 2 Plotting a Growth Curve (Rose)
- Slide 3 Growth Monitoring Exercise
- Slide 4 Weight-for-Age Chart for Girls
- Slide 5 Weight-for-Age Chart for Boys
- Slide 6 Comparing Individual Heights
- Slide 7 Height-for-Age Chart for Girls
- Slide 8 Height-for-Age Chart for Boys
- Slide 9 Length Measurements (Nandi)
- Slide 10 Height-for-Age Chart (Nandi)
- Slide 11 Weight-for-Height/Length Chart
- Slide 12 Nandi's Weight and Length Measurements
- Slide 13 Weight-for-Height/Length Chart (Nandi)

## 9.1 Storytime – The Smuggler



Nasirudin is a smuggler. Every evening when he arrives at the customs house, the inspectors search the contents of his donkey baskets to discover what he is smuggling. But each day their efforts go unrewarded. No matter how thoroughly they search, they find nothing but straw.

The years go by, and Nasirudin grows richer and richer. The customs official vainly continues the searches. Finally, as a retired old man, Nasirudin meets one of the customs officers, now retired as well. 'Tell me Nasirudin, now that you have nothing to hide, what was it that you were smuggling all those years?' Nasirudin smiles and replies, 'Donkeys, of course'.



**Ask:** *What is the point of this story? What does it have to do with nutrition?*

**Answer:** Sometimes the answers we are looking for are not obvious. The information we collect about weighing and measuring children helps to reveal situations that may not be obvious by slide observation only. We have tools such as the Road to Health cards which can help identify when something is wrong so that we can provide counselling to help prevent the situation from becoming worse for that child.

## 9.2 Consequences for child growth measurement monitoring

At the top left-hand side of a piece of flip-chart paper, draw a big smiley face. At the top of the right-hand side draw a sad face.



Divide participants into teams of four and give each team different coloured sticky notes. Instruct each team to post its answers for the following questions around the appropriate picture (happy or sad):

**Ask:** *From what you have learned so far, how will accurate measurements help our programmes and community?*

Post these answers by the happy face.

**Answers** on the happy side could include the following: we will know how serious the nutrition situation is; we can make interventions where needed; we can track our progress; effective programming will improve future school achievement for children; we can improve productivity of the community; as the community grows stronger, the nation grows stronger.

**Ask:** *What will happen if we do not do take careful and accurate measurements?*

Post these answers by the sad face.

**Answers** on the sad side could include the following: we may misunderstand the situation in a community and fail to intervene or appropriately address the situation; we may incorrectly diagnose the situation and the children will suffer; children will not do well in school; if communities are weak, then nations are weak; children in the community will continue to be weak and not strong.

## 9.3 Growth charts

### Introduction to growth charts

#### Slide 1 – Road to Health Card



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When you weigh and measure the height/length of children, you want to know how their measurements compare with the standard or **reference** weight or height/length of healthy children the same age. The **median** or middle height and weight for each age is usually called the **reference height-for-age** and the **reference weight-for-age**.

**Ask:** *What are z-scores?*

Review the definition of z-scores from lesson 2.

**Answer:** Z-scores and standard deviations (SDs) define how far away from the median a value is. When we compare a child's weight to the median value, the Z-score or SDs tell us how far away the child's weight is from the median. Healthy children vary in how much they weigh and are not exactly the median value. For example, almost all healthy three-year old children weigh between 11 and 18 kilograms. However, we know there may be a problem when a child's weight is outside this healthy range.

To help us remember what the different reference height and weights are for different ages, these are often shown on a growth chart by the weight-for-age and height-for-age curves. (Refer to your country's growth chart, if it is available).

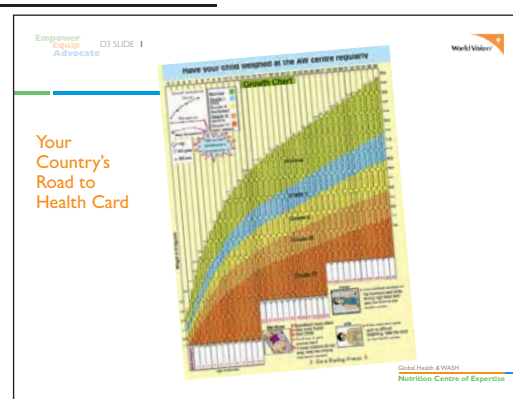
All growth charts have a weight-for-age graph printed on one side. The graph is usually divided into five years (some are three years), for the first five (or three) years of the child's life.

The **boxes** along the bottom of the graph and the **columns** above them are each for one month of the child's life. The first box and column on the left are for the month in which the child was born. The **straight lines** going across the chart are for the weight and the numbers on the left-hand side show how many kilograms each line is for.



There are sometimes two **weight-for-age** or **height-for-age curves**, and sometimes five curves (e.g. the WHO growth standards) on the chart (see your country's growth chart and the WHO growth chart). Looking at the WHO growth curve, the top curve shows how the largest children grow. The middle curve (0) shows the median or reference curves. The lower curve shows the lower end of the range of healthy weights and heights for healthy children.

Most healthy children are near the reference curve – the middle line.





## Demonstrate how to plot weight and draw growth curves

Ensure the general information on the card is filled in correctly in the language commonly used in that area. This includes the child's name, date of birth, reasons for special care (e.g. low birth weight, mother is sick).

The learning facilitator should take the group through an example, with the participants following along and plotting the example's growth curve on their own cards.

### Slide 2 – Plotting the Growth Curve (Rose)



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D3 SLIDE 2

## Plotting a Growth Curve (Rose)

**Rose (Female)**  
DOB: March 2007  
Birth Weight: 3.2 kg

Growth Monitoring Results	
April 2007	3.2 kg
May 2007	3.8 kg
June 2007	3.9 kg
July 2007	4.0 kg
August 2007	4.2 kg
September 2007	4.3 kg
October 2007	4.4 kg
November 2007	5.3 kg
December 2007	6.1 kg
January 2008	6.4 kg
April 2008	6.8 kg
June 2008	7.2 kg
September 2008	7.8 kg

Weight-for-age GIRLS

Birth to 5 years (z-scores)

WHO Child Growth Standards

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For this example, you can plot the following information:

Find Rose's age (and month of attendance) on the growth chart. Along the bottom of the chart are written the months beginning with the month the child is born. Look for the month in which Rose has just been weighed. From the middle of that month's box, use a ruler and pencil to draw a dotted line that crosses all five curves on the chart.

Along the left side of the chart are numbers that indicate the weight of Rose in kilograms. In between the kilograms, every 200 grams is marked with a faint line. On Rose's card, find her weight. From her weight, using a ruler and pencil, draw a dotted line right across the chart until it crosses the line you drew up from the bottom of the card.

Where the two lines meet, draw a dark dot in the middle of the box.

To make, or plot, Rose's growth curve, draw a line from the previous dot, if any, to the new one. If there is no weight information available for Rose for the previous month or two, draw a line from the most recent dot to the dark dot you just made for the Rose's current weight.

## How the growth reference curve shows growth

The reference weight-for-age curve shows how, as children become older, they become heavier. The shape of the curve shows the rate at which healthy children's weights increase at different ages.

If you weigh a child regularly, plot the weights on a chart, and join the dots with a line, you make a growth line for that child. The shape of a healthy child's growth line should be similar to the shape of the reference curve. The child's weight should increase at about the same rate as the reference curve – whether somewhat above or below or on the curve. This indicates a healthy child.

### Slide 3 – Growth Monitoring Exercise



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## Practise plotting weights and drawing growth curves (weight-for-age)

Number the participants 1 through 5 to place them into five groups.

Group 1 will chart Nandi's growth, Group 2 will chart Sinto's growth, group 3 will chart Tuni's growth, group 4 will chart Harjinder's growth and Group 5 will chart Sara's growth.

**Instructions to the groups:** In the Participant's Workbook are growth charts (Road to Health cards) for boys and girls. Each group plots the points for the specified child on the appropriate card (boy or girl), and joins the dots to make a curve.

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### Growth Monitoring Exercise

Nandi: (female)		Sinto: (male)		Harjinder: (female)		Sarah: (female)	
Date	Weight (kg)	Date	Weight (kg)	Date	Weight (kg)	Date	Weight (kg)
March 2007 (DOB)	3.7	July 2007 (DOB)	3.5	June 2007 (DOB)	3.6	Feb 2008 (DOB)	2.0
April 2007	3.7	August 2007	4.4	August 2007	4.5	March 2008	2.5
May 2007	4.3	October 2007	5.2	October 2007	5.7	April 2008	3.1
June 2007	4.4	November 2007	7.3	November 2007	5.9	May 2008	3.5
July 2007	4.5	December 2007	8.0	January 2008	6.2	June 2008	4.0
August 2007	4.7	February 2008	8.8	February 2008	6.4	July 2008	4.6
September 2007	4.8	April 2008	10.2	March 2008	6.4	August 2008	5.0
October 2007	4.9	June 2008	10.5	May 2008	6.5	September 2008	5.4
November 2007	5.8			July 2008	6.8	October 2008	5.9
December 2007	6.6			September 2008	7.0	November 2008	6.2
January 2008	6.9			October 2008	7.1	January 2009	6.9
April 2008	7.3			December 2008	7.5		
June 2008	7.7						
September 2008	8.3						

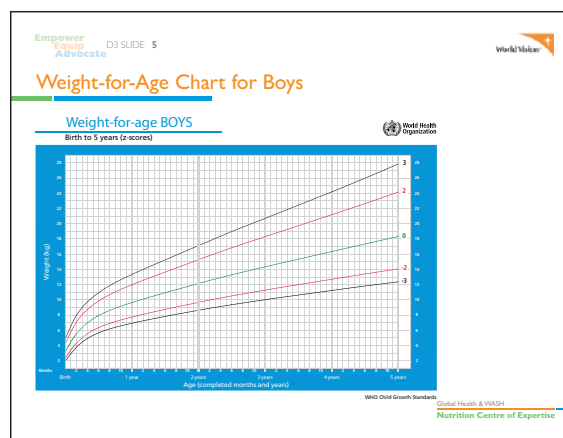
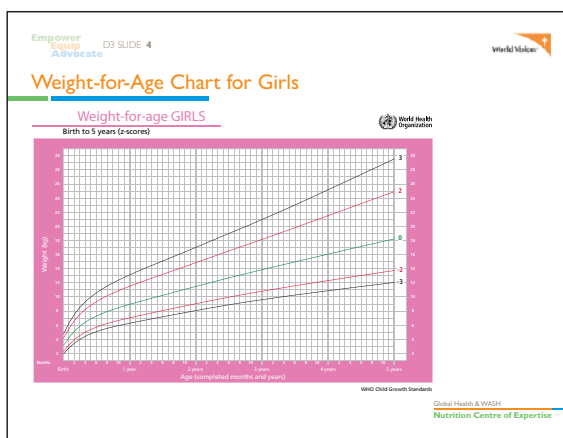
Tuni: (male)	
Date	Weight (kg)
Nov 2007 (DOB)	2.3
December 2007	2.9
February 2008	3.8
March 2008	4.3
April 2008	4.7
June 2008	5.6
July 2008	6.3
August 2008	6.7
October 2008	7.2

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### Slide 4 and 5 – Weight-for-Age Charts for Girls and Boys



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## 9.4 Interpretation of the Growth Chart

If you weigh a child once, you can plot the weight on the child's chart. This one dot tells you about a child's size, but it does not tell you if the child is growing.

One dot can tell you if a child's weight is within the normal range; and it can tell you about his or her probable health and nutrition now. But it cannot tell you for certain if he or she is healthy and well-nourished or not, because healthy children vary so much in weight. Look at the different lines on the WHO growth curve.



**Ask:** *What do the different lines on the WHO growth curves indicate?*

**Answer**

1. The 3 SD curve: 3% of normal well-nourished children are above this curve.
2. The 2 SD curve: 5% of normal well-nourished children are above this curve.
3. The middle curve (green) represents the median: half of children are above and half below this curve.
4. The -2 SD curve: 95% of normal well-nourished children are above this curve.
5. The -3 SD curve: 97% of normal well-nourished children are above this curve.



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These five growth curves provide five channels:

**1. Channel below -3 SD (below the lowest growth curve): Very low weight-for-age – the most dangerous.**

Most children with weight-for-age curves in this channel are severely malnourished and need help immediately. However, some children may be very short or small, so it is important to look at the shape of the growth curve. The child can be short or small and growing well.

**2. Channel between -2 SD and -3 SD: Low weight-for-age – a sign of danger.**

Most children whose weight-for-age falls in this channel are moderately malnourished and at risk of becoming severely malnourished.

**3. Channel between 2 SD and -2 SD: Normal weight-for-age – healthy.**

The child's weight should follow this channel. However, weight closer or above the 0 SD curve is better than below it.

**4. Channel between 2 SD and 3 SD: Normal to high weight-for-age – healthy.**

If the child's weight is around or not far above the 2 SD weight curve, the child's weight is normal. Weight that is close to the highest growth curve (3 SD) may indicate that the child is somewhat overweight.

**5. Channel above 3 SD: High weight-for-age – overweight.**

Most children who have weights that are above the 3 SD growth curve are overweight. However, very tall children also be in this category. It is important to check if the child is growing well by looking at the shape of the growth curve.

Several weight dots tell you about a child's growth. You can make a growth line for the child, which you can compare to the reference weight-for-age curve. You can see whether or not the weight is increasing, and whether the child is growing at a healthy rate.

If a child is growing at a healthy rate, then his or her parents and the health and nutrition workers know that he or she is well-nourished. If a child is not growing at a healthy rate, then his or her parents and the health workers know that the child is not well-nourished.



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## Shape of growth curves

Look at the growth curves and notice the different shapes of the curves. Look at the examples for Nandi, Sinto, Tuni, Harjinder and Sara. Identify whether they show:

- Healthy growth – growth lines are rising at the same rate as the reference curve. This shows the child is well-nourished.
- Growth Faltering – growth lines are rising more slowly than the reference curve. This is a warning sign that the child may be undernourished.
- Failing growth – growth lines are not increasing over a certain period of time (flat lines). This means the child has stopped growing and is undernourished.
- Weight loss – growth lines are decreasing, meaning that the child has stopped growing and is losing weight. The child is undernourished, and usually also ill with an infection. This is particularly serious.
- Fast weight gain – when a child's growth line rises faster than the reference weight-for-age curve. Fast weight gain often occurs when a child is recovering from undernutrition or an illness, and is a good sign of recovery. It is also called 'catch-up growth'.

Compare the direction of the child's growth curve to the reference curves to decide if the child is growing well or not.

Compare the direction of the child's growth curve to the nearest reference curve to determine if the child has gained enough weight.

The child has gained enough weight if the curve you drew this month is going up and the direction is parallel to or steeper than the nearest reference curve.

We can see that the child did not gain adequate weight the past month if the growth curve is going up but is less steep than the reference curve, or is flat, or is going down.



## Which child is growing well?

Call out the names of the child on the example cards (Nandi, Sinto, Tuni, Harjinder, Sara) and have participants raise a card with a green ✓ if the child is growing well and a card with a red X if the child is not growing well.

Ask participants how they decided.

Then ask for a volunteer to develop an imaginary story about what might have caused the child to gain or lose weight.

## 9.5 Using height/length to calculate individual nutritional status

### Slide 6 – Comparing Individual Heights



Discuss the difference in height in this photograph.

**Ask**

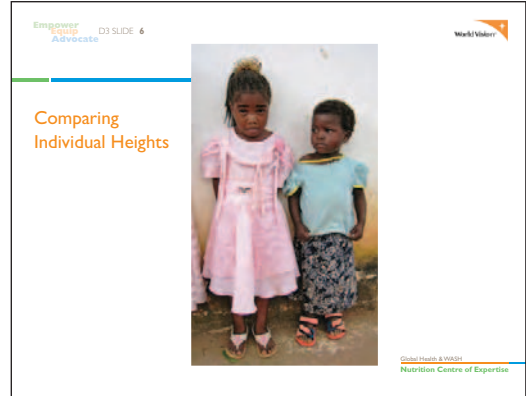
1. What comments could be made about the characteristics of these two girls?
2. What would you estimate their ages to be?

Tell participants that both of these children are 47 months old!

**Ask:** What do you think might be some of the causes for the difference in height?



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**Answers could include the following:**

quality and amount of food, hygiene practises, breastfeeding, illness (malaria, diarrhoea, HIV and AIDS, acute respiratory infections, etc.)



**Note to Learning Facilitator:** The purpose of this picture is to show that sometimes malnutrition is impossible to see by just looking at a child. From this photo you would probably assume that you are looking at two children of different ages because neither child looks malnourished. You only realise that there is a problem when you hear that the children are the same age. Then you ask yourself WHY? What happened? Why is there such a difference in the height of the children if they are really the same age?

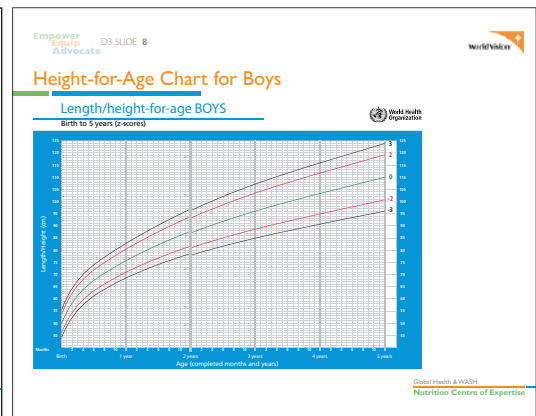
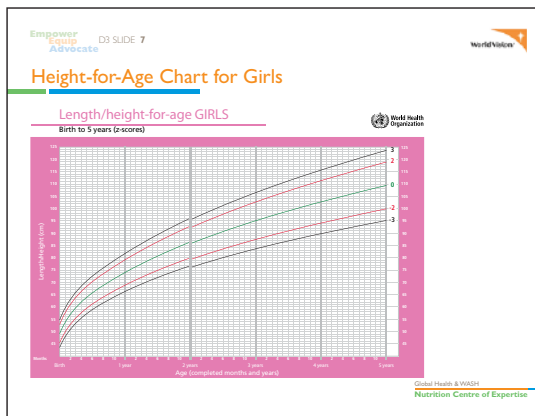
Another measure of malnutrition compares height (or length) to age (H/A). Children who are much shorter than normal for their age are considered malnourished. This is often called stunting. We also call this short for age.

To determine the H/A status of a child, we follow the same steps as for the Road to Health card (which measures weight compared to age, or W/A), except that we use a chart to compare height to age (H/A).

### Slide 7 and 8 - Height-for-Age Charts for Girls and Boys



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There are different graphs for boys and girls because boys and girls grow at different rates.

## How to graph the height-for-age of one child

### Slide 9 – Length Measurements (Nandi)



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Explain each of the following steps. Participants can follow in their workbook.

Complete all the general information on the card. This includes the child's name, date of birth, reasons for special care (e.g. low birth weight, mother is sick).

**Note:** You should use the local language so that mothers and families can understand what is written on the card. However, you must use the International Standard calendar (officially known as the Gregorian calendar) because the growth charts and reference information are global and designed around this international calendar.

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### Length Measurements (Nandi)

**Nandi: (female)**

Date	Length (cm)
March 2007 (DOB)	53
April 2007	57
May 2007	60
June 2007	63
July 2007	64
August 2007	65
September 2007	65
October 2007	66
November 2007	66
December 2007	66
January 2008	67
April 2008	70
June 2008	71
September 2008	73

Length/height-for-age GIRLS  
Birth to 5 years (scored)

WHO Child Growth Standards  
Global Health & WASH  
Nutrition Centre of Expertise

At the bottom of the growth chart on the growth card is a row of boxes with numbers written on each. There is one box for every month of the child's life, starting with the month in which the child was born and going until the child reaches six years of age.

If not already completed, write the month and year in which the child was born in the first box (the box that has 'born' printed under it).

- a) Here is an example: if the child was born in March 2007, write 'March 2007' in the first box.

Complete the rest of the boxes with the remaining months of the year in consecutive order.

- a) Here is an example: for a child born in March, the remaining boxes will have April, May, June, July, August, September, October, November, December, January, February written in them.

Each new year of the child's life begins with the same month.

After you measure the height of the child using the correct technique, ask the mother to record the child's growth on the child's health card if she can read and write. If the mother cannot read and write, then complete the card for her.

After the card has been marked, tell the mother that now you will see how well her child is growing.

- a) Find the child's age (and month of attendance) on the growth chart.
- b) Look for the month in which the child has just been weighed.
- c) From the middle of that month's box, use a ruler and pencil to draw a dotted line until it crosses all five curves on the chart.



Along the left side of the chart are numbers that indicate the height of the child in centimetres (cm.).

- a) On the child's card, find the child's height.
- b) From the child's height, using a ruler and pencil draw a dotted line right across the chart until it crosses the line you drew up from the bottom of the card.

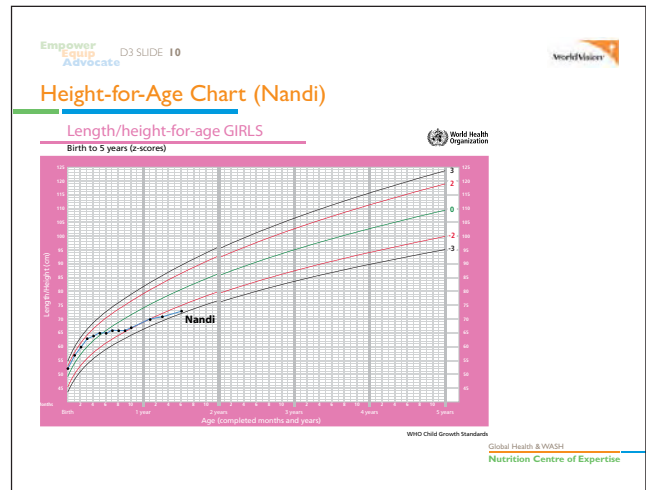
Where the two lines meet, put a dark dot in the middle of the box. This tells us how tall the child is currently.

To plot, or make, the child's growth curve, draw a line from the previous dot, if any, to the new dot. If there is no dot for the last month or two, draw a line from the last dot to the dot you have made for this month to show the child's current height.

## Slide 10 – Height-for-Age Chart (Nandi)



**Workbook  
Page 34**



## Weight-for-height (wasting)

### Slide 11 – Weight-for-Height/Length Chart



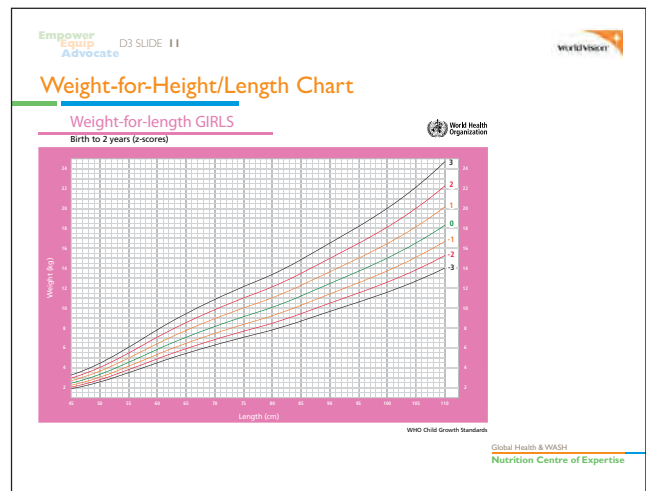
**Workbook  
Page 35**

#### Ask

Ask participants to plot various points and draw the growth curve.

*What does this growth curve indicate about Nandi's growth?*

Weight-for-height/length is another way to measure the growth of children.



## Slide 12 – Weight and Length Measurements (Nandi)



**Workbook**  
**Page 35**

Weight-for-height/length is another way to measure the growth of children. If a child is not the correct weight for his or her height, it is called ‘wasting’.

Wasting is a measure of thinness; often the measure of thinness is used in emergency situations because it shows us severe and recent weight loss. Wasted children have not only stopped growing, but have probably also lost weight. It is a sign that a child is undernourished and is not growing now. The child has a problem that it may be possible to do something about. If the parents can improve child’s nutrition, the child can recover from wasting.

Empower Equip Advocate D3 SLIDE 12

**Nandi's Weight and Length Measurements**

Date	Weight (kg)	Length (cm)
March 2007 (DOB)	3.7	53
April 2007	3.7	57
May 2007	4.3	60
June 2007	4.4	63
July 2007	4.5	64
August 2007	4.7	65
September 2007	4.8	65
October 2007	4.9	66
November 2007	5.8	66
December 2007	6.6	66
January 2008	6.9	67
April 2008	7.3	70
June 2008	7.7	71
September 2008	8.3	73

[http://www.who.int/childgrowth/standards/ichc\\_wfl\\_girls\\_z\\_0\\_2.pdf](http://www.who.int/childgrowth/standards/ichc_wfl_girls_z_0_2.pdf)

World Vision  
Global Health & WASH  
Nutrition Centre of Expertise

## Slide 13 – Weight-for-Height/Length (Nandi)

### 9.6 Closing

Tell the participants that you are going to give them a quiz. Make sure the participants are all sitting down. Tell them you will ask a question, and when they know the answer to the question, they must stand up. Wait until more than half of the participants are standing before asking the first one to state what he or she thinks the answer is. If the response is not correct, ask others in the group to correct the information.



#### Ask

The review questions are:

1. When a child has faltering growth, what will the shape of his or her growth curve look like?

**Answer:** The growth curve will rise more slowly than the reference curve.

2. When a child is experiencing ‘catch-up growth’, what will the shape of his or her growth curve look like?

**Answer:** The growth curve will rise faster than the reference curve.

3. When a child has healthy growth, what will the shape of his or her growth curve look like?

**Answer:** The growth curve will rise at the same rate as the reference curve.

Empower Equip Advocate D3 SLIDE 13

**Weight-for-Height/Length Chart (Nandi)**

Weight-for-length GIRLS  
Birth to 2 years (z-scores)

World Health Organization  
WHO Child Growth Standards  
Global Health & WASH  
Nutrition Centre of Expertise



**Hours****Purpose of Lesson 10**

To understand Road to Health cards to communicate effectively with mothers about improving child growth when necessary.

**Competencies**

1. Use the information on the growth cards to help mothers understand how well their child is growing.
2. Develop skills for counselling mothers about their child's growth.
3. Understand that counselling is not the same as telling; counselling is respectful listening and conversation with a mother to come up with a practical plan for how the mother can promote her child's growth.

**Preparation**

1. Prepare information about the eating and lifestyle habits of the people in your target area so that you can give appropriate advice about modifying practises.
2. Obtain copies of local counselling cards if available.
3. Write the main points of the agenda for the day on flip-chart paper and post it in a place where all can see it.
4. Provide each participant with the counselling cards included in the toolkit. These are the Malawi Infant and Young Child Feeding National Counselling Cards. They are a good example of counselling aids that can be used. You may have locally developed ones that you could refer to also.

**Graphics**

- Slide 14 Growth Counselling Reminders
- Slide 15 Counselling Card #11
- Slide 16 Height/Length-for-Age (Nandi)
- Slide 17 Weight-for-Height/Length (Nandi)
- Slide 18 Weight-for-Age (Nandi)
- Slide 19 Counselling Card #15
- Slide 20 Counselling Card #12

One purpose for monitoring an individual child's growth is to identify if growth faltering is beginning so that early action can be taken to prevent the child from becoming malnourished. One way to do this is to provide counselling to the mother immediately after the interpretation of the growth curve.

**Incorrect**



**Correct**



**10.1 Growth counselling reminders**

**Slide 14 – Growth Counselling Reminders**



**Workbook  
Page 36**

- Have a conversation with the mother or caregiver.
- Ask questions that will help you understand what practices she has at home that might contribute to the child's lack of growth.
- Listen carefully to the answers and make some recommendations to the caregiver.
- Reach an agreement about some steps the mother could take at home.
- Ask the mother to state what agreements you reached during the conversation to ensure that she understands and remembers what she agreed to try to promote her child's growth.
- Give at least 10 minutes to each counselling session.

Empower  
Equip  
Advocate D3 SLIDE 14

**Growth Counselling Reminders**

- Have a conversation with the caregiver.
- Ask questions that will help you understand what practices she has at home that might contribute to the child's lack of growth.
- Listen carefully to the answers and make some recommendations to the caregiver.
- Reach an agreement about some steps the caregiver could take at home.
- Ask the caregiver to state what agreements you reached during the conversation to ensure she understands and remembers what she had agreed to try to promote her child's growth.

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**10.2 Role play presentation of results to the mother**



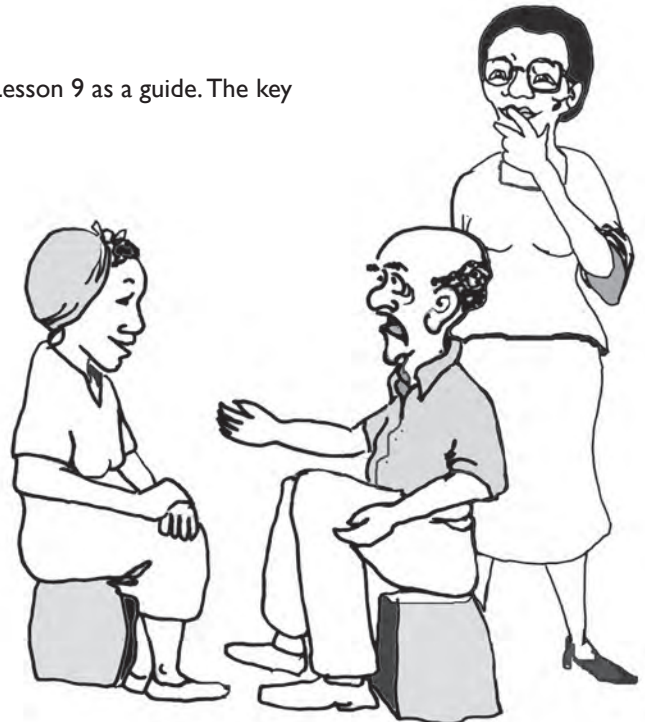
Divide participants into three groups. Each group will role play a scenario where the health worker is counselling the mother after measuring her child. The three different scenarios are as follows:

- a) weight-for-height (W/H) chart shows mild malnutrition.
- b) weight-for-age (W/A) chart shows moderate malnutrition.
- c) height-for-age (H/A) chart shows mild malnutrition

Each group will present its drama. After each one, debrief with the whole group.

**Example:** Use the example of Nandi from Lesson 9 as a guide. The key messages to give could include:

- Exclusive breastfeeding to six months;
- Continued breastfeeding to two years;
- Start giving other foods at six months;
- Gradually increase the quantity and types of food the child is eating;
- Include a wide variety of foods including vegetables, fruits and animal foods (eggs, fish, chicken, meat);
- Help the child eat;
- Complete immunisations;
- Handwashing of the person preparing food and also of all family members before they eat;
- Proper care during illness (give extra food and liquid).



**Note about counselling:** We must be careful about the counselling that people give because sometimes they might be too simplistic or not very respectful of local people. For example, if a volunteer only says that mother is not feeding the child right, be sure to explore this. Encourage the volunteer to think about what could be happening in the home, what economic or family or employment issues may be affecting how, what, and when the child is fed. Do not assume that a mother is feeding her child incorrectly for no reason!

## 10.3 Counselling cards

One way to help with the counselling process is to use the counselling cards you received. We will take a look at using the counselling cards together.

**Note to Learning Facilitator:** If your country has its own counselling cards, then you should use them for this exercise; if not, then please use the counselling card examples provided.

### Slide 15 – Counselling Card #1 I

#### Complementary feeding from 7 up to 9 months



Card 11

#### Complementary feeding from 7 up to 9 months

**11**

- **Continue breastfeeding your baby on demand both day and night.** This will maintain his or her health and strength as breast milk continues to be the most important part of your baby's diet.
- **When feeding a baby who is between 7 and 9 months old, always give your baby breast milk first before giving other foods.**
- **FADDIHAH:** Think of these characteristics when giving complementary foods to your baby: **F** = Frequency, **A** = Amount, **D** = Density (consistency), **D** = Diversity (different kinds of foods), **U** = Utilisation, **A** = Active/responsive feeding, and **H** = Hygiene.
- **Frequency:** Feed your baby 3 times a day.
  - **Amount:** Gradually increase the amount of food to 1/2 a cup (6 up to 120 ml). Babies have small stomachs and can only eat small amounts at each meal.
  - **Density (consistency):** Mash and soften the foods so that the baby can easily chew and swallow. Breast milk, animal milk or fresh fruit juice can be used to prepare the soft food. Do not add water. Be careful not to make the baby's food too thin. Thicken the baby's food as the baby grows older, making sure that he/she is still able to easily swallow without choking.
  - **Diversity:** Every day, or as often as possible, your baby needs at least a small bit of food from each of the following groups:
    - a. Millet flour, sorghum flour, maize flour, potatoes, bananas, etc.
    - b. Fresh or dry beans, peas or groundnuts
    - c. Meat, chicken, fish or eggs
    - d. Vegetables like dark green vegetables (chicory, rhubarb, bok choy, spinach), tomatoes, eggplant, carrot, cabbage, etc.
    - e. Fruits like passion fruit, mango, papaya, orange, banana, watermelon, pineapple, avocado, etc.
    - f. Oil, margarine, meat fat or avocado
  - **Utilisation:** Add a few spoons of washed pieces of fruit or fresh fruit juice to the baby's food.
  - **Active/responsive feeding:** Be patient and actively encourage your baby to eat. Use a separate plate to feed the baby to make sure he or she eats at the food given.
- **Hygiene:** Good hygiene is important to avoid diarrhoea and other illnesses.
  - Always use a clean open cup to give water or any liquid foods to your baby. DO NOT use bottles, teats or spooned cups. They are difficult to clean and can cause your baby to become sick.
  - Always use a clean hand, spoon, bowl or plate to give foods to your baby.
  - Always store the foods given to your baby in a safe, hygienic place.
  - Always wash your hands with soap and water before preparing foods and before feeding your baby. Wash your hands after using the toilet and after washing baby's bottom.
- **Example of balanced baby foods:**
  - A thick porridge can be made out of a flour of either maize, cassava, millet or soya. Milk, sugar, oil, groundnuts, eggs, vegetables and fruits can be mixed into the porridge.
  - A mashed food mixture can combine foods like banana, potato, carrot, beans, millet with a food like fish, meat, beans or groundnut paste. Vegetables like greens, pumpkin, carrot, eggplant, avocado or tomato should also be mixed into the baby food.
- **Note for the health worker about HIV positive babies:**
  - HIV positive mothers who have decided to stop breastfeeding should feed their babies at least one and a half cups (500 ml) of animal milk every day.
  - HIV positive babies need more food than HIV negative babies.
    - An HIV positive baby who is not sick should receive one extra feed each day.
    - An HIV positive baby who is sick and/or losing weight should be fed twice as much compared to what a healthy baby should eat.
- **Note for the health worker about the size of cups:**
  - All cups shown and referred to in the Counselling Cards are mugs which have a volume of 120 ml. If other types or sizes of cups are used to feed a baby, they should be looked to see what volume they hold and the recommended quantity of food or liquid should be adjusted accordingly.



Look at Counselling Card #11 and ask a participant to read it aloud. Discuss with the group how the conversation guides on the back of each card follow the key points listed above. Then proceed to the next card.

When the reading is complete, ask the other participants to comment on how this scene might be done in their community – what would it look like in their setting? How do the participants think the mother might feel?

Divide participants into five or six groups of two to three people each.

Each group develops a role play about a counselling situation with health worker, child, and mother. Allow about 15 minutes for groups to prepare.

Three of the groups will use the sample counselling cards.

The other groups will use the Road to Health cards that they plotted during the previous session (Lesson 9).

### 10.4 Nandi's example

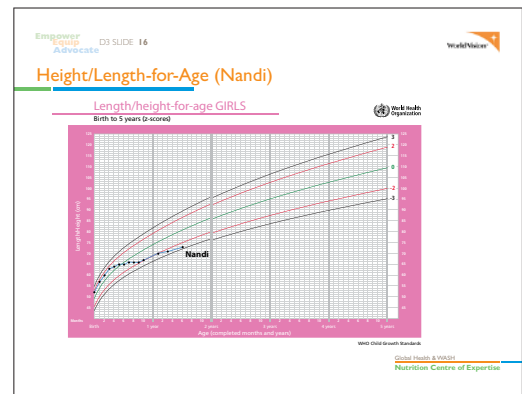
We have charted the growth of children using weight-for-age (W/A), using height-for-age (H/A) and using weight-for-height (W/H). These different combinations of information give us slightly different pictures of the level and type of malnutrition. Let's look at one child, named Nandi, and think about the counselling that would happen with her mother.

#### Slide 16 – Height/Length-for-Age (Nandi)



Workbook  
Page 37

Nandi grows well for about five months. Her growth measurements then show little change until about 11 months, when she starts growing at a normal rate again, but is moderately malnourished. Nandi is presently malnourished.

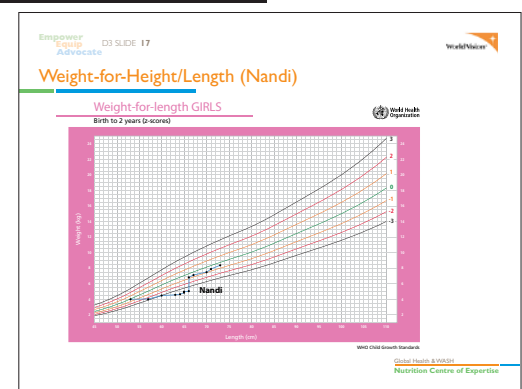


#### Slide 17 – Weight-for-Height/Length (Nandi)



Workbook  
Page 37

Nandi grows well until about 11 months. Then she suddenly stops growing. Nandi is quickly falling into the mildly malnourished range. If she continues in this way, she will quickly become moderately malnourished.

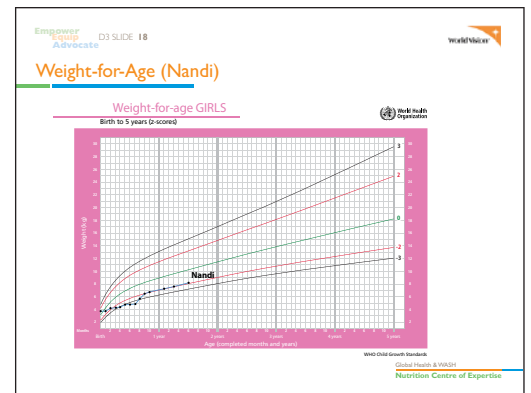


## Slide 18 – Weight-for-Age (Nandi)



Workbook  
Page 37

From birth Nandi has not grown well. There was some rapid growth at eight and nine months. And she is presently growing at a steady rate; however, Nandi is just above the moderately malnourished level.



1. Are there months where Nandi's growth is normal on one graph but malnourished on a different graph? What does that mean?



**Possible answer:** Use month four as an example. Nandi is in the normal range on the length-for-age and on the weight-for-length charts. However, on weight-for-age Nandi is moderately to severely malnourished.

2. Nandi is growing well in length but is not gaining weight at all. What are some possible reasons for this?

There are several possible reasons that Nandi is not gaining weight. Some of those reasons might include:

- She is ill.
- She has HIV and AIDS.
- She is left alone for long periods with little care.
- She is not being breastfed, and the water she consumes is not safe for drinking.

3. How would you counsel Nandi's mother if you were using the height/length-for-age (H/A) chart?

**Here is an example of a correct answer:**

Nandi grew well for many months after birth. That is excellent. Why do you think she grew so well after birth? Did you breastfeed Nandi? What did you do when Nandi was sick?

Here she stopped growing so well (look at the chart together). What might have happened? Did Nandi get sick? Were there family circumstances that prevented her from getting enough food to eat?

And then here, Nandi has started to grow again (look at the chart together). That is good. What are you doing to help her grow? Encourage good things such as breastfeeding, giving a variety of foods, taking her to the health centre when she is ill, making sure Nandi is immunised.

But we see here (look at the chart together) that her growth is at a very low level; this makes her more likely to get sick. So we would like to see Nandi catch up to a normal growing level.

Slide 19 – Counselling Card #15

### Feeding the sick child more than 6 months

**Card 15 from the Counselling Card Pack**

Card 15

### Feeding the sick child more than 6 months

15

**Feeding during illness**

- Breastfeed more frequently and offer additional food during illness. This will help the baby to fight sickness, recover more quickly and not lose weight.
- Encourage your child to breastfeed, eat and drink more. A child needs more food and drinks during illness.
- DO NOT use bottles, teats or spouted cups. They are difficult to clean and can cause your baby to become sick.
- Take time to patiently encourage your sick child to eat as his or her appetite may be decreased because of the illness.
- Assist your child by putting the food within his or her reach or by helping his or her to hold the cup or spoon. Offer verbal encouragement when the child eats something.
- Feed your child foods he or she likes, not too thick and not too dry, in small quantities throughout the day.
- Offer the baby simple foods like porridge and fruits, even if he or she does not express interest in eating.
- Avoid spicy or fatty foods.

**Feeding during recovery**

- When a baby is recovering from an illness, he or she will breastfeed and eat more than usual. The baby is replacing what he or she lost during illness. This can be tiring for the mother.
- After replacing what he or she lost the baby will feed as before.
- Give your baby one additional meal of solid food each day during the next two weeks after he or she has recovered. This will help him or her regain weight lost during the illness.
- Take enough time to actively encourage your baby to eat this extra food and to breastfeed more frequently when his or her appetite has returned.

Look at the sample counselling cards, especially Card #15 – ‘Feeding the sick child more than 6 months’ – for more ideas of what to discuss with the mother.

4. How would you counsel Nandi’s mother if you were using the weight-for-height (W/H) chart?

Here is an example of some possible answers:

Nandi has been growing well from birth to about 11 months. That is very good! What did you do that helped her to grow so well? Allow mother to talk. [Some possible answers might include exclusive breastfeeding, continued to breastfeed; giving her a variety of foods started at six months; the baby has been healthy, not sick; the baby was immunised].

But now we can see from Nandi’s chart that she stopped growing well at 11 months. Show Nandi’s mother the chart and explain how difference between the reference line (the reference line shows how we expect children to grow) and Nandi’s line.

Slide 20 – Counselling Card #12

### Complementary feeding from 9 up to 12 months

**Card 12**

### Complementary feeding from 9 up to 12 months

12

- **Continue breastfeeding your baby on demand both day and night.** This will maintain his or her health and strength as breast milk continues to be the most important part of your baby’s diet.
- **When feeding a baby who is between 9 and 12 months old, always give your baby breast milk first before giving other foods.**
- **FADDAH:** Think of these characteristics when giving complementary foods to your baby: **F** – Frequency, **A** – Amount, **D** – Density (consistency), **H** – Diversity (different kinds of foods), **U** – Utilisation, **A** – Active/responsive feeding, and **H** – Hygiene.
  - **Frequency:** From 9 months onwards, feed your young child 4 times a day (3 meals and 1 snack). Note about snacking: Snacks are extra foods given between meals, they are easy to prepare, are clean, safe and easily available. These foods act as addition to other meals, and do not replace meals. Good snacks provide energy and nutrients. They should not be confused with meals. Most snacks can be eaten as finger foods such as pieces of fruit or vegetables.
  - **Amount:** Give your baby between one-half (1/2) and two-thirds (2/3) of a cup at each feed. (A cup is 120 ml.) Babies have small stomachs and can only eat small amounts at each meal.
  - **Density (consistency):** Mash and soften the foods so that the baby can easily chew and swallow. Breast milk, animal milk or fresh fruit juice can be used to prepare the soft food. Do not add water. Be careful not to make the baby’s food too thin. Thicken the baby’s food as the baby grows older, making sure that he/she is still able to easily swallow without choking.
  - **Diversity:** Every day, or as often as possible, your baby needs at least a small bit of food from each of the following groups:
    - a. Millet flour, sorghum flour, maize flour, potatoes, banana, etc.
    - b. Fresh or dried beans, peas or groundnuts
    - c. Meat, chicken, fish or eggs
    - d. Vegetables like dark green vegetables (kalewa, nakwa, bonenaga, khulawa), tomato, eggplant, carrot, cabbage, etc.
    - e. Fruits like passion fruit, mango, pawpaw, orange, taramo, watermelon, pineapple, avocado, etc.
- **Utilisation:** Add a few spoons of fresh pieces of fruit or fresh fruit juice to the baby’s food.
- **Active/responsive feeding:** Be patient and actively encourage your baby to eat. Use a separate plate to test the baby to make sure he or she eats all the food given.
- **Hygiene:** Good hygiene is important to avoid diarrhoea and other illnesses.
  - Always use a clean open cup to give water or any liquid foods to your baby. DO NOT use bottles, teats or spouted cups. They are difficult to clean and can cause your baby to become sick.
  - Always use a clean hand, spoon, bowl or plate to give food to your baby.
  - Always store the foods given to your baby in a safe, hygienic place.
  - Always wash your hands with soap and water before preparing foods and before feeding your baby. Wash your hands after using the toilet and after washing baby’s bottom.

**Note for the health worker about HIV positive babies:**

- HIV positive mothers who have decided to stop breastfeeding should feed their babies at least one and a half cups (500 ml) of animal milk every day.
- HIV positive babies need more food than HIV negative babies.
  - An HIV positive baby who is not sick should receive one extra feed each day.
  - An HIV positive baby who is sick and/or losing weight should be fed twice as much compared to what a healthy baby should eat.

**Note for the health worker about the size of cups:**

- All cups shown and referred to in the Counselling Cards are mugs which have a volume of 320 ml. If other types or sizes of cups are used to feed a baby, they should be tested to see what volume they hold and the recommended quantities of food or liquid should be adjusted accordingly.

Look at the sample counselling Cards, especially Card #12 – ‘Complementary feeding from 9 up to 12 months’ – for more ideas of what to discuss with the mother.

5. *What questions would you ask Nandi’s mother?*

**Here are some questions that you might ask Nandi’s mother:**

Was there something significant that happened for Nandi or for your family around the time that Nandi was about 11 months old? For instance, did someone in the family lose a job and thus there was less food in the household? (allow mother to think of possible events).

Questions you can ask to help the mother think about the reasons why her daughter is not growing so well might include these: Are you still breastfeeding? Has Nandi been sick? What do you do when she is sick? Do you have enough food for the family to eat?

6. *What advice would you give Nandi’s mother?*

**Possible answers:**

Depending on the mother’s responses, suggest some practical and inexpensive ways that she could begin to help improve Nandi’s growth.

There are many possible answers, but it is important for you to focus on one or two main ones, because if you give the mother too much information at one time she will not be able to remember any of it. Some practical and inexpensive ways in which the mother could help to improve Nandi’s rate of growth include:

- Continue breastfeeding.
- Give a variety of food including some eggs, fish, chicken or meat.
- Eat at least four or five times a day.
- Help the child to eat.
- Ensure that Nandi’s drinking water is safe.
- Treat diarrhoea with oral rehydration therapy.
- Take her to the health post when she ill.
- Wash your hands when you prepare food.
- Make sure the child washes her hands before eating.
- Ensure her immunisations are up to date.

In discussion with the mother, come to an agreement about one or two things she could try for the next month to help Nandi grow.

Explain carefully and then have the mother repeat to you what she has agreed to try.

**For example:** Mother has been feeding only rice and broth two times a day, before she goes to work and after she comes home. Encourage the mother to add dried fish and some chopped greens to the rice. The mother can also leave some already-prepared food with the older sister who cares for Nandi during the day. The older sister should be instructed to feed this special food to Nandi two times during the time that the mother is away at work.

### **10.5 Closing**

Ask participants to share one key idea that they learned during today's lesson.

Ask participants how they feel about their own skills for counselling mothers.



Minutes

## Purpose of Lesson 11

To learn how to use data in order to assess the nutritional status of a population.

## Competencies

1. Read and accurately interpret a Demographic Health Survey (DHS) nutritional status chart.
2. Use DHS information to make wise decisions for programming at the field level.
3. Compare DHS information to the information collected at the field level.

## Preparation

The learning facilitator should become very familiar with exercise 11.4 (Demographic Health Survey) and Slide 27 (Demographic and Health Survey Chart Sample). Say the instructions to yourself so you are comfortable teaching the participants during the actual presentation.

## Materials and Supplies:

Flip-chart paper with an easel, permanent markers of different colours  
Overhead projector or PowerPoint projector, a screen

## Graphics

- Slide 21 Community Weighing Summary
- Slide 22 Triggers for Action – Underweight
- Slide 23 Levels of Stunting in This Community
- Slide 24 Triggers for Action – Stunting
- Slide 25 Weight-for-Height/Length (Nandi)
- Slide 26 Triggers for Action – Wasting
- Slide 27 Demographic and Health Survey (DHS) Chart Sample  
(substitute your country's DHS chart)
- Slide 28 Comparing DHS to Triggers for Action
- Slide 29 Congratulations!



## 11.1 Individual vs. population

In the previous lessons we learned about common nutrition-related anthropometric measures (i.e. height/length, weight and MUAC). We learned how these measurements are used to assess the nutritional status of **individuals** – especially individuals under 5 years. We learned how to interpret these measurements to understand how well a child is growing.

These measurements are combined to form **indices**, which are compared to international growth standards, or reference growth curves (WHO Child Growth Standards, 2006). The most commonly used anthropometric indices are weight-for-height (wasting), height-for-age (stunting) and weight-for-age (underweight). These indices give us information about the different types of malnutrition.

In Lesson 11 we further our understanding of these indices and learn how these three types of malnutrition can be used to assess the nutritional status of a **population** (e.g. community) and to measure changes in the nutrition situation of a community.

## 11.2 Quick review from Lesson 2\*

### Wasting (low weight-for-height/length or WHZ)

Wasting (weight-for-height/length less than -2 SD from reference) identifies children who are 'wasted', that is, thinner than expected for a healthy, well-nourished child of the same height/length. These children have not only stopped growing but have probably also lost weight. Wasting reflects recent, short-term (acute) malnutrition or illness. It is a sign that a child is undernourished and not growing at the present time. The child has a problem that it may be possible to do something about. If the parents can improve the child's nutrition, the child can recover from wasting.

Measuring thinness or wasting enables health and nutrition workers to find out quickly if a child is undernourished. It is not only useful for screening or assessing **individual** children, but it is also useful for **assessing the nutrition situation of a community** in an emergency situation. The proportion of wasted children in an area may vary by the season, due to annual periods of food insecurity or seasonal illness. Wasting is addressed through treatment and preventive nutrition activities.

### Stunting (low height/length-for-age or HAZ)

Stunting (height/length-for-age less than -2 SD from reference) identifies children who are 'stunted', that is, shorter than expected for a healthy child of the same age. If a child is undernourished, his or her increase in height slows. A child who is undernourished for a long time is shorter than he or she should be. A child whose height is less than -2 SD from the median is **stunted**. We refer to this as 'chronic' or long-term undernutrition. As learned in Lesson 9, measuring the rate at which children increase in height is not a good way to monitor individual children's growth. However, height-for-age is useful when we want to:

- **Assess the nutrition of a population**, for example, when we do a survey of a community. Children's heights are a proxy for the community and tell us if that community has been or is undernourished. It helps us to find which areas are most undernourished.
- **Measure changes in the nutritional situation of a community.** Height-for-age measurement of the children tells us whether, over a period of time, the nutritional situation in the community is improving or getting worse. This is useful for programme managers and planners who have to decide how to use funds and other resources, and for people who evaluate the effects of development projects.

Therefore, stunting is most useful for assessing overall community nutritional status and measuring long-term changes. Also, stunting does not vary by seasons over the year.

## Underweight (low weight-for-age or WAZ)

Underweight (weight-for-age less than -2 SD from reference) identifies children who are 'underweight', that is, they weigh less than a healthy, well-nourished child of the same age. An underweight child is more than -2 SD below the median reference weight for a child of the same age. This may be because the child has not grown normally in height, weight, or both, or that he or she has recently lost weight. Measuring the rate at which children increase in weight is a very good way to monitor individual children's growth. It is, however, **less useful than stunting or wasting for measuring populations.** This is because it reflects both stunting and wasting, and cannot distinguish between the two. Therefore, if your population has a high rate of underweight, you do not know if the reason is due to **recent** lack of food or illness in the population (i.e. wasting), or due to **long-term** undernutrition (i.e. lots of children who haven't achieved normal heights).

## 11.3 Calculate nutritional status for a community

### Nutritional status of a community using underweight

We can use information we have collected about individual child growth (weight and age) to show the nutrition levels for an entire community.



**Ask:** *What does weight-for-age tell us?*

**Possible correct answers:** A general measure of nutritional status; compares a child's weight to his or her age; compared to various measures over time (e.g. growth monitoring) it is a good indicator of growth faltering; underweight is a general measure that reflects both recent and long-term malnutrition.

As we weigh children and mark their weight on the Road to Health card we can note how many children are within the normal growth curve lines and how many are moderately or severely malnourished.

Then we can construct a simple table to record the number of children in each of the four categories (normal growth, mildly malnourished, moderately malnourished, severely malnourished). Putting the information into this form will allow us to see if malnutrition really is a problem in a particular community.

## Slide 21 Community Weighing Summary



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Look at the table with participants. Ask the following questions.

**Ask**

1. *How many children in Shining Hope Community were weighed?*

**Answer:** 72

2. *How many were malnourished and to what extent?*

**Answer:** Thirty are normal; 28 are mildly malnourished; 8 are moderately malnourished; and 6 severely malnourished.

Demonstrate how to calculate percentages: complete one calculation together as a group.

3. *Ask the participants to calculate the percentages of each of the groups.*

**Answer:** Normal 42%, mildly malnourished 39%, moderately malnourished 11%, severely malnourished 8%.

### How do we know if malnutrition is a problem in the community?

We can use the Triggers for Action tables to help us determine when the levels of malnutrition are acceptable, when action is required, or when the levels are at a critical point.

## Slide 22 – Triggers for Action – Underweight



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**Ask**

1. *How should we understand the levels of underweight for Shining Hope Community in terms of cut-off levels or triggers for action?*

**Answer:** Moderately and severely malnourished = 19% in the attention-required category.

2. *Is there a problem with malnutrition in “Shining Hope” Community?*

**Answer:** There is a medium level of malnutrition and some attention is required.

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### Community Weighing Summary

Number of Children Weighed in Each Category

	Normal	Mildly Malnourished	Moderately Malnourished	Severely Malnourished	Total Children
	### ### ### ### ### ###	### ### ### ### ### ###	### ###	### I	
Totals (#)	30	28	8	6	72
Totals (%)					100

To calculate percentages: =  $\frac{\text{the number of children in the category}}{\text{the total number of children}} \times 100$

Example  $30 \text{ normal children} \times 100$   
 $72 \text{ total children}$   
 $= .417 \times 100$   
 $= 41.7\%$  We can round this up to 42%

42% of children have normal nutrition and are growing well.

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### Triggers for Action – Underweight

% of children 0-59 months moderately and severely malnourished

	Acceptable	Attention Required	Critical
Underweight Moderately/Severely Malnourished	<10%	10-19%	≥20%

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In a community the acceptable level of children who are moderately and severely malnourished (according to the underweight measure) is 10%. This means that we have a 'cut-off' of 10%.

If 10-20% of the children in a community are moderately or severely malnourished, then some action is required.

If 20% or more of the children in a community are moderately or severely malnourished, then there is immediate need for urgent action. That is, the 'trigger point' for urgent action is 20%.

## Nutritional status of a community using stunting

A child who is much shorter than normal for his or her age is considered malnourished. This type of malnutrition is called stunting.

How tall or short children are tells us if they have been well nourished, or not well nourished, over a long period of time.

If children do not get enough high quality food to meet their needs, they will not grow in height at the rate that they should.

When we see how many children in a community are stunted, this tells us whether or not there is a widespread problem with malnutrition.

## Slide 23 – Level of Stunting in This Community



**Ask:** How will we track the number of children in each category as we measure their height?

**Answer:** By adding up the number of children within each height range, we can calculate the percentage (%) of total children in each category.



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**Page 40**

**Ask:** What percentage of children are within each of the four categories of malnutrition in this community?

**Answer:** Normal 22%; mildly malnourished 44 %; moderately malnourished 29%; severely malnourished 4%.

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### Level of Stunting in Community

Height/Length-for-Age – Number of Children

	Normal	Mildly Malnourished	Moderately Malnourished	Severely Malnourished	Total Children
Totals	16	32	21	3	72

To calculate percentages: =  $\frac{\text{the number of children in the category}}{\text{the total number of children}} \times 100$

Example  $\frac{16 \text{ normal children}}{72 \text{ total children}} \times 100$   
 $= .22 \times 100$   
 $= 22 \%$

22% of children have normal nutrition according to their height-for-age and are growing well.

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## Slide 27 – Demographic and Health Survey (DHS) Chart Sample



**Workbook**  
**Page 43**

**Table 13.7 Nutritional status of children**

Percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status: height-for-age, weight-for-height, and weight-for-age, by background characteristics, and percentage of children of noninterviewed mothers, and all children classified as malnourished, Cambodia 2000

Background characteristic	Height-for-age			Weight-for-height			Weight-for-age			Number of children
	Percentage below -3 SD	Percentage below -2 SD	Mean Z-score (SD)	Percentage below -3 SD	Percentage below -2 SD	Mean Z-score (SD)	Percentage below -3 SD	Percentage below -2 SD	Mean Z-score (SD)	
<b>Child's age in months</b>										
<6	5.1	14.5	-0.4	1.9	9.0	-0.1	1.1	7.7	-0.4	351
6-9	4.4	23.5	-1.1	1.4	9.3	-0.4	6.1	20.2	-1.1	229
10-11	6.1	26.5	-1.1	2.5	20.0	-1.0	14.0	44.6	-1.7	104
12-15	14.0	36.6	-1.4	7.1	24.9	-1.2	10.8	49.4	-1.9	228
16-23	23.2	49.3	-2.0	5.1	21.5	-1.2	17.0	51.2	-2.0	340
24-35	22.3	50.4	-1.9	3.9	16.7	-1.1	17.1	55.0	-2.0	640
36-47	27.2	53.2	-2.1	4.2	14.8	-1.0	14.9	51.9	-2.0	734
48-59	27.6	54.5	-2.2	4.0	11.7	-0.9	12.3	51.8	-2.0	746
<b>Child's sex</b>										
Male	19.0	43.3	-1.7	3.9	15.4	-0.9	11.9	44.3	-1.8	1,735
Female	22.1	45.9	-1.8	3.9	14.6	-0.9	13.4	46.3	-1.8	1,637
<b>Birth order<sup>2</sup></b>										
1	18.0	40.9	-1.7	3.8	15.6	-1.0	12.3	43.6	-1.8	611
2-3	20.1	44.2	-1.7	2.8	13.7	-0.8	11.5	42.8	-1.7	1,160
4-5	19.8	42.7	-1.7	4.2	14.3	-0.9	11.8	44.5	-1.8	744
6+	22.5	48.7	-1.8	4.9	17.1	-1.0	14.9	49.5	-1.9	773
<b>Birth interval in months<sup>2</sup></b>										
First birth	18.0	40.8	-1.7	3.8	15.6	-1.0	12.3	43.6	-1.8	612
<24 months	31.3	55.3	-2.2	3.5	11.7	-0.9	17.0	52.2	-2.0	529
24-47 months	19.6	46.0	-1.8	3.6	15.4	-0.9	11.6	45.2	-1.8	1,488
48+ months	14.7	34.9	-1.4	4.4	16.1	-0.9	11.2	39.6	-1.6	660
<b>Residence</b>										
Urban	19.4	38.1	-1.6	3.3	12.6	-0.8	9.1	37.9	-1.6	484
Rural	20.7	45.7	-1.8	4.0	15.4	-0.9	13.2	46.5	-1.8	2,888
<b>Region</b>										
Banteay Mean Chey	11.7	28.9	-1.3	5.0	19.5	-1.1	10.5	39.5	-1.7	162
Kampong Cham	19.3	48.2	-1.8	5.2	15.6	-1.0	13.6	47.8	-1.9	464
Kampong Chhnang	19.4	45.9	-1.9	0.7	9.5	-0.9	9.9	46.1	-1.8	161
Kampong Speu	17.4	44.5	-1.7	3.6	16.9	-1.0	13.7	44.0	-1.9	232
Kampong Thum	26.1	47.2	-1.7	10.2	24.5	-1.0	12.5	49.4	-1.9	150
Kandal	17.6	46.2	-1.9	1.1	11.8	-0.9	10.6	48.2	-1.9	301
Kaoh Kong	30.8	55.0	-2.2	3.9	14.7	-0.6	15.4	42.7	-1.8	40
Phnom Penh	17.0	25.6	-1.2	3.1	18.3	-0.9	8.0	35.0	-1.4	197
Prey Veaeng	27.4	51.2	-2.1	6.5	15.1	-1.0	17.5	56.8	-2.0	244
Pousat	20.0	46.3	-1.7	1.3	13.4	-1.0	12.4	46.3	-1.8	126
Svay Rieng	22.9	51.3	-1.8	4.9	13.0	-0.8	13.5	45.9	-1.7	125
Takaev	21.1	42.1	-1.6	4.8	17.2	-0.8	14.5	39.9	-1.6	218
Bat Dambang/ Krong Pailin	15.9	36.3	-1.4	5.7	21.1	-1.0	12.0	36.4	-1.6	240
Kampot/Krong Kaeb/ Krong Preah Sihanouk	26.0	43.4	-1.8	2.6	9.6	-0.5	12.6	39.8	-1.5	230
Preah Vihear/Stueng	22.9	51.0	-2.0	2.8	10.9	-0.9	13.2	47.0	-1.9	164
Traeng/Kracheh	33.4	55.0	-2.2	6.2	15.2	-0.9	19.0	54.0	-2.0	51
Mondol Kiri/Rotanak Kiri										
Siem Reab/Otdar	21.0	50.7	-2.0	0.8	10.6	-0.8	10.9	49.9	-1.8	266
Mean Chey										
<b>Mother's education<sup>2</sup></b>										
No education	24.4	51.0	-1.9	4.7	15.7	-0.9	15.1	51.2	-1.9	1,067
Primary	19.4	42.6	-1.7	3.6	15.3	-0.9	12.1	42.7	-1.8	1,778
Secondary and higher	14.1	35.1	-1.4	2.6	12.6	-0.9	8.4	39.7	-1.5	463
<b>Children of interviewed mothers</b>	20.2	44.3	-1.7	3.8	15.0	-0.9	12.5	44.9	-1.8	3,288
<b>Children of non-interviewed mothers</b>										
Mother in household	*	*	*	*	*	*	*	*	*	20
Mother not in household	35.6	61.5	-2.2	8.2	15.0	-0.8	15.9	57.6	-1.9	64
<b>Total</b>	20.5	44.6	-1.8	3.9	15.0	-0.9	12.6	45.2	-1.8	3,372

Note: This table refers to de facto children. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

<sup>1</sup> Includes children who are below -3 standard deviations from the International Reference Population median

<sup>2</sup> Excludes children whose mothers were not interviewed



**Ask the participants:**

Have you ever looked at a DHS table before?

Do you know where to get this information?

## Slide 26 – Triggers for Action – Wasting



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If more than 5% of the children in Shining Hope Community have low weight-for-height, then there is a moderate problem of wasting and attention is required. If 10% or more of the children in Shining Hope Community have low weight-for-height, then there is a critical problem of wasting.

### Ask

1. What levels of wasting in a community should be a concern to us?

**Answer:** Any levels over 5% are a concern.

2. How do we know if our community has a problem with wasting?

**Answer:** If our data says the levels are over 5%, then we know there is a problem with wasting.

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### Triggers for Action – Wasting

% of children 0-59 months moderately and severely malnourished

	Acceptable	Attention Required	Critical
Wasting (weight-for-height)	<5%	5 – 9%	≥10%

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## 11.4 Demographic Health Survey (DHS)



### Ask Participants:

Have you ever felt overwhelmed by charts and tables?

Have you ever felt that charts have helped you understand something better?





## Slide 27 – Demographic and Health Survey (DHS) Chart Sample



Workbook  
Page 43

**Table 13.7 Nutritional status of children**

Percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status: height-for-age, weight-for-height, and weight-for-age, by background characteristics, and percentage of children of noninterviewed mothers, and all children classified as malnourished, Cambodia 2000

Background characteristic	Height-for-age			Weight-for-height			Weight-for-age			Number of children
	Percentage below -3 SD	Percentage below -2 SD	Mean Z score (SD)	Percentage below -3 SD	Percentage below -2 SD	Mean Z score (SD)	Percentage below -3 SD	Percentage below -2 SD	Mean Z score (SD)	
<b>Child's age in months</b>										
<6	5.1	14.5	-0.4	1.9	9.0	-0.1	1.1	7.7	-0.4	351
6-9	4.4	23.5	-1.1	1.4	9.3	-0.4	6.1	20.2	-1.1	229
10-11	6.1	26.5	-1.1	2.5	20.0	-1.0	14.0	44.6	-1.7	104
12-15	14.0	36.6	-1.4	7.1	24.9	-1.2	10.8	49.4	-1.9	228
16-23	23.2	49.3	-2.0	5.1	21.5	-1.2	17.0	51.2	-2.0	340
24-35	22.3	50.4	-1.9	3.9	16.7	-1.1	17.1	55.0	-2.0	640
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<b>Birth interval in months<sup>2</sup></b>										
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Kampong Speu	17.4	44.5	-1.7	3.6	16.9	-1.0	13.7	44.0	-1.9	232
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Kandal	17.6	46.2	-1.9	1.1	11.8	-0.9	10.6	48.2	-1.9	301
Kaoh Kong	30.8	55.0	-2.2	3.9	14.7	-0.6	15.4	42.7	-1.8	40
Phnom Penh	17.0	25.6	-1.2	3.1	18.3	-0.9	8.0	35.0	-1.4	197
Prey Veaeng	27.4	51.2	-2.1	6.5	15.1	-1.0	17.5	56.8	-2.0	244
Pousat	20.0	46.3	-1.7	1.3	13.4	-1.0	12.4	46.3	-1.8	126
Svay Rieng	22.9	51.3	-1.8	4.9	13.0	-0.8	13.5	45.9	-1.7	125
Takae	21.1	42.1	-1.6	4.8	17.2	-0.8	14.5	39.9	-1.6	218
Bat Dambang/ Krong Pailin	15.9	36.3	-1.4	5.7	21.1	-1.0	12.0	36.4	-1.6	240
Kampot/Krong Kaeb/ Krong Preah Sihanouk	26.0	43.4	-1.8	2.6	9.6	-0.5	12.6	39.8	-1.5	230
Preah Vihear/Stueng	22.9	51.0	-2.0	2.8	10.9	-0.9	13.2	47.0	-1.9	164
Traeng/Kracheh	33.4	55.0	-2.2	6.2	15.2	-0.9	19.0	54.0	-2.0	51
Mondol Kiri/Rotanak Kiri										
Siem Reab/Otdar	21.0	50.7	-2.0	0.8	10.6	-0.8	10.9	49.9	-1.8	266
Mean Chey										
<b>Mother's education<sup>2</sup></b>										
No education	24.4	51.0	-1.9	4.7	15.7	-0.9	15.1	51.2	-1.9	1,067
Primary	19.4	42.6	-1.7	3.6	15.3	-0.9	12.1	42.7	-1.8	1,778
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<b>Children of interviewed mothers</b>	20.2	44.3	-1.7	3.8	15.0	-0.9	12.5	44.9	-1.8	3,288
<b>Children of non-interviewed mothers</b>										
Mother in household	*	*	*	*	*	*	*	*	*	20
Mother not in household	35.6	61.5	-2.2	8.2	15.0	-0.8	15.9	57.6	-1.9	64
<b>Total</b>	20.5	44.6	-1.8	3.9	15.0	-0.9	12.6	45.2	-1.8	3,372

Note: This table refers to de facto children. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

<sup>1</sup> Includes children who are below -3 standard deviations from the International Reference Population median

<sup>2</sup> Excludes children whose mothers were not interviewed



**Ask the participants:**

Have you ever looked at a DHS table before?

Do you know where to get this information?

DHS reports are a valuable source of information. But sometimes the charts can be complicated. For this example we will use a page from the Cambodia DHS. (Learning facilitators may replace this chart with the same chart from their country's DHS.) We will work through it together.



## Ask

1. *What is the title of the chart?*

**Answer:** Nutritional status of children.

2. *What does it say underneath the title as an explanation?*

**Answer:** Percentage of children under five years classified as malnourished according to three anthropometric indices of nutritional status: weight-for-age; height-for-age, and weight-for-height. (Write this on a flip chart.)

3. Underline **Percentage of children under five years**. *What does this mean?*

**Answer:** The percentage shows how many children out of 100 would be in this category.

4. Underline **malnourished** in a different colour.

- a. Underline in a different colour **three anthropometric indices of nutritional status**

- b. *What does anthropometric mean?*

**Answer:** *Anthropometric* means a measurement of the human body.

5. *What have we learned to measure?*

**Answer:** Weight, height/length and MUAC.

6. Underline in another colour **weight-for-age**.

- a. *How do we find weight-for-age?*

**Answer:** Weigh the child, find out the sex and age in months and compare to standard growth curve for the sex of the child.

- b. *What does it tell us about the child?*

**Answer:** It tells us whether a child is underweight (moderately or severely) or not. If the child is higher than -2 SD, then the child is within the normal range for weight for age.

7. Underline **height-for-age**

- a. *What does this tell us?*

**Answer:** This tells us whether a child is stunted (moderately or severely) or not.

- b. *How do we measure it?*

**Answer:** The length/height of the child needs to be measured. The child's sex and age in months is also needed. This is then compared to a standard growth curve/chart to see whether a child is stunted or not.

8. Underline **weight-for-height**

*What does this tell us?*

**Answer:** This tells us whether a child is wasted (moderately or severely) or not.

9. We have learned about each one of these points in our training.
  - a. This table tells about the number of children in our country or district that are malnourished according to the three indicators we have discussed.
  - b. *What are those indicators?*  
The indicators are listed on the next line of the chart. Point it out.
10. Under each indicator there are three different columns. We will look at the columns labelled 'Percentage below -2 SD' which signifies children who are moderately or severely malnourished.
  - a. Circle these words under each of the indicators to help participants remember which column we are interested in.
  - b. This is another way of saying the percentage of children who are moderately or severely malnourished. Or the ones who are below the bottom line on our graphs. (Show a Road to Health graph and point out that any children below the bottom line are moderately or severely malnourished.)
11. Notice down the left-hand side of the table various characteristics are listed. Several of these are interesting, for example:
  - a) Sex – how many girls under 5 are moderately and severely malnourished according to height-for-age? Who is better nourished; boys or girls?
  - b) Regions – which region has the highest percentage of children malnourished according to weight-for-age? Which region seems to have the lowest level of nutrition according to weight-for-height? What might this tell us?
  - c) Total (at the bottom of the page) – is the total number of children under 5 who are moderately or severely malnourished according to each of the three indicators.
12. Ensure that participants are comfortable with finding information on the chart. Ask participants to call out a question the trainer must answer. Then have participants call out questions for other participants to answer. Continue until participants are confident about their use of the table.
13. This table does not give percentages for normal children or mildly malnourished children. However, we can compare the numbers for moderately and severely malnourished children with our table on Triggers for Action. Remind participants of Slide 26.

## 11.5 Comparing DHS to Triggers for Action

### Slide 28 Compare DHS to Triggers For Action



**Workbook  
Page 44**

Complete this chart using information from the DHS. (Pick a region from the DHS table that Shining Hope Community would be a part of, for example, Kampong Cham.)

Do a sample together and then let participants work on it in pairs.

Answer any questions and offer support where needed (allow five minutes).

**Ask:** *What does this table tell us?*

**Answers:** Allow time for the participants to provide comments. Look for answers such as

- Malnutrition is a problem
- Malnutrition is worse in some provinces than others
- Stunting is worse than wasting

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### Comparing DHS to Triggers for Action

% of children under five who are moderately and severely malnourished

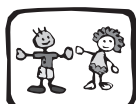
	DHS Total	DHS District (Kampong Cham)	Immediate Action Required (Trigger)
Underweight	45.2%	47.8%	≥20%
Stunting	44.6%	48.2%	≥30%
Wasting	15.0%	15.6%	≥10%

% of children under five who are moderately and severely malnourished

	DHS Total	DHS District	Community Information	Trigger for Action
Underweight				≥20%
Stunting				≥30%
Wasting				≥10%

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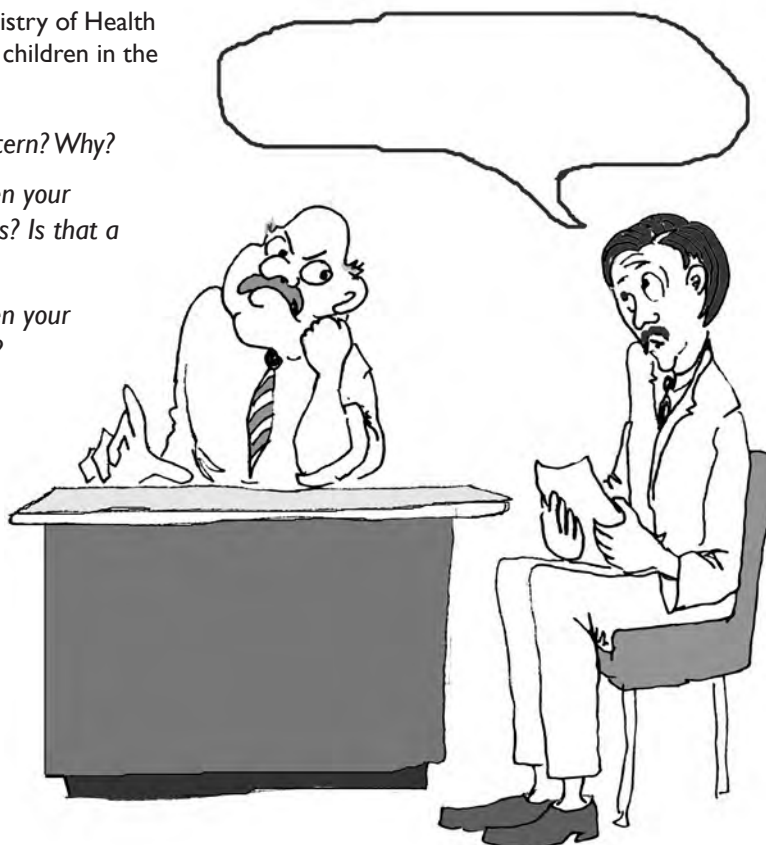
## 11.6 Role Play at the Ministry of Health



Picture yourself informing a Ministry of Health official about health statistics of children in the district. What would you say?

1. Which indicators are of concern? Why?
2. Are there differences between your region and the national totals? Is that a problem? Why?
3. Are there differences between your district and your community?
4. What might be some reasons for any differences?

Discuss possible responses to differences between your measures and the official DHS information. Ask what participants think they could do to address this and where they could go for help.



### 11.7 Closing


#### ***Congratulations Everyone!***

You have now learned to weigh and measure children with proper technique. You have also learned how to do growth monitoring and promotion. You have begun to understand what different measures of malnutrition and growth mean. We hope that this tool will continue to enable you to support your community to improve the nutrition of their children and families. Good nutrition is an important part of a healthy community!

#### **Slide 11.9 Congratulations Everyone**

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**Congratulations! We're finished.  
Now on to fighting malnutrition!**



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