Republic of Kenya
Ministry of Health

INTEGRATED MANAGEMENT OF ACUTE MALNUTRITION

Diagnosis and Triage

TRAINING OBJECTIVE

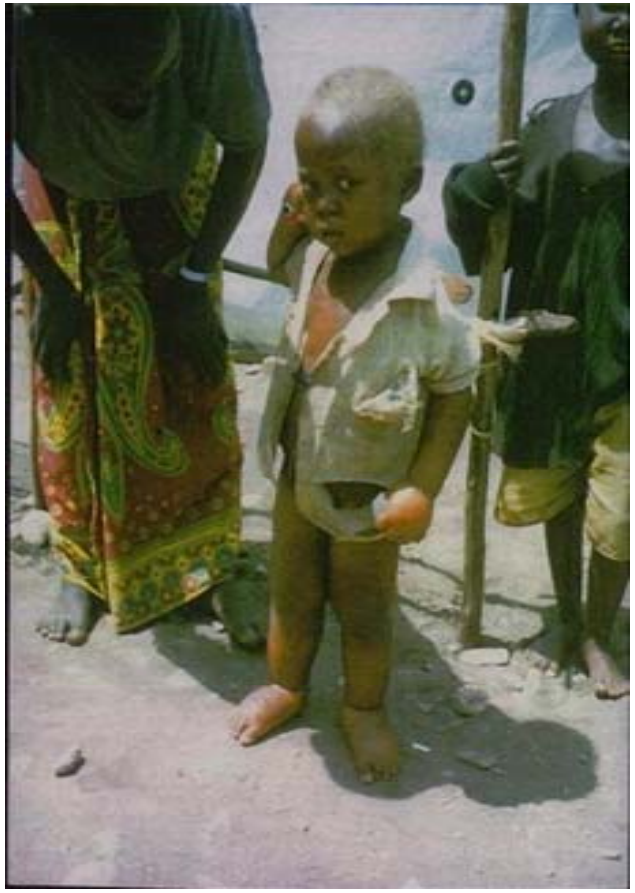
Enable health workers to quickly and accurately identify, classify and select appropriate treatment for acute malnutrition cases

LEARNING OBJECTIVES:

By the end of this session participants should be able to:

- Identify various forms of malnutrition
- Be familiar with technical terms that describe malnutrition
- Understand the links between nutrition, health and mortality
- Recognise the clinical symptoms associated with moderate and severe acute malnutrition
- Understand diagnosis and triage of acute malnutrition

Steps on Admission: Diagnosis and Triage



- **Step 1:** Check for general signs of malnutrition
- **Step 2:** Gather Patient Information
- **Step 3:** Identify Cause of Malnutrition
- **Step 4:** Conduct Appetite Test
- **Step 5:** Determine Appropriate Treatment

STEP 1

Ask the following questions:

- Has there been any weight loss in previous month?
- Does the patient have an appetite?
- Does the patient have any medical condition that will impair nutritional status?
- Is the breast-feeding child suckling well?

STEP 2

Take the patient's anthropometric measurements for interpretation/classification.

- Measure weight and height/Length and calculate weight-for-height percentage median or z-score.
- Take a MUAC measurement.
- Check for bi-lateral oedema.
- Record all measurements on patient card and register.
- Calculate BMI or W/H as appropriate

STEP 3

Fill out a brief checklist to assist identify why the child is malnourished:

- Is there an illness that lead to the child's weight loss?
- Are there economic issues in the family that reduces food availability and/or access?
- Is there dynamics within the household contributing to the situation? (e.g. the mother sick)

STEP 4

- Conduct an appetite test to determine if a severe acute malnourished patient requires in-patient or out-patient treatment.
- A child with a poor appetite will not take the diet at home and will continue to deteriorate or die.
- A poor appetite means that the child has a significant infection or a major metabolic abnormality.

Recognition of severe malnutrition

A. Severe wasting:

Signs- front view

- Loose skin of upper arms
- Loose skin of thighs
- Outline of ribs easily seen

Signs at back of child

- Prominent shoulder blades, loss of buttock flesh and baggy pants.

Recognition cont..

B. Oedema

Check the feet, legs, hands, arms and face for oedema and classify as follows:

- Mild (+) -pitting in both feet
- Moderate (++) –swelling of both feet and legs or hands or arms.
- Severe (+++) – Generalized oedema.

Recognition cont…

C. MUAC

- MUAC stands for mid upper arm circumference.
- Severe malnutrition is defined by MUAC<11.5cm or 115mm in children aged 6m-59m.

Recognition cont…

D. Weight for Height

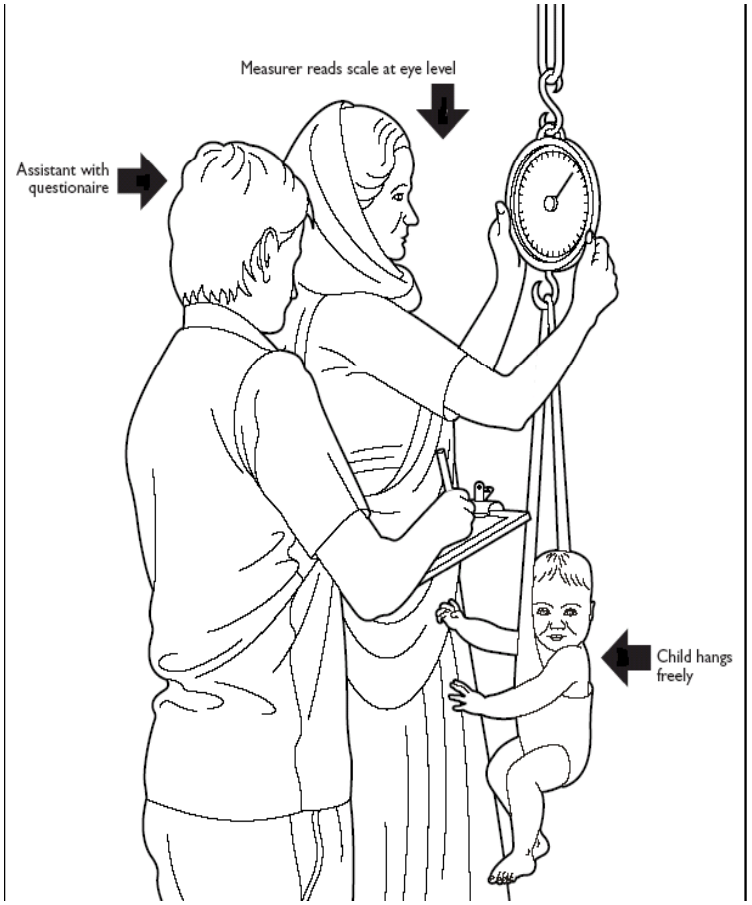
- Take the height/length of the child
- Take the weight as well
- Determine the weight for height score (WFH z-score/median) on a WHO reference table.
- If WFH z-score is <-3 SD, or Weight for height % of median <70% (WHM 70%)the child is severely malnourished.

For Weight,

- Take care not to expose the child to cold but remove all clothes.
- Measure to the nearest 0.01kg (10g)

NB: Stunting – low height/length for age indicates chronic malnutrition

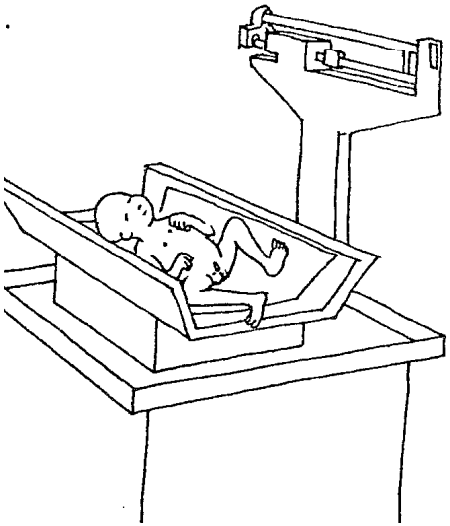
Measuring Weight

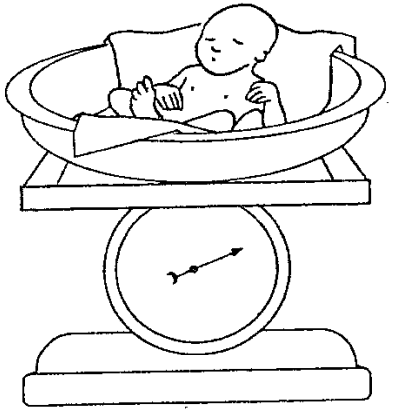


- Before weighing the child, take all his/ her clothes off
- Zero the weighing scale
- Ensure that the weighing scale is at eye level
- Place the child in the weighing pants

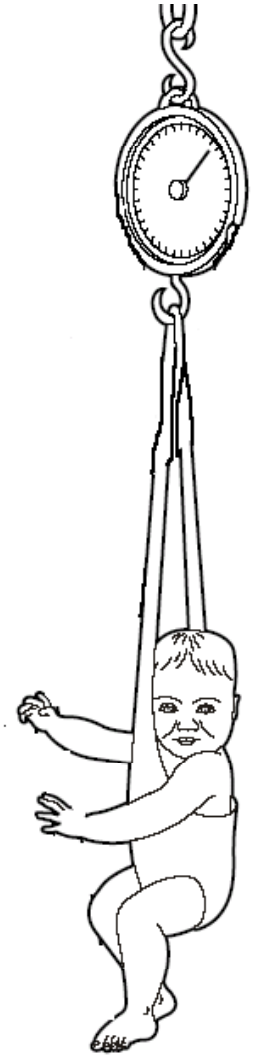
Measuring Weight

- INPATIENT: Weigh on admission and **every day** at the same time (1 hour before/ after feed)
- OUTPATIENT: Weigh the child on **every visit** – weekly
- SFP: Weigh the child on **every visit** - monthly / bi weekly





Types of weighing scales



Recognition of severe malnutrition

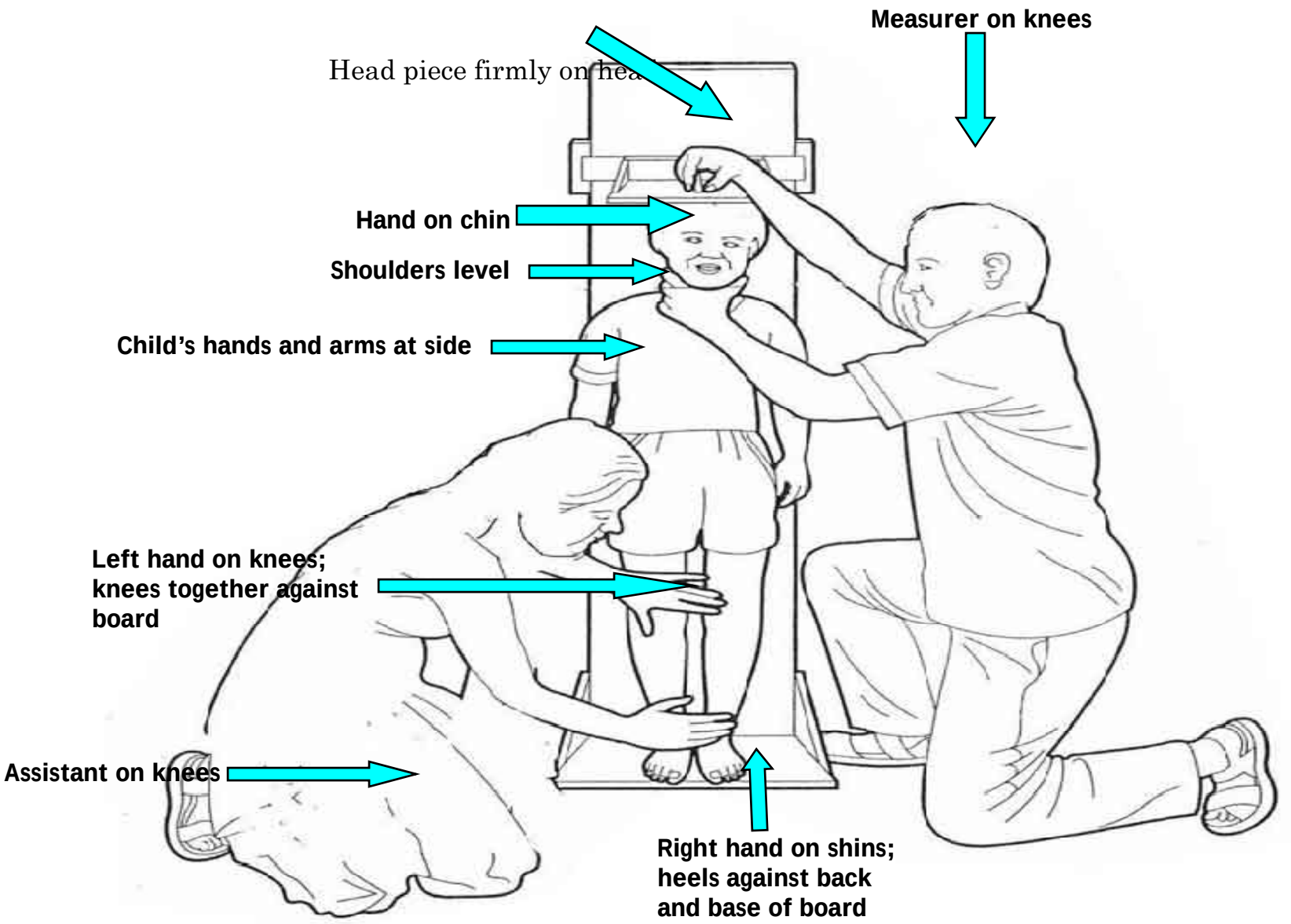
D. Weight and height/length

- Child less that 85 cm or too week to stand – take length
- Child more than 85 cm or more - take standing height.

Length is greater than standing height by 0.5 cm.

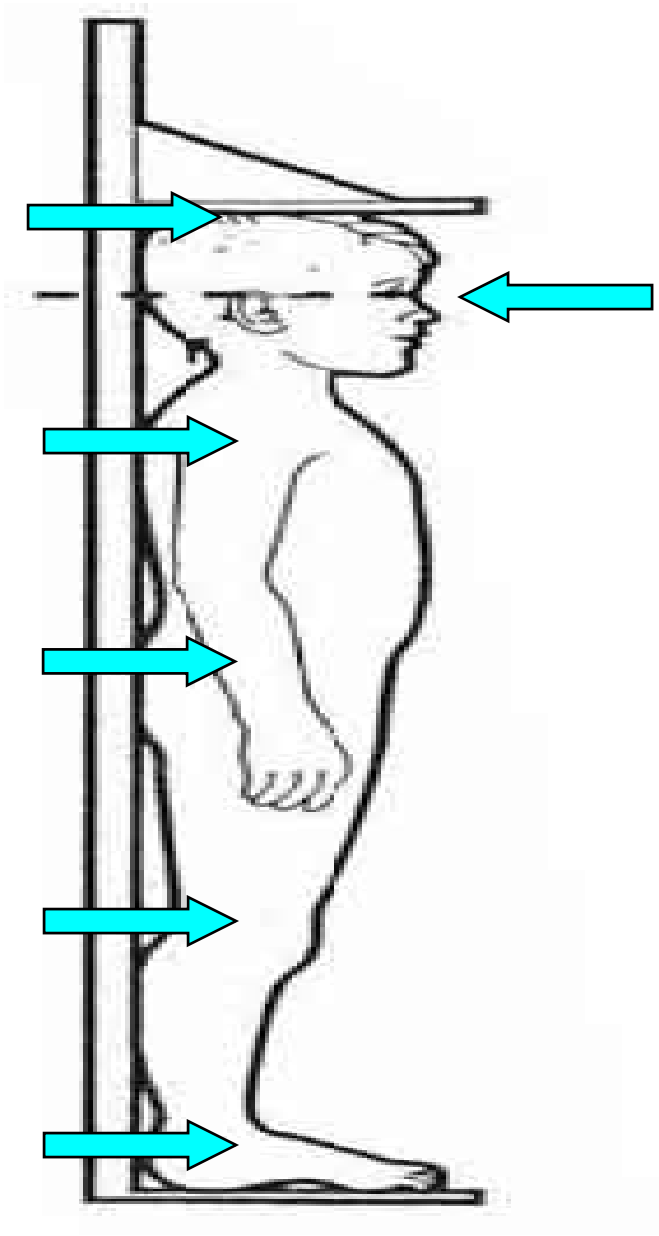
- A *Measuring board* is used for length while a *Stadiometer* is used for height
- Measurement should be done to the last 0.1 cm
- There is need to standardize measuring board and stadiometer.

Height measurement >85 cm



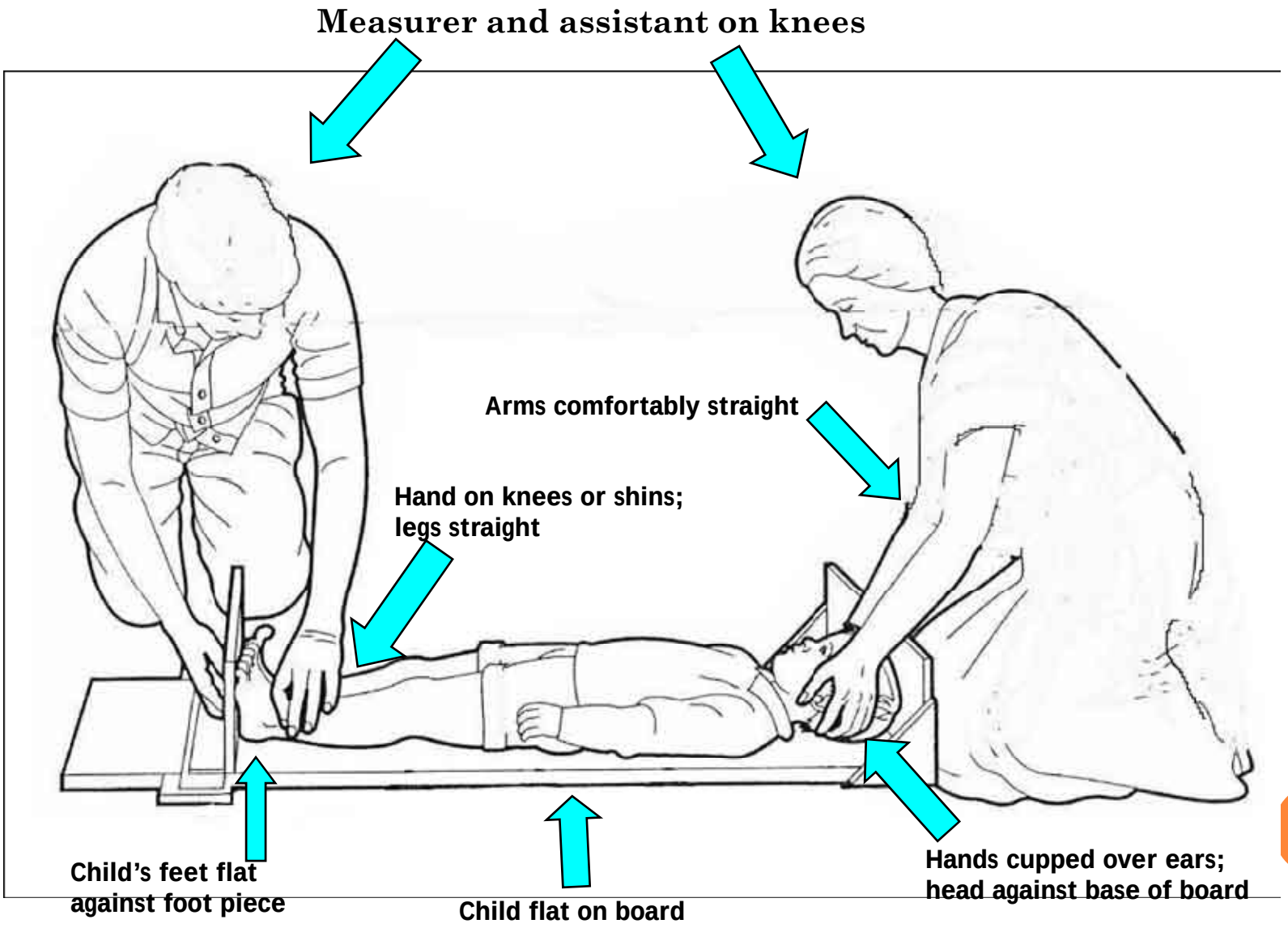
Height measurement >85 cm

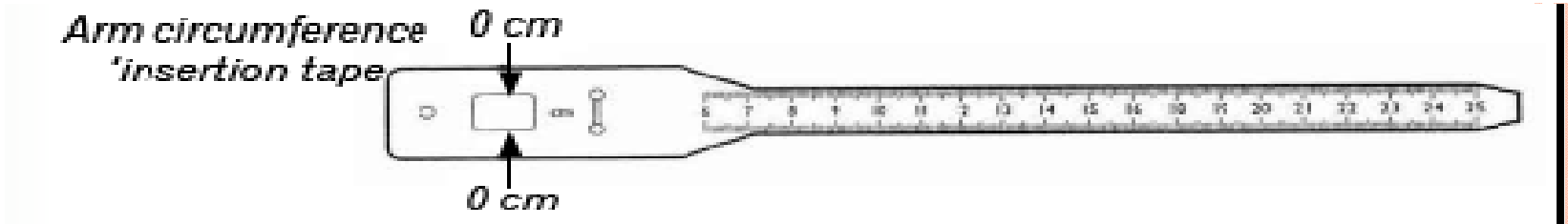
The child head, shoulders, hips, knees and heel must be in contact with the board

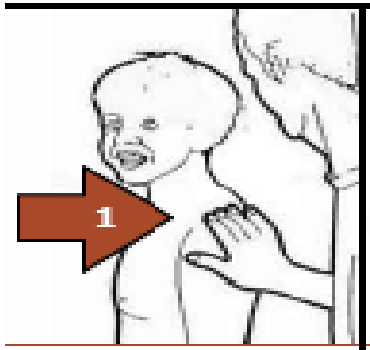


Line of sight

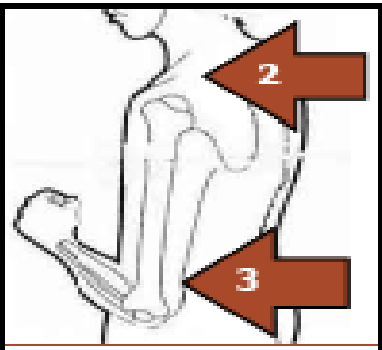
Height measurement <85 cm



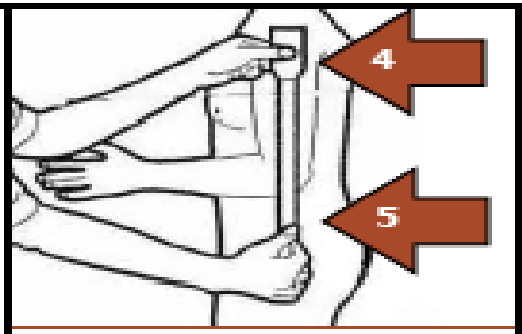




1. Locate tip of shoulder



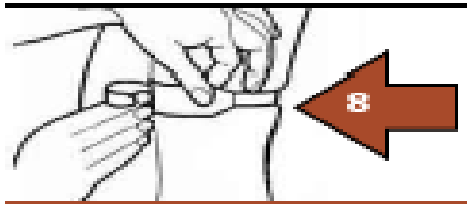
2. Tip of shoulder
3. Tip of elbow



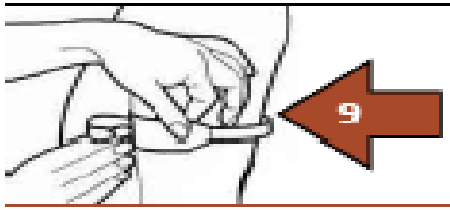
4. Place tape at tip of shoulder
5. Pull tape past tip of bent elbow

6. Mark midpoint

7. Correct tape tension



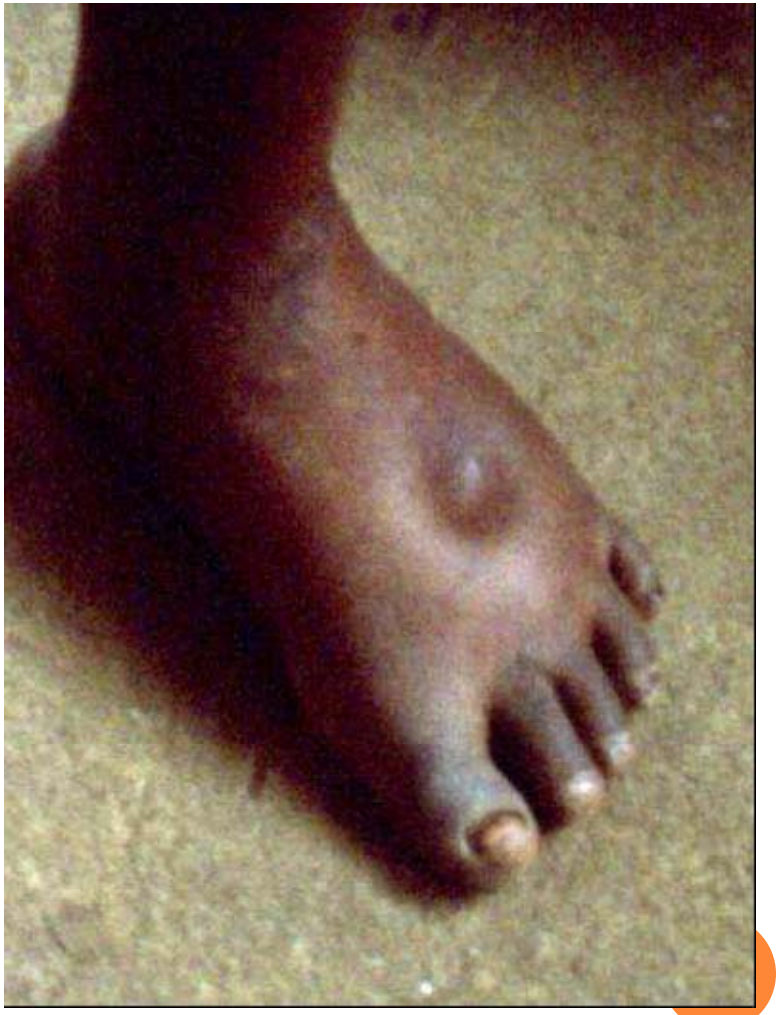
8. Tape too tight



9. Tape too loose

10. Correct tape position for arm circumference

Detection of oedema



Dermatosis in Oedema

- Common in children with oedema
- Patches of skin abnormally light or dark
- Shedding of skin, ulceration of skin and/or weeping lesions

Other important signs

Dermatosis – skin changes

- Mild – skin color change- hypo- pigmentation or hyper-pigmentation.
- Moderate – Drying and roughness of skin, mild cracking
- Severe – Desquamation i.e. peeling skin, fissures, flaky paint dermatosis, wet or oozing skin.

Eye signs

- Pus and redness of eyes
- Bitot spots- foam like appearance on sclera.
- Corneal clouding
- Corneal ulceration

Recognition of severe malnutrition

Determine Standard Deviation (SD) scores

- -1 SD ~ 90% of median weight- for- height
- -2 SD ~ 80% of median weight-for-height
- -3 SD ~ 70% of median weight-for-height

Why weight for height instead of height for age? It is because the latter (height for age) is affected by stunting.

Admission criteria

Indicator	Severe Acute Malnutrition
Infants less than 6 months (or ≥ 6 months and <3kg)	
Weight-for-Length	< -3 Z-score or <70%
Oedema (bilateral pitting)	Oedema present
Suckling ability	Too weak to suckle or feed
Children 6 months to 5 years	
Weight-for-Length / Height (WFH)	< -3 Z-score or <70%
MUAC (cm)	< 11.5 cm
Oedema (bilateral pitting)	Oedema present

INFANTS

< 6 months: all infants should be referred to Inpatient Care

OLDER CHILDREN / ADULTS

If severely malnourished older children are found (height boards go up to 130 cm) then they can be admitted under “other” criteria.

Malnourished adults should be referred to the health facility for medical check up and supplementary food if eligible. This includes elderly and pregnant and lactating women

Recognition of severe malnutrition

The cardinal signs of severe acute malnutrition are any one of the following:

- Oedema
- Visible severe wasting
- MUAC <11.5cm or 115mm
- Weight for height (WFH <-3SD) or WHM<70%

Eye signs

- Pus and redness of eyes
- Bitot spots- foam like appearance on sclera.
- Corneal clouding
- Corneal ulceration

Calculating Anthropometric Indices

1. Body Mass Index (BMI)
2. Weight-for-Height

Body Mass Index

- The most useful measure of malnutrition in adults is *body mass index* (BMI)

- BMI is an indicator of weight deficit in relation to height, which is equivalent to wasting.

$$\text{BMI} = \frac{\text{Weight(kg)}}{\text{Height (m}^2\text{)}}$$

EXAMPLE

- A young, non-pregnant woman's height is 1.60 m and her weight is 50 kg.

Body mass index= $\frac{\text{Measured weight (kg)}}{\text{height}(m^2)}$

$\frac{50\ kg}{1.6m^2}$

BMI =19.5

- This woman is not malnourished

Weight-for-Height

- In emergencies, weight for height (wasting) is the primary nutritional index of concern as it reflects recent changes in dietary intake and infection.
- Wasted children can rapidly deteriorate but will also improve rapidly if treated appropriately.
- There are two main methods for comparing a child's measurements with the reference values.
- Calculating either their *Z score* (*standard deviation* score) from expected values or the *percentage of the median*.

SD SCORE:

- Standard deviation (SD) scores are a measure of the distance between the child's value and the expected value of the reference population.
- Ninety-five per cent of the reference population has anthropometric SD scores between -2 and +2, which is within the normal range.
- If a child's SD score falls outside the normal range, this signals a deviation from the norm in his/her nutritional status.
- The SD score is a more accurate way of presenting prevalence data in population-level surveys.

Calculating SD scores:

- Use weight-for-height reference table
- Find the child's length or height in the middle
- Use left columns for boys, right for girls
- Find SD Score at the top of the column
- If weight is between an SD Score, write "less than" (<)

PERCENTAGE OF MEDIAN:

- Percentage of the median expresses the child's measurements as a percentage of the expected value for the reference population.

- The percentage of the median will classify slightly fewer children as malnourished compared to when Z scores are used.

- The percentage of the median is commonly used for admission and discharge criteria for selective feeding programmes because it is easier to understand and calculate.

EXAMPLE:

- A boy measures 84.2 cm in length and weighs 9.9 kg. Calculate his weight for height

i. Z-score

ii. Percent median

Solution: Calculating of Z score:

- The reference population data would show that the reference median weight for boys of 84 cm is 11.7 kg and that the SD for the reference distribution for boys of 84 cm is 0.908.

$$\text{SD Score} = \frac{\text{Measured weight} - \text{Median of reference population}}{\text{Standard deviation of reference population}}$$

$$= \frac{9.9 - 11.7}{0.908}$$

= -1.98SD Score

This boy is moderately malnourished according to his Z score

Solution: Calculating Percentage of the Median:

$$\text{Percentage of the median} = \frac{\text{Measured weight} \times 100}{\text{Median of reference population}}$$

$$= \frac{9.9 \times 100}{11.5}$$

$$= 86\% \text{ of median}$$

This boy is considered as well nourished according to his percentage of the median score

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Triage of cases of malnutrition

Triage of cases

MEDICAL EXAMINATION AND APPETITE TEST

SAM <u>with complications</u>

•Nutritional oedema ++,+++

OR

•Marasmic Kwashiorkor

(WHZ<-3(OR WHM<70%/MUAC<115mm with any grade of oedema)

OR

•WHZ<-3(OR WHM<70%)

•MUAC<115mm

•Nutritional oedema +

AND

No appetite and /or complications(IMCI danger signs)

<u>Infants</u>

6months unable to suckle or visibly wasted

In Patient Care

SAM <u>without complications</u>

•WHZ<-3(OR WHM<70%)

OR

•MUAC<115mm

OR

•Nutritional oedema +

AND

•Appetite

•Clinically well

•Alert

Out Patient Care

Moderate Acute malnutrition <u>without complications</u>

WHZ>-3 and <-2 (OR WHM70-80%

MUAC >115mm and <125mm

Supplementary Feeding

Severe Acute Malnutrition •Bilateral oedema •MUAC <11.5cm •WFH <-3sd or <70% of median	No Appetite With Medical complications (IMCI danger signs) Oedema ++, +++	Refer the patient to **Inpatient care**
	Good appetite No medical complications* Oedema +	Refer or admit patient for outpatient therapeutic care **(OTP)**

Moderate Acute Malnutrition •MUAC >11.5cm and <12.5cm •WFH <-2sd or 70-79% median		Refer or admit patient for community based care for **moderate malnutrition** **-** Supplementary feeding programme (SFP) **And** **nutrition counselling**

TRIAGE PROCESS

At Risk/ Growth Faltering	Check if •Eligible for any of feeding programmes or general ration •Give nutrition counselling •Deworm •Check if received Vit A •Check immunisation status •check clinical status treat any infections
Healthy	•Deworm •Check if received Vit A •Check immunisation status • Treat any infections. •Give nutritional counselling Congratulate mother

Practice more..

Thank you

EXERCISE 1G: GROUP DISCUSSION ON TRIAGE- ASSIGNMENT

- How are children with severe acute malnutrition identified and prioritised in your hospital?
- Where does it take place?
- By who?
- Should we be doing anything differently?