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Women and Infant Nutrition Field Support Project (WINS)

MOH/CHDC/WINS Uganda Program

Anthropometric Training Manual

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MOH/CHDC/WINS UGANDA PROGRAM
ANTHROPOMETRIC TRAINING MANUAL

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MOH/CHDC/WINS UGANDA PROGRAM
ANTHROPOMETRIC TRAINING MANUAL

1.0 INTRODUCTION

As part of the MOH/CHDC/WINS Uganda Program, preschool-age children and their mothers will be weighed and measured in their households during the baseline survey. Weighing and measuring, i.e., anthropometry, will be done by an anthropometrist, who will be on each team.

This manual presents the procedures for the anthropometrist to follow. Keep this manual with you during training and also during data collection so that you can refer to it.

2.0 PERSONNEL AND DUTIES

There will be 5 two-peson teams on the survey. Each team consists two interviewers who will collect all the data on the baseline survey and will weigh and measure selected children and their mothers in households.

3.0 ANTHROPOMETRIC MEASUREMENTS, MEASURING INSTRUMENTS AND EQUIPMENT AND UNITS

The following are the measurements, instruments and units that will be taken on this survey:

Measurement	Measuring Instrument	Units
Weight	Seca Model 770 Floor Scale	0.1 kg
Height	Shorr Height Measuring Board	0.1 cm
Mid-Upper Arm Circumference (MUAC) of Children	Three-Colored Insertion Tape	0.1 cm
MUAC of Adults	Ross Insertion Tape	0.1 cm

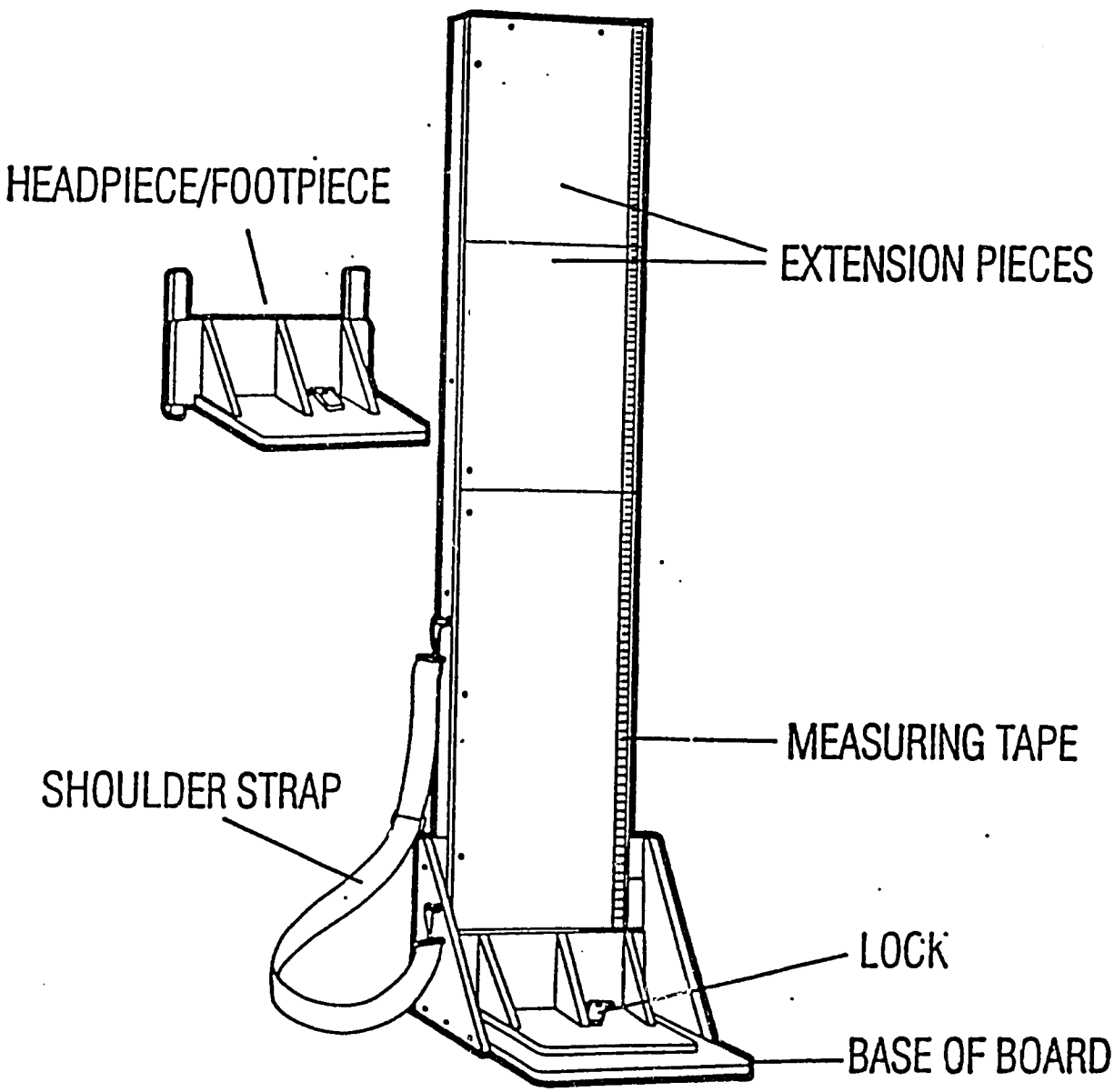
You will be responsible for the care of the measuring instruments and equipment assigned to you. Report any loss or damage or any instrument that is not working properly.

3.1 The Height Measuring Board

The Shorr Height Measuring Board will be used to measure the height of all selected children and their mothers on the survey. It is graduated in 0.1 cm increments. It is used in an upright position for measuring the height of children and adults two (2) years and older. It is used in a horizontal position (e.g., on the ground or floor) for measuring the recumbent length of children lying down who are less than two (2) years of age. There are five pieces to the measuring board:

a. The base of the board, attached to a vertical section
b. The sliding head/footpiece, stored in the base of the board
c. Two extension pieces for measuring taller people
d. An adjustable shoulder strap for transporting the board

SHORR HEIGHT MEASURING BOARD



Source: Irwin J. Shorr, 1993

THE SHORR INFANT/CHILD/ADULT HEIGHT MEASURING BOARD
INSTRUCTIONS FOR USE

ARTS: Sliding Head/Footpiece, Main Board (where sliding head/footpiece is stored), Lower Extension Piece, Upper Extension Piece, Adjustable Shoulder Strap

SSEMBLY

. Stand the board upright so the shoulder strap is on your left side as you face the board. Remove the shoulder strap.

. Turn the bolt counterclockwise to release the upper extension piece. Note that the bolt stays attached to the back of the extension piece. Do not attempt to remove it. Remove the upper extension piece and set it aside

. Repeat step 2 above for the lower extension piece (the bolt that holds this piece is located on the back of the main board) that is attached to the main board. Face the board and step on the base with one foot to keep it stable.

. Slide the lower extension piece into the top end of the main board.

. The sliding head/footpiece is stored in the base of the main board. Move the latch on the head/footpiece to the right to disengage.

. Grasp the sliding head/footpiece on the center triangular piece. Move the sliding head/footpiece up and down 3 or 4 times over the junction where the main board and lower extension piece meet.

. While holding the sliding head/footpiece with one hand exactly over the junction where the main board and lower extension piece meet, fasten the luggage type draw-catch on the back of the board with your other hand. This will ensure that the main board and lower extension piece are exactly in line so the sliding head/footpiece will slide smoothly. Return the sliding head/footpiece to its storage position in the base of the main board, but do not lock it in position.

. Slide the upper extension piece into the top end of the lower extension piece. Repeat steps 6 and 7 for the upper extension piece.

OTES: a. The two draw-catches on the back of the board are in different places on each extension piece. Make sure the draw-catches are latched properly. If a draw-catch cannot be latched, the upper and lower extension pieces may have been incorrectly interchanged.

b. If taller people (adults) are not going to be measured, the upper extension piece can be removed and stored.

OLLAPSING FOR STORAGE OR TRANSPORTATION

. Stand the board upright, face the board and step on the base with one foot to keep it stable.

. Place the sliding head/footpiece into the base of the main board. Move the latch to the left to lock it into place.

. Release the draw-catches on the back of both pieces and remove.

. While stepping on the main board, place the back of lower extension piece against the main board with the measuring ape of the lower extension piece facing out towards you. Make sure that all sides and upper corners of the lower xtension piece and the main board are straight and in line with each other.

. Push the bolt that is on the back of the main board and screw the bolt into the lower extension piece.

. Place the upper extension piece on top of the lower extension piece. Make sure that the side of the board of the upper extension piece where the tape is located faces inward against the back front of the lower extension piece. Make sure that all sides of the upper extension piece are straight and in line with the lower extension piece and the main board.

. Push down on the bolt that is on the back of the upper extension piece and screw the bolt into the back of the lower extension piece.

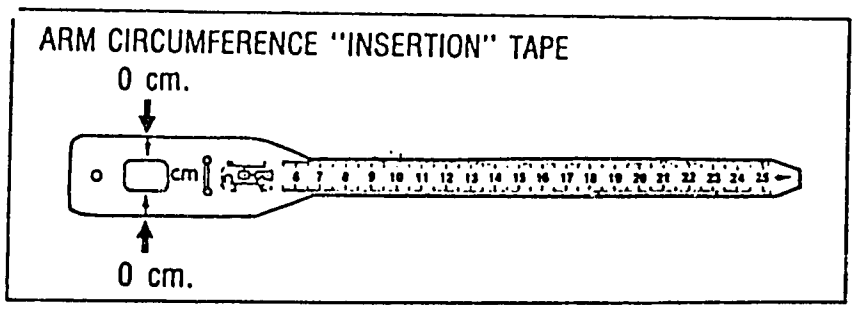
. Replace the shoulder strap.

BEST AVAILABLE DOCUMENT

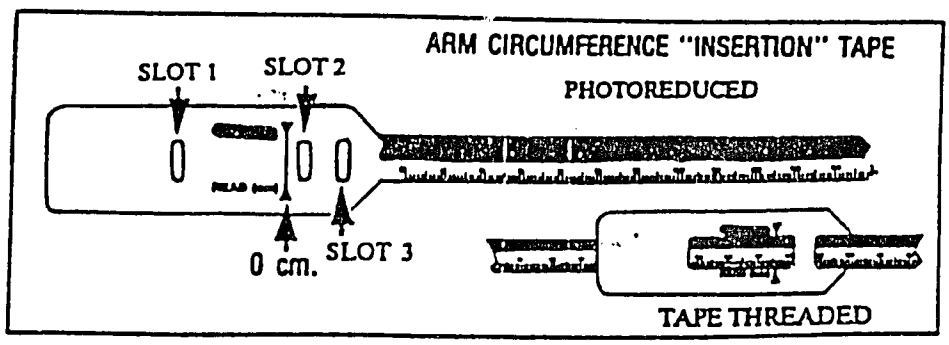
3.3 Arm Circumference Tapes

There are two types of arm circumference tapes. Both have slots for inserting the tape and a reading window with arrows. The first tape which is used for measuring mid-upper arm circumference of children, has three colors, green, yellow and red, is 25 cm long, and is graduated in 0.1 cm increments. The second tape, which is used to measure the mid-upper arm circumference of adults is 56 cm long and is graduated in 0.1 cm increments. All tapes are stored in small plastic containers with screw tops. Do not place more than three tapes in one container. Make sure to carefully place the tapes in the containers when not in use. The tapes can crimp and will be very difficult to use.

MUAC Tape for Children



MUAC Tape for Adults



3.4 Other Equipment and Care of the Instruments

There will be extra batteries for the floor scale, pens, pencils, erasers, pencil sharpeners, bags to hold the equipment during transport, cloths to clean the instruments, etc. (See Annex C, Anthropometric Measuring Instrument and Equipment Checklist.)

Although the measuring instruments are durable and portable, you must be careful when using them and when you transport them. You must maintain them on a daily basis. Wipe the measuring board with a clean cloth (a damp cloth can be used followed by drying with a clean dry cloth). Wipe the scale regularly.

Inform your supervisor immediately if there are any problems with the measuring instruments or equipment. Make sure that you have all your instruments and equipment, questionnaires, etc. before you go to a household. Refer to the Anthropometric Measuring Instrument and Equipment Checklist that will be given to you.

4.0 MEASUREMENT PROCEDURES

4.1 Procedures and Precautions Before Measuring

a. Two People Required for Child Standing Height and Child Recumbent Length

Two people are required to measure a child's standing height and recumbent length. The anthropomotrist (the Measurer) holds the child and takes the measurements. The assistant helps hold the child's knees and feet during height and head during length.

b. Measuring Instrument Placement

Begin to observe possible places where the board can be positioned and the floor scale placed as soon as you walk towards a household. Be selective about where you place the instruments. It is best to weigh and measure outdoors during daylight hours. If it is cold or raining and you must work indoors, make sure to have adequate light.

b. Age Assessment

Before you begin, determine ages of the people you are about to weigh and measure. If a child is less than two years of age, measure length, lying down. If a child is two years of age or older, measure height. If accurate age is not possible to obtain, measure length if a child is less than 85 cm. Measure height if the child is equal to or greater than 85 cm.

c. When to Weigh and Measure

Weigh and measure after verbal information on the questionnaire has been recorded. This will allow you to become familiar with the members of the household. DO NOT weigh and measure at the beginning of an interview, i.e., as soon as you enter a household, which would be more of an upsetting intrusion.

d. Weigh and Measure Adults First
Weigh and measure adults first who will serve as models to the younger children and who will be able to assist you in weighing and measuring the younger children.

e. Weigh and Measure One Person at a Time
Make sure that you weigh and measure one person at a time completely before beginning the weighing and measuring of the next person. DO NOT, for example, take the height of all people in a household followed by the weight of all people since this can cause errors.

f. Controlling Children
When you weigh and measure children, you must control them. The strength and mobility of even very young children should not be underestimated. Be firm yet gentle with children. Your own sense of calm and self confidence will be felt by the mother and the child.

When a child has contact with any measuring equipment, i.e., on a measuring board, in the weighing pants or sling, or with an arm circumference tape, you must hold and control the child so the child will not trip or fall. Never leave a child alone with a measuring instrument or piece of equipment. Always have physical contact with the child except when you must let go of a child for a few seconds while taking its weight.

g. Coping With Stress
Since weighing and measuring requires touching and handling people, normal stress levels for this type of survey work are higher than for surveys where only verbal information is collected.

Explain the weighing and measuring procedures to the mother, and to a limited extent, the child, to help minimize possible resistance, fears or discomfort they may feel. You must determine if someone is under so much stress that the weighing and measuring must stop. Remember, young children are often uncooperative; they tend to cry, scream, kick and sometimes bite. If a child is under severe stress and is crying excessively, try to calm the child or return the child to the mother for a moment before proceeding with the weighing and measuring.

Do not weigh or measure a child if the mother refuses, the child is too sick or too distressed or if the child is physically deformed which may interfere with or give an incorrect measurement. To be kind, you may want to measure such a child and make a note of the deformity on the questionnaire.

h. Recording Measurements and Being Careful
Record the measurements in pencil. If you make an error, completely erase the error and rewrite the correct numbers. Keep objects out of your hands and pencils out of your mouth, hair or breast pocket when you weigh and measure so that neither the child nor you will get hurt due to carelessness. When you are not using a pencil, place it in your equipment pack, pencil case or on the questionnaire. Make sure you do not have long fingernails. Remove interfering rings and watches before you weigh and measure. Do not smoke when you are in a household or when you weigh and measure.

i. Strive for Improvement
You can be an expert anthropometrist if you strive for improvement and follow every step of every procedure the same way every time. The quality and speed of your measurements will improve with practice. You may be working with a partner to form a team. If so, you will be responsible for not only your own work, but also for the quality of work of your team.

You will be required to weigh and measure many people. Do not take these procedures for granted even though they may seem simple and repetitious. It is easy to make errors when you are not careful. Do not omit any steps. Concentrate on what you are doing.

4.2 STANDING HEIGHT OF ADULTS

1. Place the height measuring board on a hard flat surface against a wall, table, tree, staircase, etc. Make sure that the board is stable.

2. Ask the person to take off his/her shoes, and, if necessary, unbraid any hair that would interfere with the height measurement.

3. Place the questionnaire and pencil on the ground directly next to you (Arrow 1). Stand on the left side of the person (Arrow 2). Make sure you are at eye-level with the reading area on the measuring board.

4. Ask the person to place his/her knees (Arrow 3) and feet (Arrow 4) together so they are against the base and back of the measuring board. Make sure the feet are flat on the board and touching both the base and the back of the board at the same time. Make sure that the heels and calves are against the board (Arrows 5 and 6).

5. Tell the person to look straight ahead. Make sure that the person's line of sight is level with the ground (Arrow 7). Place your open left hand on the person's chin. Gradually close your hand (Arrow 8). Do not cover the person's mouth or ears. Make sure the shoulders are level (Arrow 9), the hands are at the person's side (Arrow 10), and the shoulder blades and buttocks are against the board (Arrows 11 and 12). The head of an adult may not touch the back of the board (Arrow 13).

6. With your right hand, lower the sliding headpiece on top of the person's head. Make sure that you push through the person's hair (Arrow 14).

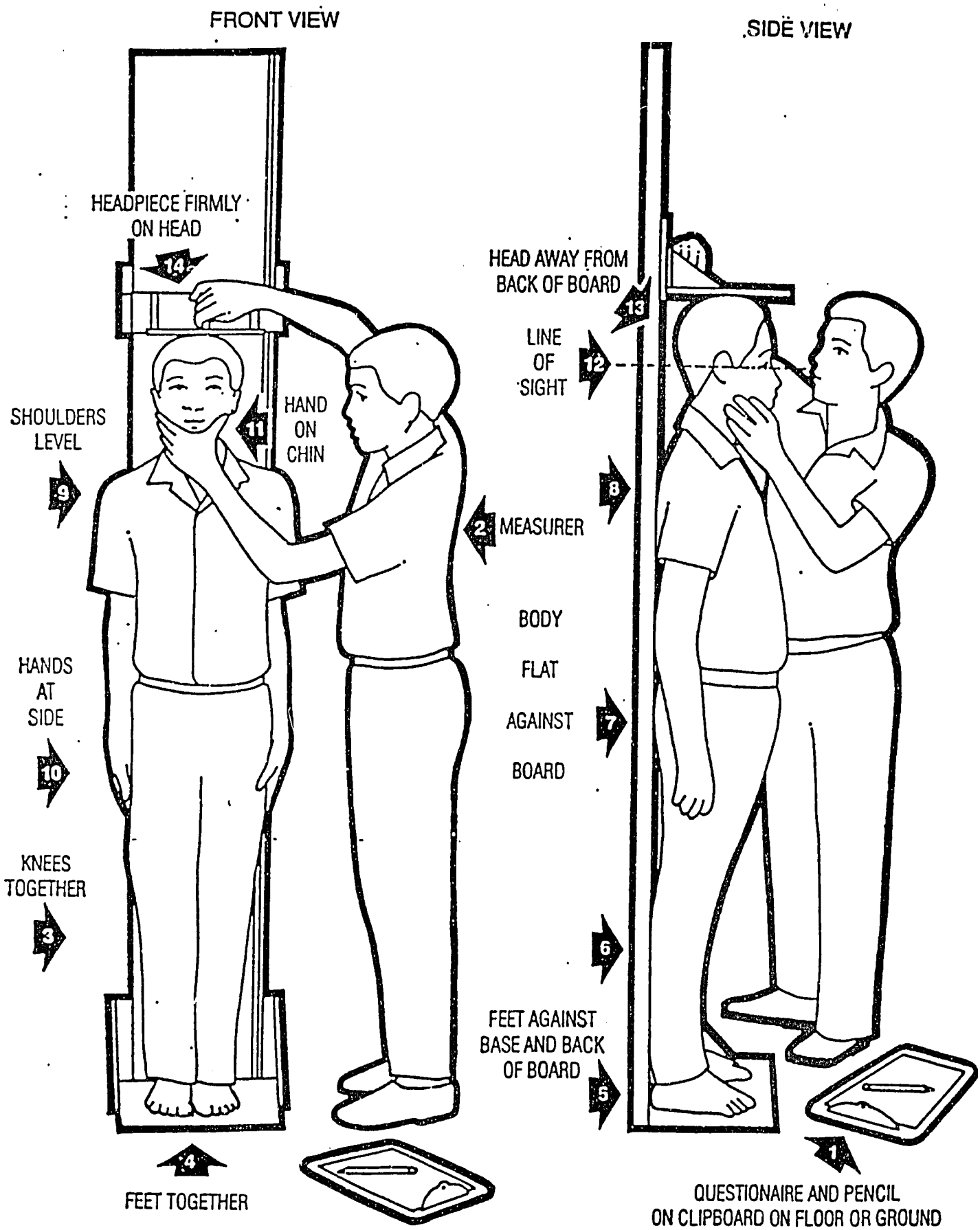
7. Check the person's position (Arrows 1-14). Repeat any steps as necessary.

8. When the person is in the correct position, read and call out the measurement twice to the nearest 0.1 cm. Remove the sliding headpiece from the person's head and your left hand from the person's chin.

9. Immediately record the measurement on the questionnaire.

10. Check that the measurement you recorded on the questionniare is correct and readable. If you have made an error, erase it completely and record the correct measurement.

STANDING HEIGHT OF ADULTS



From, Shorr, I.J., "Anthropometry as part of Household Surveys," The World Bank, Washington, DC, 1994.

4.3 WEIGHT OF ADULTS

a. Explain to the adults in the household that you will weigh them first, followed by the very young children who cannot stand up by themselves and finally, the older children who can stand up.

b. Ask the first adult to wear light clothing and to remove any heavy clothes, sweaters, etc. Also, make sure that there are no interfering hairstyles or hats, etc. Ask the mother to undress the child(ren) completely (or with only undergarments on). If she is concerned that it is cold, tell her that she may cover the child(ren) with a cloth or blanket that she has until the scale is ready.

c. Turn the scale on by gently pushing button through the hole on the bar on the front of the scale. The The display will read "00.0".

d. Stand on the right side of the adult which is closest to the display pannel. Ask the adult to step on the center of the scale and to stand quietly. You may want to assist her by supporting her at the elbow. Wait until the numbers on the display stop changing.

e. Make sure that the adult is not touching anything. Record the weight to 0.1 kg. If the numbers change (for example, from 84.2 to 84.3 kg), record the <u>lower</u> number; (in this example, record 84.2 kg).

f. Follow the Reading and Recording System; i.e., make sure to call out loud the weight. Check the recorded weight for accuracy and legibility.

g. Thank the respondent.

4.4 WEIGHT OF CHILDREN

a. Begin to weigh very young children (i.e., infants and children who cannot stand up and must be held) when the mother has just been weighed so that she can hold them while she is still on the scale.

b. If it is cold and the mother wants the child to be covered during the weighing, have the mother hold a blanket or cloth while she is still standing on the scale after you have recorded her own weight on the questionnaire.

c. While the mother is standing quietly on the scale, make sure that the numbers have stopped changing. Push the button through the hole on the bar on the front of the scale. The display will read "00.0". That is, you have just adjusted the scale to zero ("00.0") with the mother on the scale.

d. Give the mother a child to hold (the mother may already be holding a blanket or cloth in which to wrap the child).

e. Wait for a few seconds for the numbers on the display to stop moving. Record the weight to 0.1 kg on the questionnaire for the child. You have just obtained the weight of the child only with this method of weighing.

f. If there is another child to be weighed that must be held by the mother or other adult, have the mother remain on the scale and repeat this procedure beginning with step 4.4 b.

g. For older children who can stand on their own, have the child (with minimal clothing) stand in the center of the scale. Wait for the numbers on the display to stop changing. Record the weight to 0.1 kg. Follow the Reading and Recording System and check the recorded weight for accuracy and legibility. Assist the child off the scale.

The following are additional instructions that may appear on the digital display panel of the scale:

a. The reading of the scale is accurate to 0.1 kg.

b. If two values are displayed alternately (e.g., 46.2 kg and 46.3 kg), this means that the weight is between two values. Record the LOWER value on the questionnaire (in this example, record 46.2 kg).

c. If "SUP" appears on the display while weighing a person, the scale is overloaded (i.e., the person weighs more than the capacity of the scale; more than 200 kg), and, therefore, the scale cannot be used for this person. If this occurs, record " 200" on your questionnaire.

d. If no weight appears on the display panel when a person is on the scale, ask the person to step off the scale, press the red button and wait for the display "00.0" to appear.

e. If ---- appears on the display, press the red button and wait for the "00.0" to appear.

f. If "Err" appears on the display, as the subject to step off the scale, press the red button and wait for the display "00.0" to appear.

g. If "bAt" appears on the display, this means that the battery is low; change the batteries immediately.

4.5 STANDING HEIGHT FOR CHILDREN TWO TO SIX YEARS OLD*

1. **Measurer or Assistant:** Place the measuring board on a hard flat surface against a wall, table, tree, staircase, etc. Make sure the board is stable.
2. **Measurer or Assistant:** Ask the mother to remove the child's shoes and unbraid any hair that would interfere with the height measurement. Ask her to walk the child to the board and to kneel in front of the child.
3. **Assistant:** Place the questionnaire and pencil on the ground (Arrow 1). Kneel with both knees on the right side of the child (Arrow 2).
4. **Measurer:** Kneel on your right knee only, for maximum mobility, on the child's left side (Arrow 3).
5. **Assistant:** Place the child's feet flat and together in the centre of and against the back and base of the board. Place your right hand just above the child's ankles on the shins (Arrow 4), your left hand on the child's knees (Arrow 5) and push against the board. Make sure the child's legs are straight and the heels and calves are against the board (Arrows 6 and 7). Tell the measurer when you have completed positioning the feet and legs.
6. **Measurer:** Tell the child to look straight ahead at the mother if she is in front of the child. Make sure the child's line of sight is level with the ground (Arrow 8). Place your open left hand on the child's chin. Gradually close your hand (Arrow 9). Do not cover the child's mouth or ears. Make sure the shoulders are level (Arrow 10), the hands are at the child's side (Arrow 11), and the head, shoulder blades and buttocks are against the board (Arrows 12, 13, and 14). With your right hand, lower the headpiece on top of the child's head. Make sure you push through the child's hair (Arrow 15).
7. **Measurer and Assistant:** Check the child's position (Arrows 1-15). Repeat any steps as necessary.
8. **Measurer:** When the child's position is correct, read and call out the measurement to the nearest 0.1 cm. Remove the headpiece from the child's head, your left hand from the child's chin and support the child during the recording.
9. **Assistant:** Immediately record the measurement and show it to the measurer.
   NOTE: If the assistant is untrained, the measurer records the height.
10. **Measurer:** Check the recorded measurement on the questionnaire for accuracy and legibility. Instruct the assistant to erase and correct any errors.

*From: Shorr, I.J., "How To Weigh And Measure Children," United Nations, New York 1986.

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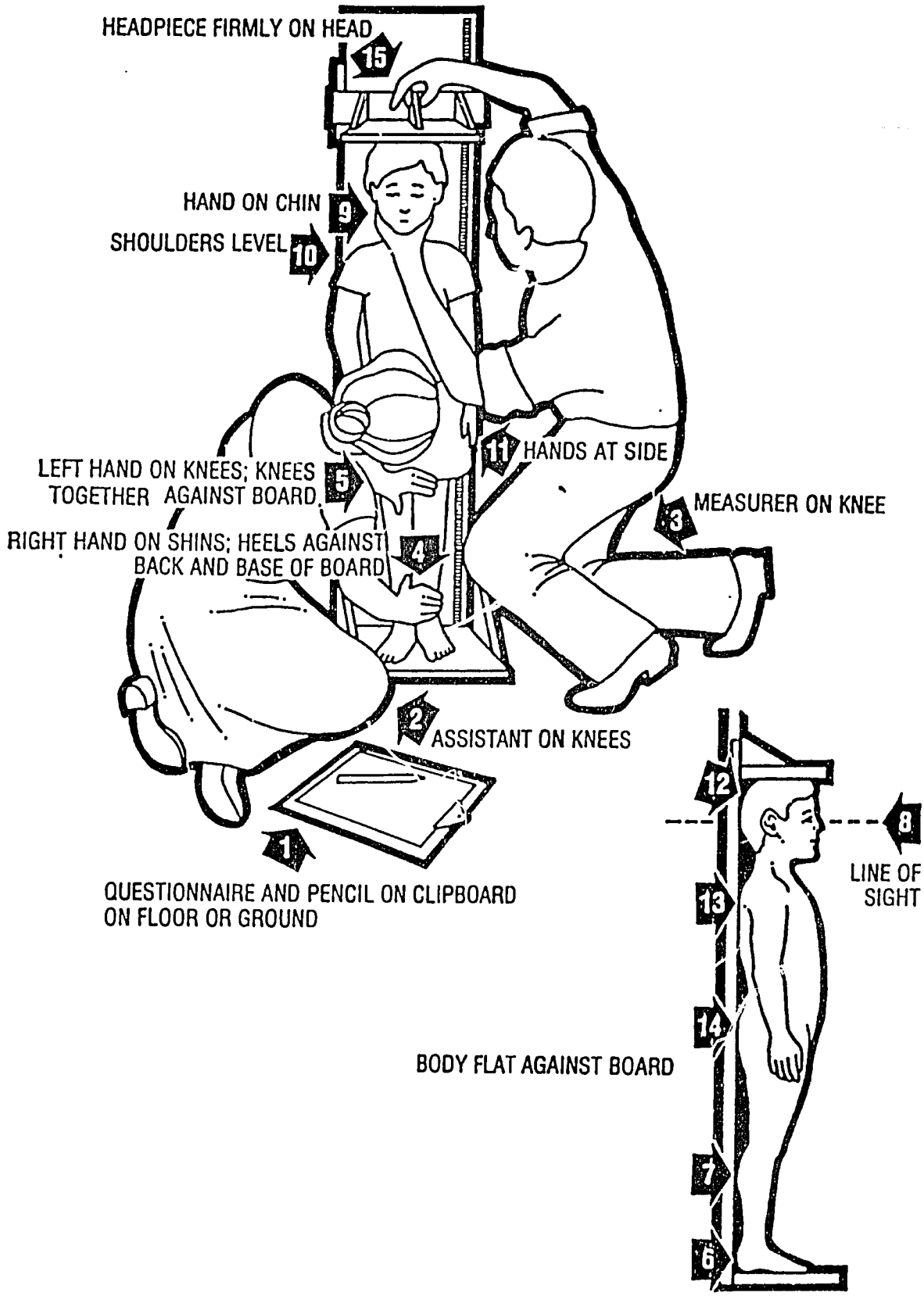
STANDING HEIGHT FOR CHILDREN TWO TO SIX YEARS OLD*



*From: Shorr, I.J., "How To Weigh And Measure Children," United Nations, New York 1986.

4.6 RECUMBENT LENGTH OF CHILDREN LESS THAN TWO YEARS OLD*

1. **Measurer or Assistant:** Place the measuring board on a hard flat surface, i.e. ground, floor or steady table.
2. **Assistant:** Place the questionnaire and pencil on the ground, floor or table (Arrow 1). Kneel with both knees behind the base of the board, if it is on the ground or floor (Arrow 2).
3. **Measurer:** Kneel on the right side of the child so that you can hold the footpiece with your right hand (Arrow 3).
4. **Measurer and Assistant:** With the mother's help, lay the child on the board by doing the following:

   Assistant: Support the back of the child's head with your hands and gradually lower the child onto the board.

   Measurer: Support the child at the trunk of the body.
5. **Measurer or Assistant:** If she is not the assistant, ask the mother to kneel on the opposite side of the board facing the measurer to help keep the child calm.
6. **Assistant:** Cup your hands over the child's ears (Arrow 4). With your arms comfortably straight (Arrow 5), place the child's head against the base of the board so that the child is looking straight up. The child's line of sight should be perpendicular to the ground (Arrow 6). Your head should be straight over the child's head. Look directly into the child's eyes.
7. **Measurer:** Make sure the child is lying flat and in the centre of the board (Arrows 7). Place your left hand on the child's shins (above the ankles) or on the knees (Arrow 8). Press them firmly against the board. With your right hand, place the footpiece firmly against the child's heels (Arrow 9).
8. **Measurer and Assistant:** Check the child's position (Arrows 1-9). Repeat any steps as necessary.
9. **Measurer:** When the child's position is correct, read and call out the measurement to the nearest 0.1 cm. Remove the footpiece, release your left hand from the child's shins or knees and support the child during the recording.
10. **Assistant:** Immediately release the child's head, record the measurement, and show it to the measurer.
    NOTE: If the assistant is untrained, the measurer records the length on the questionnaire.
11. **Measurer:** Check the recorded measurement on the questionnaire for accuracy and legibility. Instruct the assistant to erase and correct any errors.

*From: Shorr, I.J., "How To Weigh And Measure Children," United Nations, New York 1986.

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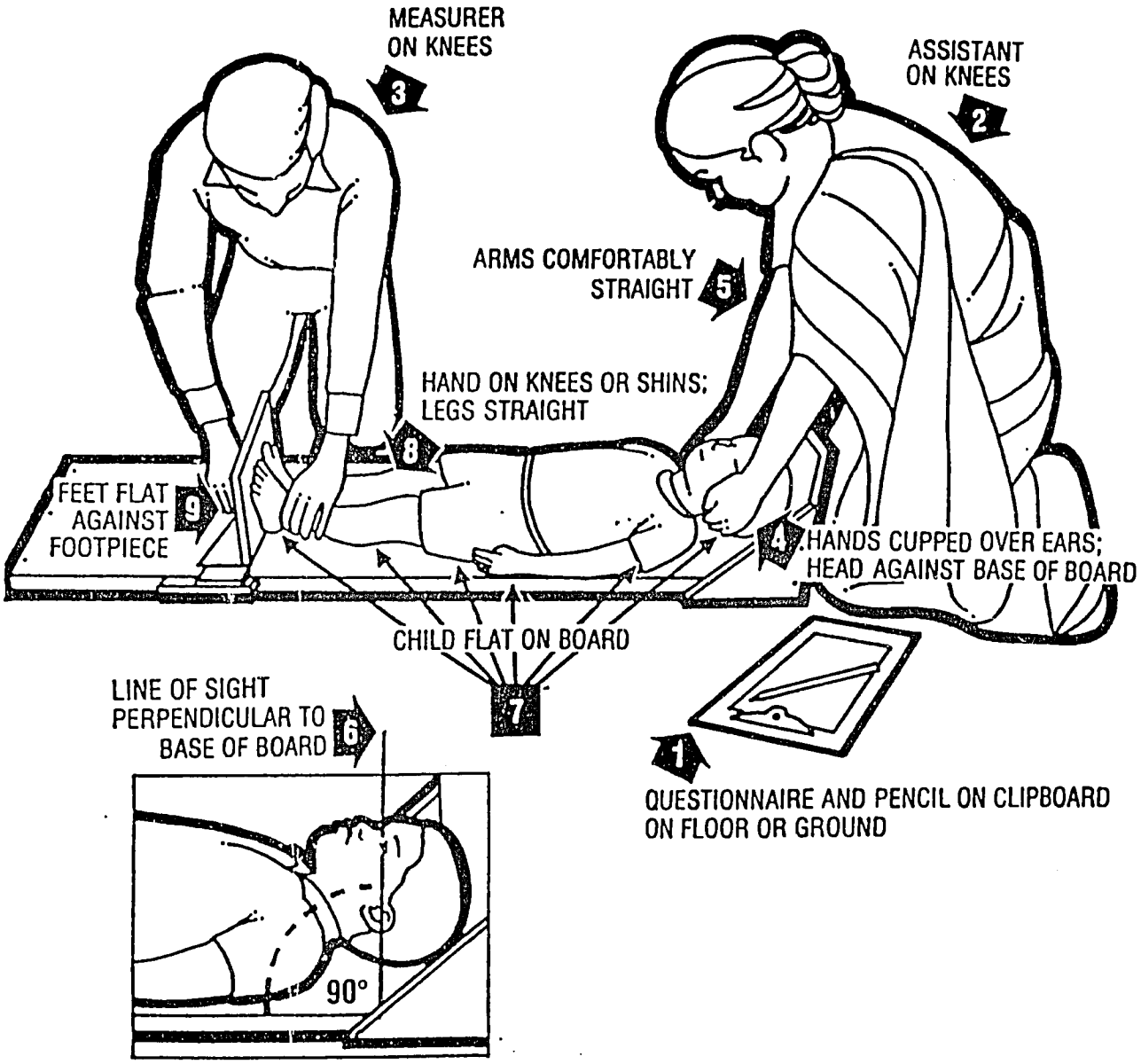
RECUMBENT LENGTH OF CHILDREN LESS THAN TWO YEARS OLD*



*From: Shorr, I.J., "How To Weigh And Measure Children," United Nations, New York 1986.

4.7 MID-UPPER ARM CIRCUMFREENCE (MUAC) OF CHILDREN AND ADULTS*

1. **Measurer:** Keep your work at eye level. Sit down when possible. Very young children can be held by the mother during this procedure. Ask the mother to remove clothing that may cover the child's left arm.

2. **Measurer:** Calculate the midpoint of the child's left upper arm by first locating the tip of the child's shoulder (Arrows 1 and 2) with your finger tips. Bend the child's elbow to make a right angle (Arrow 3). Place the tape at zero, which is indicated by two arrows, on the tip of the shoulder (Arrow 4) and pull the tape straight down past the tip of the elbow (Arrow 5). Read the number at the tip of the elbow to the nearest centimetre. Divide this number by two to estimate the midpoint. As an alternative, bend the tape up to the middle length to estimate the midpoint. A piece of string can also be used for this purpose. Either you or an assistant can mark the midpoint with a pen on the arm (Arrow 6).

3. **Measurer:** Straighten the child's arm and wrap the tape around the arm at the midpoint. Make sure the numbers are right side up. Make sure the tape is flat around the skin (Arrow 7).

4. **Measurer and Assistant:** Inspect the tension of the tape on the child's arm. Make sure the tape has the proper tension (Arrow 7) and is not too tight or too loose (Arrows 8-9). Repeat any steps as necessary.

5. **Assistant:** Have the questionnaire ready.

6. **Measurer:** When the tape is in the correct position on the arm with the correct tension, read and call out the measurement to the nearest 0.1 cm. (Arrow 10).

7. **Assistant:** Immediately record the measurement on the questionnaire and show it to the measurer.

8. **Measurer:** While the assistant records the measurement, loosen the tape on the child's arm.

9. **Measurer:** Check the recorded measurement on the questionnaire for accuracy and legibility. Instruct the assistant to erase and correct any errors.

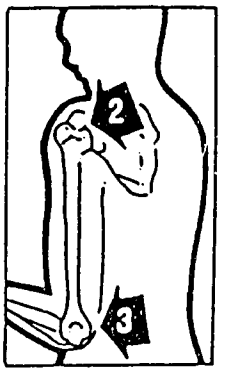
10. **Measurer:** Remove the tape from the child's arm.

*From: Shorr, I.J., "How To Weigh And Measure Children," United Nations, New York 1986.

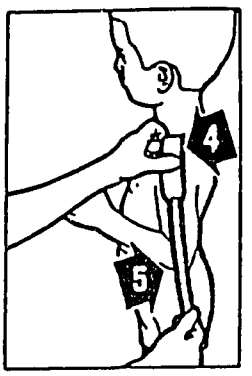
BEST AVAILABLE DOCUMENT

MID-UPPER ARM CIRCUMFREENCE (MUAC) OF CHILDREN AND ADULTS*

1 LOCATE TIP OF SHOULDER

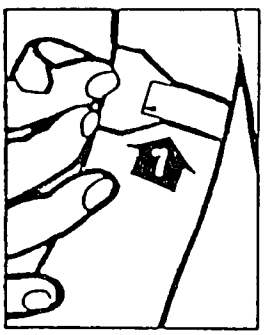


2 TIP OF SHOULDER
3 TIP OF ELBOW

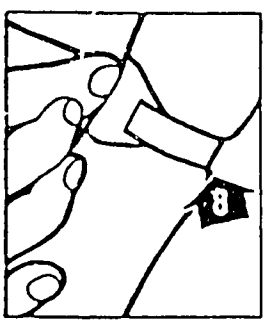


4 PLACE TAPE AT TIP OF SHOULDER
5 PULL TAPE PAST TIP OF BENT ELBOW

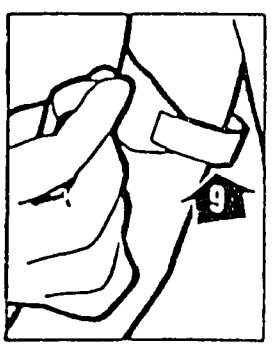
6 MARK MIDPOINT



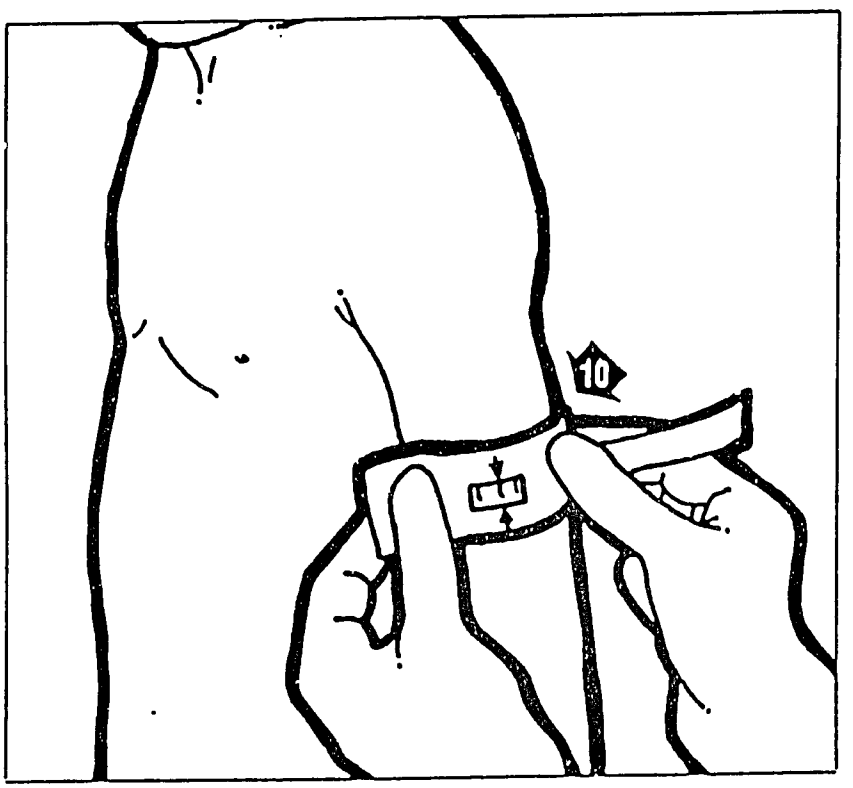
7 CORRECT TAPE TENSION



8 TAPE TOO TIGHT



9 TAPE TOO LOOSE



10 CORRECT TAPE POSITION FOR ARM CIRCUMFERENCE

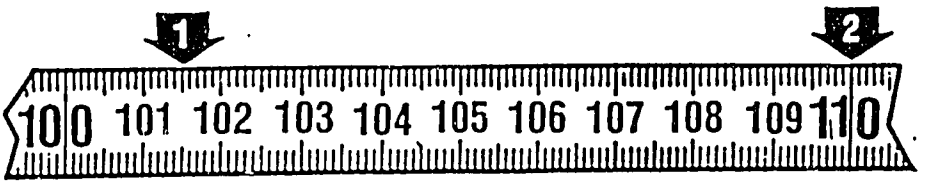
*From: Shorr, I.J., "How To Weigh And Measure Children," United Nations, New York 1986.

5.0 QUALITY CONTROL*

5.1 Reading Measurements

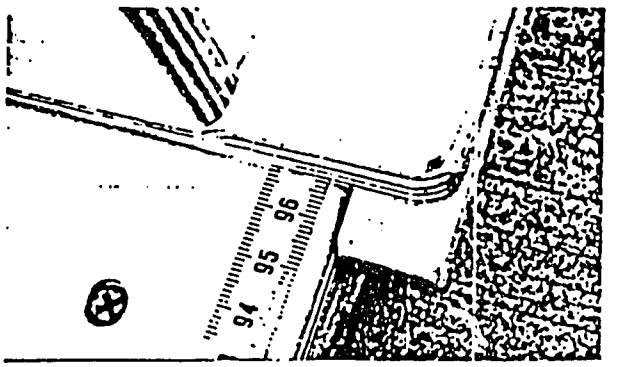
a. The reading areas of the tape on the measuring board and arm circumference tapes are in centimetres (CM) that are numbered (see illustration below). Each cm is divided into ten gradations, i.e., small vetical lines, that are each 0.1 cm (or 1 mm). The line at five mm is slightly longer (Arrow 1). Large numbers appear at every ten cm (Arrow 2).

Section of Measuring Board Tape



b. Be careful to read the numbers on the measuring equipment properly. The tape on the measuring board should be read in an upward direction for height and left to right for length. Do not read the numbers in a "backward" direction. For example, the reading of the tape on the measuring board below is 96.7 cm, NOT 97.3 cm.

Correct Reading is
96.7 cm, NOT 97.3 cm.

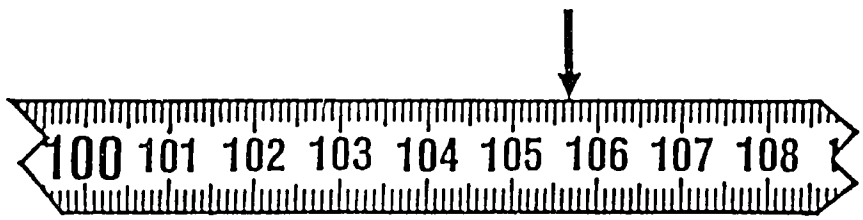


*Section 5.0 Quality Control, from: Shorr, I.J., "How To Weigh And Measure Children," United Nations, New York 1986.

c. Make sure to count the number of visible lines, i.e., mm when you read the tape. Note the reading of the tape on the height measuring board in the illustration on page 18 which is 96.7 cm. The head-piece falls almost directly on the seventh line. Since it can be seen, it is counted towards the measurement.

d. If the movable headpiece or footpiece of the height measuring board fall between two lines, record the measurement of the LOWER number. For example, the reading of the tape below is 105.6 cm., since the arrow falls between the 6th and 7th lines after 105.

Arrow Between Lines 105.6 and 105.7 cm.
Record the Lower Number, 105.6



5.2 Recording Measurements

a. Place numbers in appropriate boxes for the measurements. Be careful to make clear and neat numbers the same way every tine. The following is a suggested way of writing numbers, although the final decisions about how the numbers will be written will be made during training:

1 2 3 4 5 6 7 8 9 0

b. Notes:

1 : A single vertical line. Do not slant the 1 (/). Do not put a 'hat' or base on the 1 (1 , 1).

2, 3 : Make 2 and 3 with no loops (2 2 3 3).

4 : Make open 4's. Closed 4's can look like 9's (4).

5 : Be careful not to connect the 5 which can look like a 6 (5).

6 : Be careful with the loop of the 6 which can look like a zero (6).

7 : Cross the 7. This way it will not look like a 1 (7 : 1 or 7?).

8 : Make with two separate loops. 'Figure-eight' 8's can look like 0 (8). Be careful not to separate the two loops (8).

9 : Make sure to close the loop of the 9 which could look like a 4 (9 : a 9 or a 4?).

0 : Zeros can look like the number 6 (0 : a 0 or 6?).

5.3 Reading and Recording Verification Systems

a. System When Two People Measure a Child

When a team of two people measures height or length, one team member, the measurer, reads the measurement, while the other, the assistant, records the measurement on the questionnaire. One of the greatest sources of measurement errors takes place during the reading and recording of a measurement. The following dialogue illustrates a reading and recording verification system that should decrease errors.

SITUATION: A child's height has been measured by a team, the measurer and assistant.

1. Measurer calls out the measurement:
   "Ninety-four point two" (centimetres).

2. Assistant hears and repeats: *"Ninety-four point two"*

3. Measurer hears and acknowledges: *"Okay"*

4. Assistant hears acknowledgement and responds: *"Okay"*

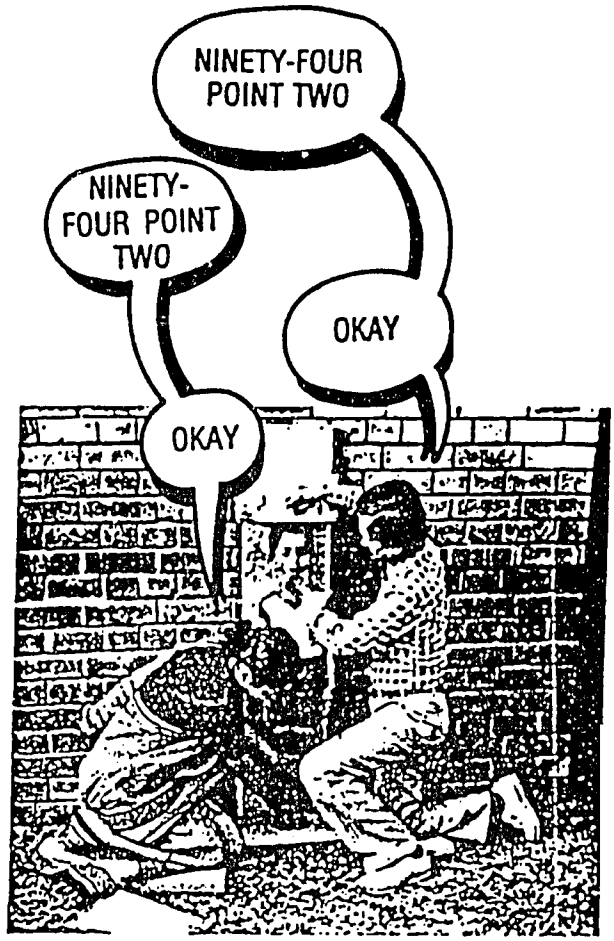
5. Assistant now records the height measurement '94.2' in the appropriate boxes on the questionnaire.

6. Assistant shows the questionnaire to the measurer.

7. Measurer checks to see if the assistant wrote down the correct measurement (94.2) in the correct place on the questionnaire.

b. System When One Person Measures a Child

When one person measures a child and records the measurement, he/she should repeat the measurement several times out loud from the time the measurement is made to the time it is recorded.



Assistant Repeats Measurement

Measurer Calls Out Measurement

Assistant Records Measurement

Measurer Supports Child

Assistant Shows Measurement to Measurer

Measurer Checks Measurement

8. 18 CHILDRENS HEALTH STATUS (UNDER 5 YEARS OF AGE)

Name of Child	Date of Birth	Age (mths)	Sex F or M	Immunisation Card Yes 1 No 2	ATHROPOMETRY			IMMUNISATION HISTORY				ANY ILLNESS PAST TWO WEEKS
					Weight (Kg)	Height (Cm)	M.U.A.C. (cm)	B.C.G.	POLIO	DPT	Measles	

CODES

Sex	Immunisaton			
	Bcg	Polio	Dpt	Measles
Male (1)	0	0	0	0
Female (2)	1	1	1	1
		3	3	

(0 = None)

9. MATERNAL NUTRITION

9.1. Women of child bearing Age in the Household 15 - 49 years.

NAME	AGE	PARITY	CURRENTLY PREGNANT YES/NO	WEIGHT	HEIGHT	M.A.C.

9.2 List foods prohibited (avoided) in pregnancy.

_____

_____

_____

ANNEX B
DEFINITION OF TERMS

1. Anthropometry: The technique that deals with the measurement of the size, weight and proportions of the human body. The anthropometric measurements that are used in this survey are standing height*, recumbent length and weight.

2. Height/Stature: Distance from the crown of the head to the bottom of the feet (heels) while measured standing (for people two years of age or older).

3. Length:* Distance from the crown of the head to the bottom of the feet (heels) while a child is measured supine (i.e., lying on the back for children less than two years of age).

4. Weight: Measurement of a person's total body mass undressed.

5. Height Measuring Board (Stadiometer): A measuring board that can be used to measure either standing height or recumbent length, graduated in 0.1 cm.

6. Headpiece/Footpiece: The part of the measuring board that moves and rests on a person's head for height, and against the feet for length.

7. Mid-Upper Arm Circumference (MUAC): The measurement of the circumference of the upper arm using a special "insertion" tape with slots and window for reading the measurement.

8. Standardization Test: A test to evaluate competency in anthropometric measurement.

9. Frankfort Plane: The line from the hole in the ear to the bottom of the "orbit", i.e., the bone of the eye. The Frankfort Plane indicates the direction of the line of sight and the position of the head during standing height and recumbent length measurement procedures.

10. Recumbent: Lying down, on either the front or back of the body.

11. Supine: Lying down on the back of the body.

12. Measurer: A trained enumerator who measures the height and weight of children.

13. Assistant: An enumerator who assists the measurer by helping to hold a child in place during the standing height and recumbent length measurement procedures and records the measurements on the questionnaire.

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*The strict definition of "height" includes <u>both</u> stature (standing height) and recumbent length (measured lying down). The term "height" is often used to refer to standing height only, while the term "length" is often used to refer to recumbent length only.

ANNEX C
ANTHROPOMETRIC MEASURING INSTRUMENT AND EQUIPMENT CHECKLIST

QUANTITY	DESCRIPTION
1	Infant/Child/Adult Height Measuring Board
1	Floor model scale
2	Infant/Child Mid-Upper Arm Circumference Tapes in one plastic cup
2	Adult Mid-Upper Arm Circumference Tapes in one plastic cup
1	Equipment bag
	Pencils, pens, eraser and sharpener, pencil case
	Cloth to wipe equipment

MOH/CHDC/WINS UGANDA PROGRAM
SUPERVISOR ANTHROPOMETRIC QUALITATIVE CHECKLIST*

INSTRUCTIONS: THIS FORM TO BE COMPLETED BY A SUPERVISOR FOR A HOUSEHOLD. PLACE AN "X" IN THE APPROPRIATE BOX.

1.0 PREPARATION	YES	NO	DID NOT OBSERVE
1.1 Did the measurer check his/her measuring instruments and equipment (e.g., measuring board, scale, etc.) before proceeding to a household?			
1.2 Did you, the supervisor, introduce the measurers to the members of the household where a child/children were weighed and measured?			
1.3 Did the measurer verify the age of the child?			

COMMENTS:

2.0 SETTING UP THE MEASURING INSTRUMENTS AND EQUIPMENT	YES	NO	DID NOT OBSERVE
2.1 MEASURING BOARD a. Did the measurer place the board on the ground or floor in a secure place with adequate room to work?			
b. Did the measurer remove the shoulder strap and place it in the equipment storage bag?			
c. Did the measurer place the sliding footpiece in the correct position on the board before the length measurement, and on the ground or floor for the standing height measurement?			
d. Was the measurer careful when handling the board?			
2.2 SCALE a. Did the measurer check the scale to see if the batteries need replacing?			
b. Did the measurer place the scale on a firm surface (i.e., on the ground or floor)?			

COMMENTS:

*From, Shorr, I.J., "Anthropometry as Part of Household Surveys," The World Bank, Washington, D.C., 1993.

SUPERVISOR ANTHROPOMETRIC QUALITATIVE CHECKLIST, cont'd

3.0 GENERAL PROCEDURES	YES	NO	DID NOT OBSERVE
3.1 Did the measurer always have physical contact with children when on a measuring board and with adults when assistance is required during weighing and measuring?			
3.2 Did the measurer complete the measurements on adults and young children first before other children?			
3.3 Did the measurer complete standing height or recumbent length first before weight on each person?			
3.4 Did the measurer complete all the measurements on one person before beginning the measurements on the next person?			
3.5 Did the measurer store his/her pen/pencil properly when not in use?			
3.6 Did the supervisor make arrangements for another appointment (i.e., to re-visit a household) to weigh and measure people who were not at home or could not be weighed and measured during the first visit? Write "NA" if Not Applicable in "Yes" column.			
COMMENTS:			

4.0 MEASUREMENT TECHNIQUES	YES	NO	DID NOT OBSERVE
4.1 RECUMBENT LENGTH a. Were children less than two years of age or those that cannot stand up well measured for recumbent length (i.e, lying down)?			
b. Were shoes, sandles, socks, etc., removed before the measurement?			
c. Were hats removed or interfering hairstyles unbraided before the measurement? Write "NA" if Not Applicable in "Yes" column.			
d. Who was the assistant (check box 1 or 2 below, and fill in space; e.g., "Mother" may be written next to Household Member)? 1. ☐ Team Member_____ 2. ☐ Household Member_____			
e. If the assistant was a household member, did the measurer give the assistant brief training on how to hold the child's head properly? Write "NA" if Not Applicable in "Yes" column.			

cont'd

SUPERVISOR ANTHROPOMETRIC QUALITATIVE CHECKLIST, cont'd

RECUMBENT LENGTH, cont'd	YES	NO	DID NOT OBSERVE
f. Did the assistant hold the child's head properly?			
g. Did the measurer push down on the child's knees so the child is flat and in the centre of the board?			
h. Were the child's feet in the correct position (i.e., feet flat and heels against the footpiece)?			
i. Was the position of the measurer correct (i.e., directly in front of the sliding footpiece)?			
j. Did the Measurer and Assistant follow the Reading and Recording System (i.e., call out the measurement and record immediately on the questionnaire)?			
COMMENTS:			

4.2 STANDING HEIGHT	YES	NO	DID NOT OBSERVE
a. Were people two years or older measured for standing height?			
b. Were shoes, sandles, socks, etc., removed before the measurement?			
c. Were hats removed or interfering hairstyles unbraided before the measurement? Write "NA" if Not Applicable in "Yes" column.			
d. Who was the assistant (check box 1 or 2 below, and fill in space; e.g., "Mother" may be written next to Household Member)? 1. ☐ Team Member_____ 2. ☐ Household Member_____			
e. If the assistant was a household member, did the measurer give the assistant brief training on how to hold the person's feet and knees properly? Write "NA" if Not Applicable in "Yes" column.			
f. Did the assistant hold the feet and knees properly (i.e., feet flat, heels against the base and back of the board and knees flat against the back of the board)?			
g. Did the measurer hold the head in the proper position?			

cont'd

STANDING HEIGHT, cont'd	YES	NO	DID NOT OBSERVE
h. Did the measurer place the headpiece flat on the head, pushing through the hair if necessary?			
i. Was the position of the measurer correct (i.e., on the left side of the person?			
h. Was the person flat against the board?			
i. Were the person's shoulders level?			
j. Did the Measurer and Assistant follow the Reading and Recording System (i.e., call out the measurement and record immediately on the questionnaire)?			

COMMENTS:

4.3 WEIGHT	YES	NO	DID NOT OBSERVE
a. Were all clothes removed except light undergarments?			
b. Who was the measurer's assistant (for recording)? 1. ☐ Team Member_____ 2. ☐ No Assistant			
c. Did the measurer adjust the scale to zero before the person stepped on the scale?			
d. If a young child who cannot stand up was weighed, did the measurer adjust the scale to zero with the mother on the scale?			
e. If a young child that will be held requires a blanket, did the measurer adjust the scale to zero with the mother on the scale while holding the blanket?			
f. Did the measurer turn the scale on by gently pushing the bar through the hole on the front of the scale and wait for the display to read "00.0" before the person stepped on the scale?			
g. Did the measurer assist the person to step on and off the scale?			
h. Did the measurer follow the Reading and Recording system (i.e., call out the measurement and record immediately on the questionnaire)?			
i. Did the measurer record the lower number on the display if the numbers change while the person is standing on the scale?			

COMMENTS:

SUPERVISOR ANTHROPOMETRIC QUALITATIVE CHECKLIST, cont'd

4.4 MID-UPPER ARM CIRCUMFERENCE	YES	NO	DID NOT OBSERVE
a. Did the measurer determine and mark the midpoint of the upper arm properly?			
b. Did the measurer thread the tape through the three slots before placing the tape on the arm of older children and adults?			
c. Did the measurer wrap the tape around the arm of children using the short tape?			
d. Did the measurer secure the tape at the junction of the slot and inspect the tape around the arm carefully?			
e. Did the measurer place the window and arrows gently against the arm without pulling the tape and without touching the arm?			
f. Did the measurer follow the Reading and Recording system (i.e., call out the measurement and record immediately on the questionnaire)?			
COMMENTS:			

5.0 END OF MEASUREMENT SESSION	YES	NO	DID NOT OBSERVE
5.1 Did the measurer put the board, scales, tapes and other instruments and equipment away properly?			
5.2 Did the measurer check the recorded measurements before leaving the household?			
5.3 Did the measurer thank household members?			
COMMENTS:			