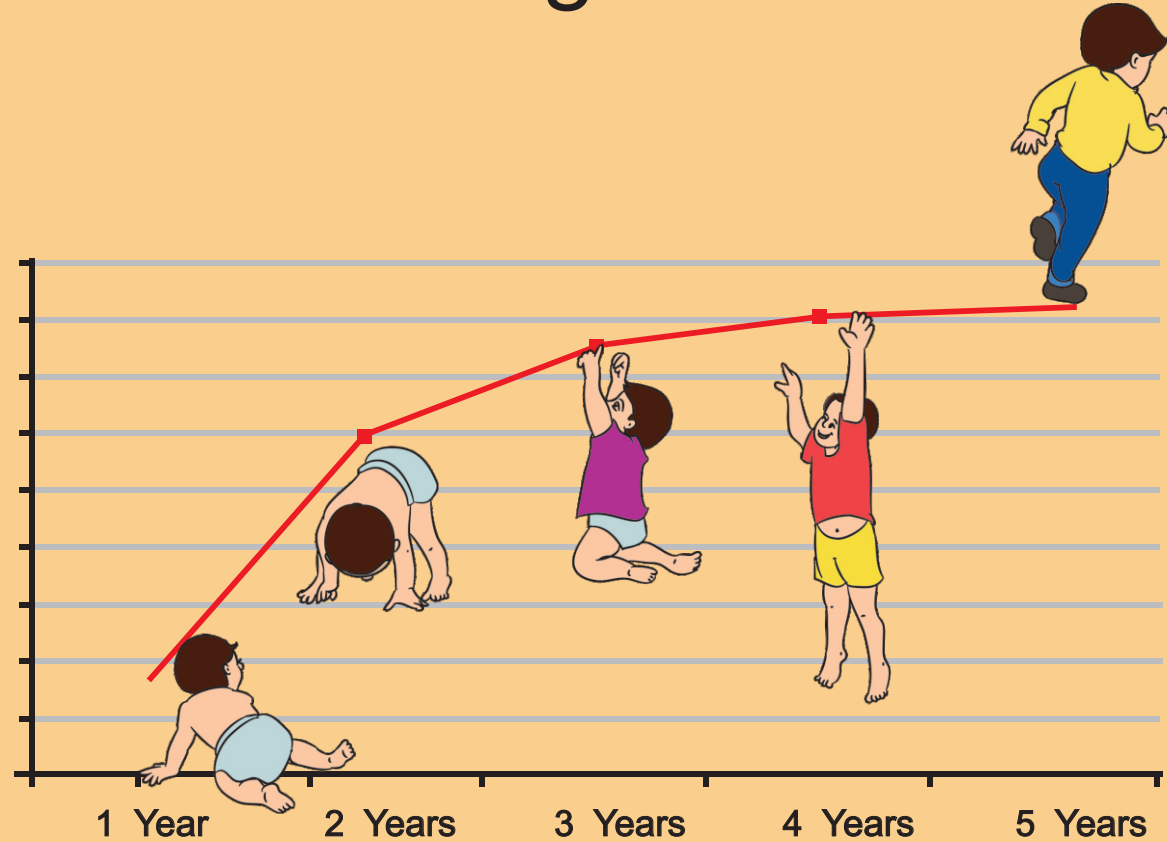


Assessment of growth in children



Ministry of Women & Child Development
Government of India, 2018

8





How to measure growth in children?

Food is essential for growth:

As we have learnt in our earlier modules, adequate food is fuel for the body and it drives growth and well-being.

- For children up to 6 months, this nutrition and energy is derived from exclusive breastfeeding.
- For children 6 months to 2 years, this is derived from breastfeeding and complementary feeding.
- For children greater than 2 years, this is derived from consuming diverse and adequate diet.

Growth measurement and its use:

- To ascertain whether the child is growing adequately, we measure the growth of the human body, using simple, safe, cheap, non-invasive methods which require minimal training.
- These measurements are used to assess the size, shape and composition of the human body and it reflects if the child is growing adequately or not.
- It helps us identify individuals with normal and abnormal nutritional status.

Types of measurements are:-

- Length for children less than 2 years of age or with height/length less than 85 cm.
- Height for children above 2 years of age; and
- Weight



Discuss with the participants:

- Why is food essential for our growth?
- Why is growth measured and how is it useful?
- What are various types of measurements?



Use the information given on the right side to take the discussion forward. Tell them which type of measurement is done by each instrument.



10 Minute

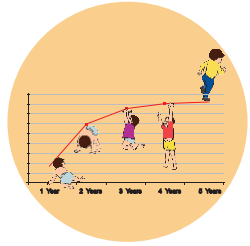
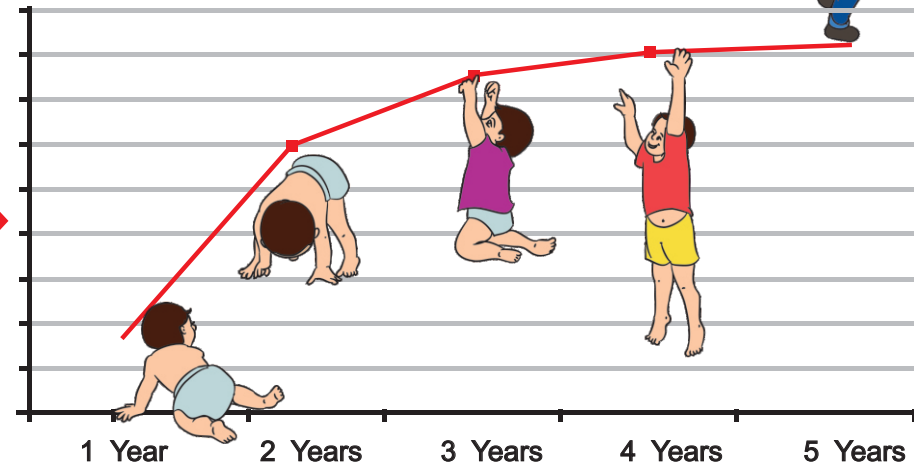
M8

Assessment of growth in children

F1

How to measure growth in children?

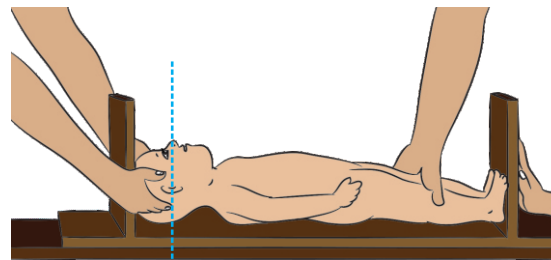
Consumption of adequate Food promotes growth



Growth can be measured

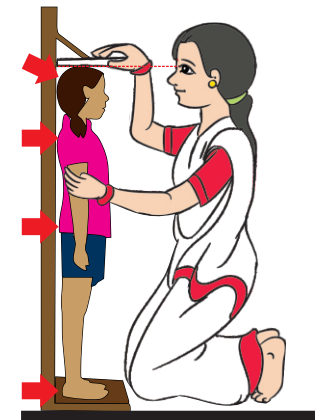


Weighing Machine



Infantometer

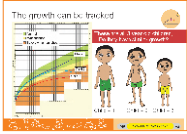
Infantometer (Machine used for measuring length of small babies)



Stadiometer

(Machine used for measuring height in children)





The growth can be tracked



Display the card and ask the participants to answer the following questions.

Ask:

- Why measurements of weight and height are important?
- A child of short parents will be short. Is that correct?
- How do we identify malnourished child by using these measurements on growth chart?
- Which child is looking more malnourished in the picture?



Use the information given on the right side to facilitate the discussion.

You are all familiar with the growth chart. This helps keep track of a child's growth, but do you know why this is important?

- Measuring a child's weight and height tells us if the child is underweight, stunted or wasted. These measurements are age and gender specific.
 - Measuring a child's weight and mapping it against its age (as on the growth chart) tells us if the child is underweight (or low weight for age). This, in general, tells us about the nutritional progress and growth of a child
 - Measuring a child's height and mapping it against its age (as on the growth chart) tells us if the child is stunted (or low height for age). This tells us that the child has chronic malnutrition, which is likely a result of long term suboptimal health and/or nutritional conditions.
 - Measuring a child's weight and mapping it against its height (as on the growth chart) tells us if the child is wasted (or low weight for height). This tells us that the child has acute malnutrition due to recent disease or lack of adequate food and nutrients.
- The growth of a child depends on several factors (nutrition of the child, mother's nutrition, height etc.) and hence it varies from child to child. Despite these differences, there is a standard range of age appropriate height and weight for children upto 5 years, which tells us whether the child is exhibiting a healthy growth pattern. This has been established based on a large multi-country study, which includes Indian children and our growth charts are developed based on this.
- It has also been conclusively established that all children have same potential to grow during the initial years of life. Role of ethnicity and genetics do not have any influence on rate of growth during childhood. So irrespective of whether it is a child of short parents or a child of normal height parents, if provided proper nourishment it should approximately grow in the same manner in its first few years of life.

Ask the participants which child is looking more malnourished?

- All children of the same age and gender may not have the same growth. Measuring them frequently and tracking them on growth chart will help to understand any discrepancy in growth.



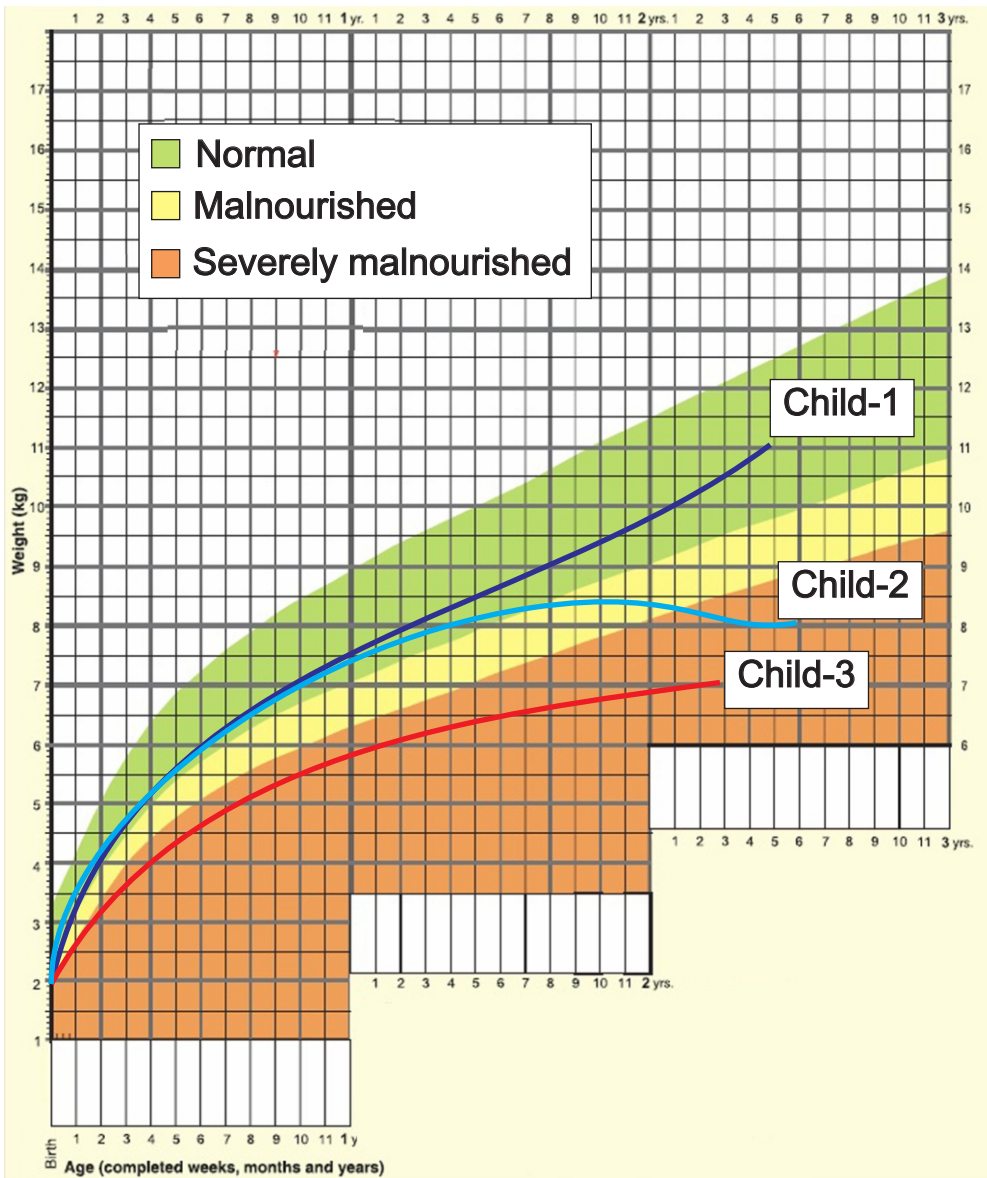
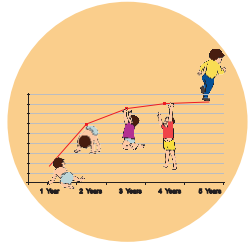
15 Minute

M8

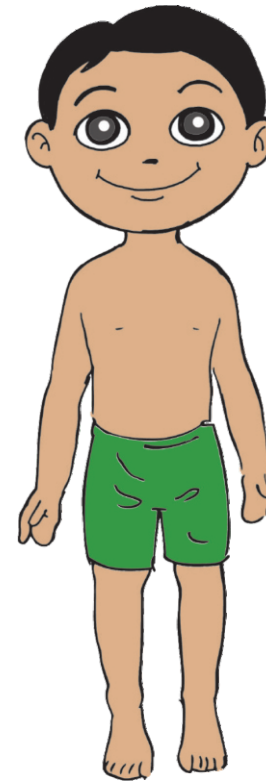
Assessment of growth in children

F2

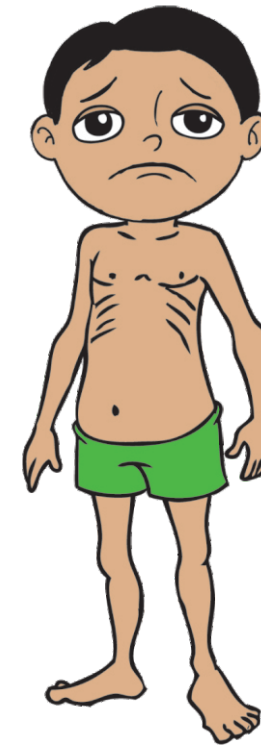
The growth can be tracked



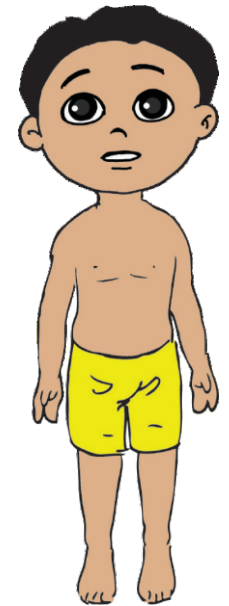
These are all 3 year old children,
Do they have similar growth?



Child - 1

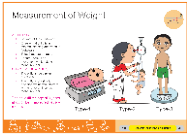


Child - 2



Child - 3





Measurement of Weight



Display the card and ask the participants

- How is the weight of child measured?
- How frequently and when should a child less than 3 years be weighed?
- How frequently and when should a child more than 3 years be weighed?



Use the information given on the right side to explain about the process of measuring weight in children.

Please remember, the child till the age of 3 years should be weighed every month and thereafter every third month.

Process

- Record child's age.
- If the child is too young to stand, place her on the type -1 weighing machine and note down the recordings.
- If the child can sit but cannot stand, place her on type-2 weighing machine and record the weight.
- If the child can stand alone, ask her to step onto the centre of the type-3 scale and stand still. Wait until the numbers on the display no longer change and stay fixed in the display.
- Record the weight of the child to 0.01 kg.
- Record this weight. For confirmation, record the weight once again. If there is a difference between the two readings, then measure the child for the third time to confirm the actual weight.

Precautions

- When you weigh, you must ensure that the child is not moving. The child should look straight.
- The child should wear only light clothing and no socks or shoes.
- Check that the scale on weighing machine is displaying '0' before weighing the child.
- Do not weigh a child if the child is too sick or if he/she is physically disabled that will interfere with or give an incorrect measurement.



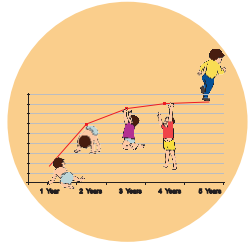
10 Minute

M8

Assessment of growth in children

F3

Measurement of Weight



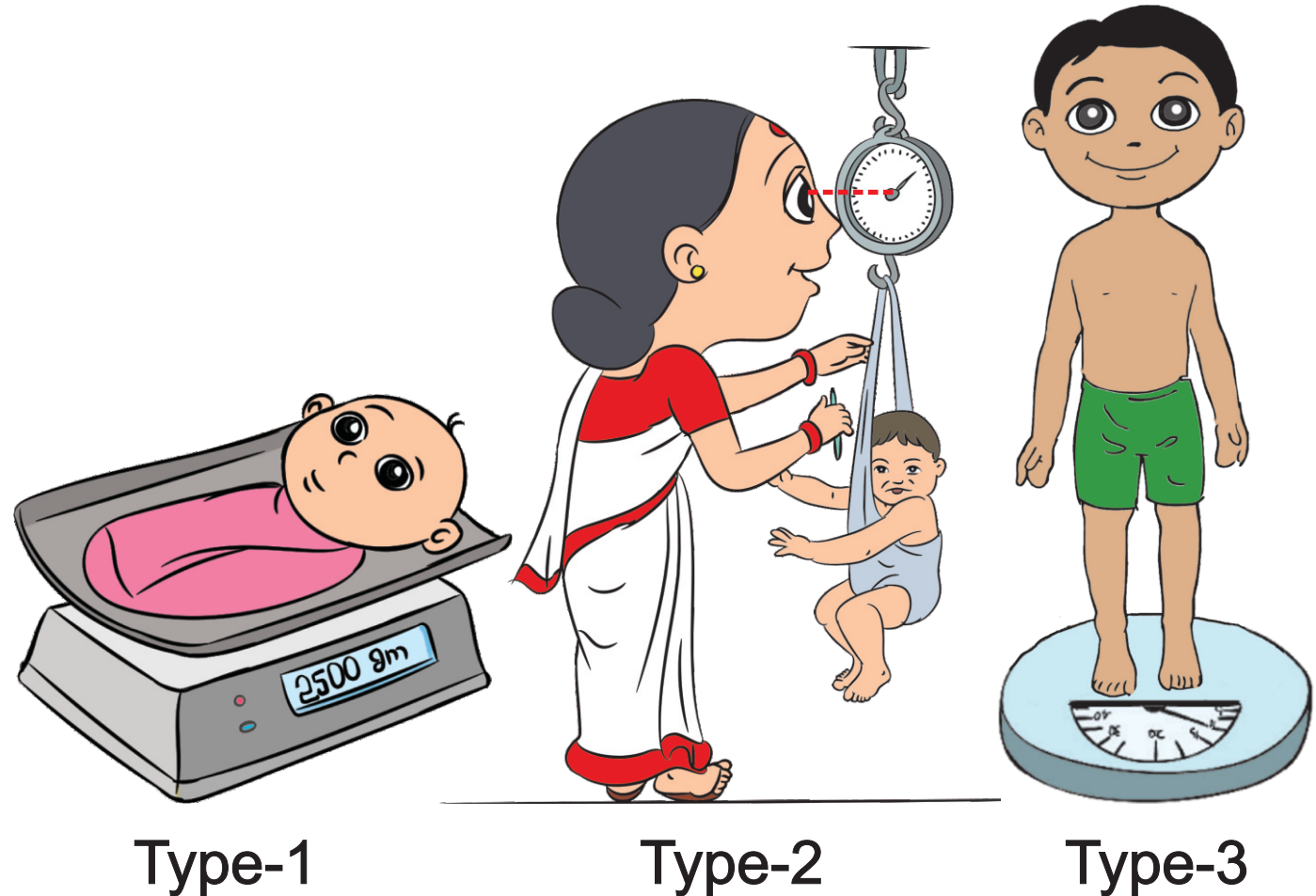
ATTENTION:

- Be sure of the child's age.
- Ensure that child is in minimal clothing and without footwears.
- Take 2 measurements.
- Ensure there is no movement while taking measurement.

DO NOT WEIGH A CHILD, IF:

- The child is too sick or distressed.
- The child is physically disabled which will interfere with or give an incorrect measurement.

The child till the age of 3 years should be measured every month.



Type-1

Type-2

Type-3





Measure LENGTH for children less than 2 years of age or with height/length less than 85 cm



Display the card and discuss with the participants:

- What are the standard procedures for length measurement?
- What precautions should be taken while measuring length?
- How many times the length should be measured?



Use the information given on the right side to facilitate the discussion.

Please remember, the length should be measured every third month.

Process

- Place your hands over the child's ears. With your arms straight, place the child's head against the base of the fixed head-end. The child should be looking straight up so that the line of sight is perpendicular to the board. Your head should be directly over the child's head. Watch the child's head to make sure it is in the correct position against the base of the fixed head-end of the infantometer.
- When the child's position is correct, move the sliding foot piece with your right hand until it is firmly against the child's heels.
- Take measurement to 0.1cm, no rounding should be done.
- Record the length. For confirmation, record the length once again. If there is a difference between the two readings, then measure the child for the third time to confirm the actual length.

Precautions

- Place the infantometer on a hard, flat surface, such as the ground, floor or a solid table.
- Make sure the child is lying flat and straight in the centre of the infantometer.
- Ensure that the child is stable and is not moving.
- Do not measure the length if the child is too sick or if he/she is physically disabled that will interfere with or give an incorrect measurement.



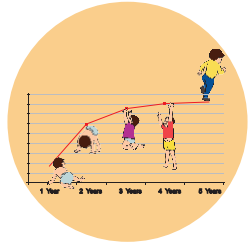
15 Minute

M8

Assessment of growth in children

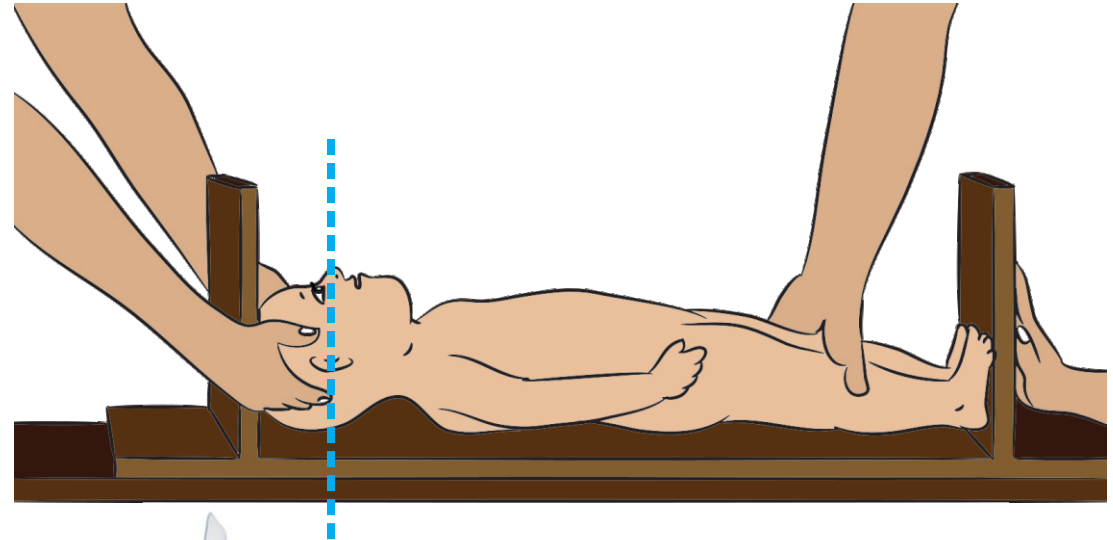
F4

Measure LENGTH for children less than 2 years of age or with height/length less than 85 cm



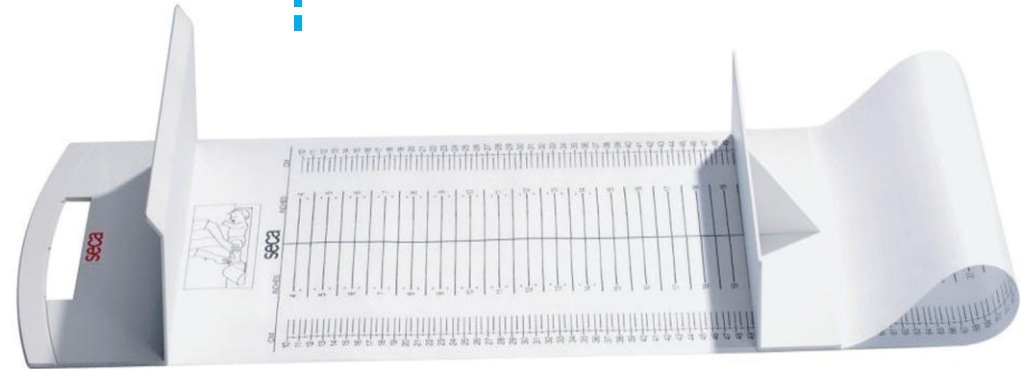
ATTENTION:

- Be sure of the child's age.
- Place the infantometer on a hard, flat surface.
- Legs should be placed together, bringing knees and ankles together.
- Head is up and facing straight ahead.
- Take 2 measurements.
- Ensure there is no movement while taking measurement.



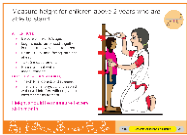
DO NOT MEASURE A CHILD, IF :

- The child is too sick or distressed.
- The child is physically disabled which will interfere with or give an incorrect measurement.



Length should be measured every third month.





Measure height for children above 2 years who are able to stand



Display the card and discuss with the participants:

- What are the standard procedures for height measurement?
- What precautions should be taken while measuring height?
- How many times the height should be measured?



Use the information given on the right side to facilitate the discussion.

Please remember, the height should be measured every sixth month.

Process

- Child stands with back against the board. Head, hips and ankle should touch the panel as shown in the picture.
- Body weight is evenly distributed on both feet/arms on the side.
- Child's legs are placed together, bringing knees or ankles together.
- Head is up and facing straight ahead.
- Eyes level parallel to the ground (line of sight).
- Bring headpiece down onto the upper most point on the head; compress the hair.
- Take reading at the eye level.
- Take measurement to 0.1cm. Do not do any rounding.
- Record the height measurements. For confirmation, record the height once again. If there is a difference between the two readings, then measure the child for the third time to confirm the actual height.

Precautions

- Place the stadiometer on a hard, flat surface against a wall.
- Remove child's shoes and socks. Apart from this, push aside braid/hair and remove clip, cap etc. that may interfere with the height measurement.
- You must ensure that the child is not moving.
- Do not measure the height if the child is too sick or if he/she is physically disabled that will interfere with or give an incorrect measurement.



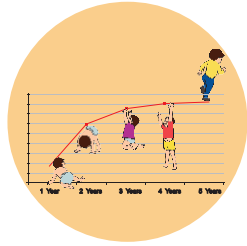
15 Minute

M8

Assessment of growth in children

F5

Measure height for children above 2 years who are able to stand



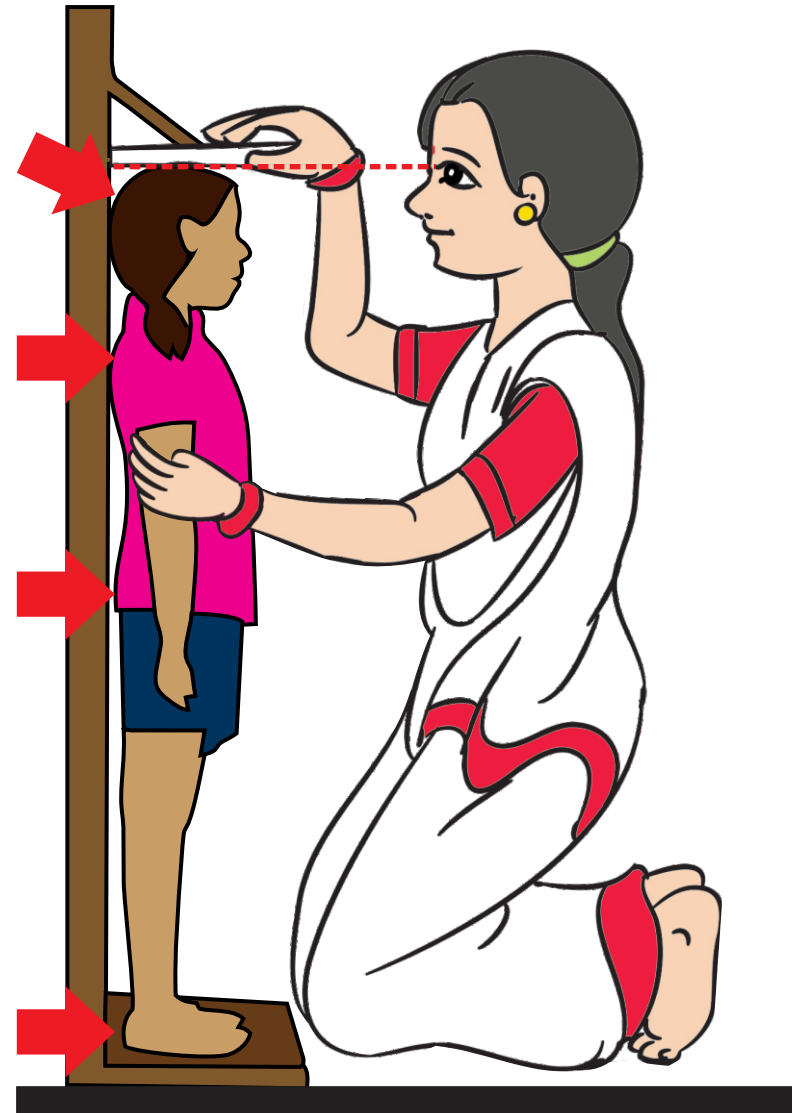
ATTENTION:

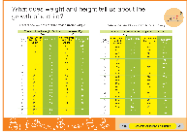
- Be sure of the child's age.
- Legs should be placed together, bringing knees or ankles together
- Head is up and facing straight ahead.
- Take 2 measurements.
- No movement while measurements.

DO NOT MEASURE A CHILD, IF :

- The child is too sick or distressed.
- The child is physically disabled which will interfere with or give an incorrect measurement.

Height should be measured every sixth month.





What does weight and height tell us about the growth of a child?



Discuss with participants:

- How do we read and interpret weight and height against age and gender?



Make the participants understand interpretation using the exercise given on the right side.

Identifying Underweight children

- Please look at the tables. These are based on the growth chart.
- Once you know the weight of a child then you will need to compare the weight of the child with the ideal weight of a child of that age and gender.
- If the weight of the child falls within the yellow or red zone in the growth chart, then the child is underweight. Please refer to the tables for easy understanding.

For example:

- If a girl child who is 6 months of age, weighs below 5.7 kgs then she is underweight. Ideally, she should weigh between 5.8 to 10 kgs.

Identifying Stunted children

- Compare the height of the child by age and gender.
- If the height is below the cut-off value then the child is stunted.

For Example:

- If height of a girl child who is 6 months of age, is 59 cm then she is stunted and her ideal height should be 65.7 cm.

Exercise: Give the following details to the participants and ask them to identify the child's nutritional status using the tables:

Child 1: Age: 9 months; Gender: Male; Length: 70 cm; Weight: 9.2 Kg

Child 2: Age: 12 months; Gender: Female; Length: 64 cm; Weight: 6.5 Kg

Check if the participants are able to identify if the Child 1 is normal and Child 2 is underweight and stunted.



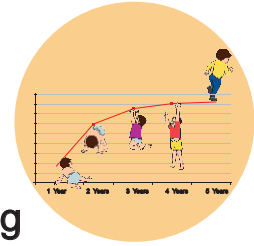
20 Minute

M8

Assessment of growth in children

F6

What does weight and height tell us about the growth of a child?



Reference weights for identifying underweight

What should be the weight of children up to five years?(Kg)				
	Boy		Girl	
Age (Month)	If less than this then it is low weight	Ideal Weight (Kg)	If less than this then it is low weight	Ideal Weight (Kg)
0	2.5	3.3	2.4	3.2
3	5	6.4	4.5	5.8
6	6.4	7.9	5.7	7.3
9	7.1	8.9	6.5	8.2
12	7.7	9.6	7	8.9
15	8.3	10.3	7.6	9.6
18	8.8	10.9	8.1	10.2
21	9.2	11.5	8.6	10.9
24	9.7	12.2	9	11.5
27	10.1	12.7	9.5	12.1
30	10.5	13.3	10	12.7
33	10.9	13.8	10.4	13.4
36	11.3	14.3	10.8	13.9
39	11.6	14.8	11.2	14.4
42	12	15.3	11.6	15
45	12.4	15.8	12	15.5
48	12.7	16.3	12.3	16.1
51	13.1	16.8	12.7	16.6
54	13.4	17.3	13	17.2
57	13.7	17.8	13.4	17.7
60	14.1	18.3	13.7	18.2

Reference heights for identifying stunting

What should be the Height of children up to five years?(cm)				
	Boy		Girl	
Age (Month)	If less than this then child is stunted	Ideal Height (cm)	If less than this then child is stunted	Ideal Height (cm)
0	46.1	49.9	45.4	49.1
3	57.3	61.4	55.6	59.8
6	63.3	67.6	61.2	65.7
9	67.5	72	65.3	70.1
12	71	75.7	68.9	74
15	74.1	79.1	72	77.5
18	76.9	82.3	74.9	80.7
21	79.4	85.1	77.5	83.7
24	81.7	87.8	80	86.4
27	83.1	89.6	81.5	88.3
30	85.1	91.9	83.6	90.7
33	86.9	94.1	85.6	92.9
36	88.7	96.1	87.4	95.1
39	90.3	98	89.2	97.1
42	91.9	99.9	90.9	99
45	93.5	101.6	92.5	100.9
48	94.9	103.3	94.1	102.7
51	96.4	105	95.6	104.5
54	97.8	106.7	97.1	106.2
57	99.3	108.3	98.5	107.6
60	100.7	110	99.9	109.4



What does “weight for height” tell us about the growth of a child?



Discuss with Participants:-

- How do we read and interpret weight for height of a child?



Make the participants understand interpretation using the exercise given on the right side.

Identifying wasting in children

- Compare the weight against length/height and gender.
- If the weight is below or in between the cut-off value then the child is wasted.

For example:

- If the height of a boy is 64 cm and weight is 5 kg then there is considerable wasting.

Exercise: Give the following details to the participants and ask them to identify the child's nutritional status using the tables:

Child 1: Age: 7 months; Gender: Male; Length: 60 cm: Weight: 6 Kg

Child 2: Age: 6 months; Gender: Female; Length: 64 cm: Weight: 5 Kg

Check if the participants are able to identify if the Child 1 is normal and Child 2 is severe acute wasted.



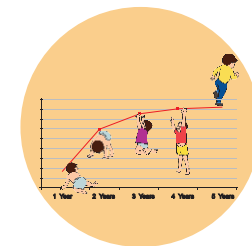
15 Minute

M8

Assessment of growth in children

F7

What does “weight for height” tell us about the growth of a child?

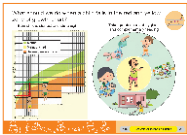


Reference weight and height/length for identifying wasting

Moderate Acute Malnourished and Severe Acute Malnourished Table

Length (cm)	Boys			Girls		
	Below this severe wasting (kg) (SAM)	Between this moderate (kg) (MAM)	Between this normal (kg)	Below this severe wasting (kg) (SAM)	Between this moderate (kg) (MAM)	Between this normal (kg)
46.0	2.0	2.0 – 2.1	2.2 – 3.1	2.0	2.0 – 2.1	2.2 – 3.2
48.0	2.3	2.3 – 2.4	2.5 – 3.6	2.3	2.3 – 2.4	2.5 – 3.6
50.0	2.6	2.6 – 2.7	2.8 – 4.0	2.6	2.6 – 2.7	2.8 – 4.0
52.0	2.9	2.9 – 3.1	3.2 – 4.5	2.9	2.9 – 3.1	3.2 – 4.6
54.0	3.3	3.3 – 3.5	3.6 – 5.1	3.3	3.3 – 3.5	3.6 – 5.2
56.0	3.8	3.8 – 4.0	4.1 – 5.8	3.7	3.7 – 3.9	4.0 – 5.8
58.0	4.3	4.3 – 4.5	4.6 – 6.4	4.1	4.1 – 4.4	4.5 – 6.5
60.0	4.7	4.7 – 5.0	5.1 – 7.1	4.5	4.5 – 4.8	4.9 – 7.1
62.0	5.1	5.1 – 5.5	5.6 – 7.7	4.9	4.9 – 5.2	5.3 – 7.7
64.0	5.5	5.5 – 5.9	6.0 – 8.3	5.3	5.3 – 5.6	5.7 – 8.3





What should we do when a child falls in the red and yellow zone of growth chart?



**Display the card.
Make use of the points
given on the right side to
take the discussion
ahead.**

If a child less than 24 months old is found to be stunted or underweight (falling in yellow or red zone of the height-for-age chart or weight-for-age), then the following actions are required:

- Inform the mother/parents of the child that their child's height is less for his age (growth is slow).
- Tell the parents to pay greater attention to the following things

Feed the child

- With diverse foods available at home.
- Give small frequent meals.
- There should be a schedule for regularly feeding the child.
- Use separate bowl for feeding so that the mother could keep track of what and how much the child has been fed.

Sanitation and hygiene

- Washing hands with soap and water before preparing the food.
- Washing hands with soap and water before feeding the child.
- Washing hands with soap and water after defecation and disposal of waste.
- Use clean boiled water for drinking.
- Keep the food covered and protect from flies.
- Child should be regularly bathed and her nails should be clipped.

Tell the parents to get their child measured monthly, to monitor the child's progress

If the child is in the green zone/normal, then congratulate the parents and ask them to continue feeding the child well and ensuring sanitation and hygiene.



10 Minute

M8

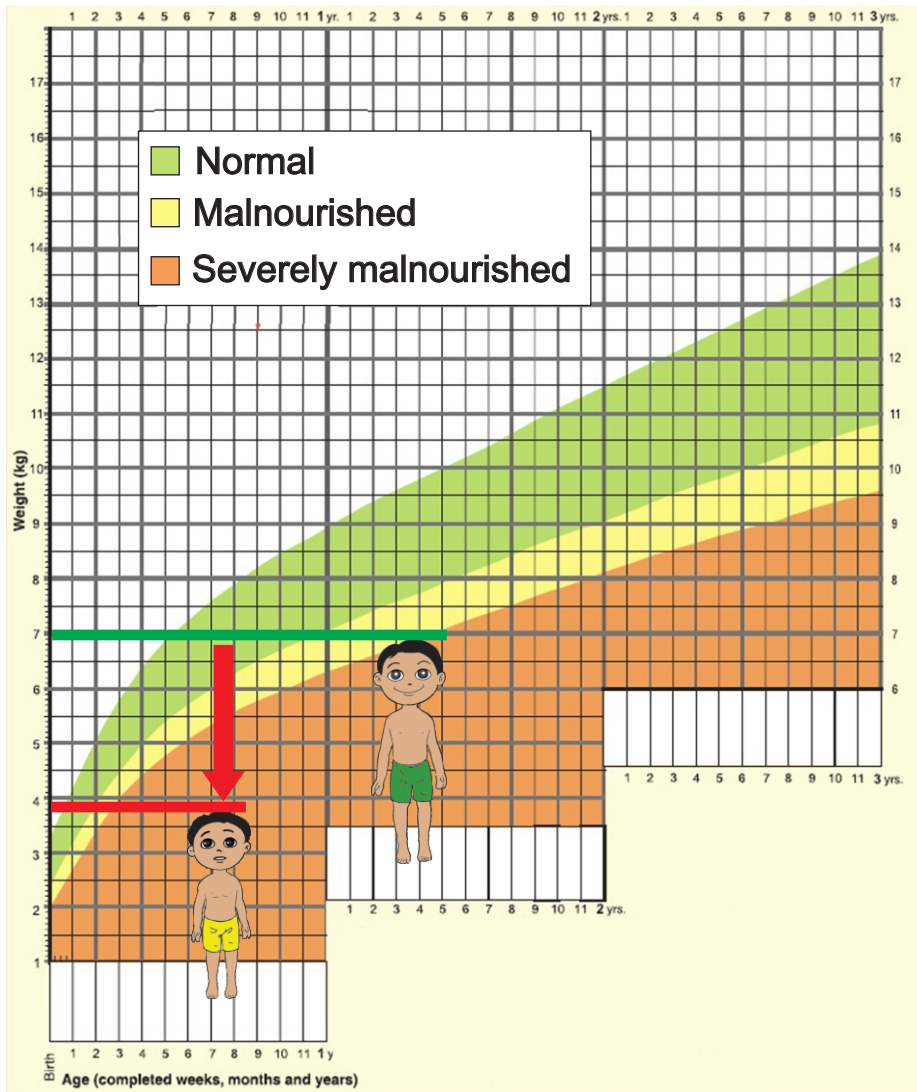
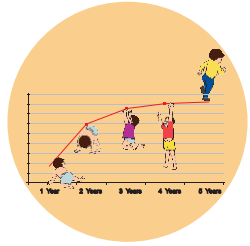
Assessment of growth in children

F8

What should we do when a child falls in the red and yellow zone of growth chart?

If the child is stunted or underweight

Take greater care of hygiene and complementary feeding





What should we do when a child has wasting or low weight for height?



Ask the participants about children whom they have referred to Primary Health Centre or NRC.



There might be 3 – 4 such participants in the group who will have such kind of field experience. Encourage them to share their experiences one by one.



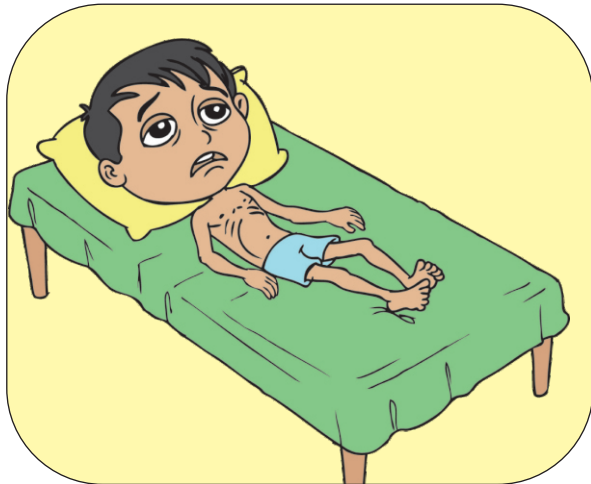
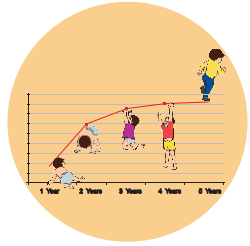
Discuss:

How can we ensure the weight gain in babies who are not sick?

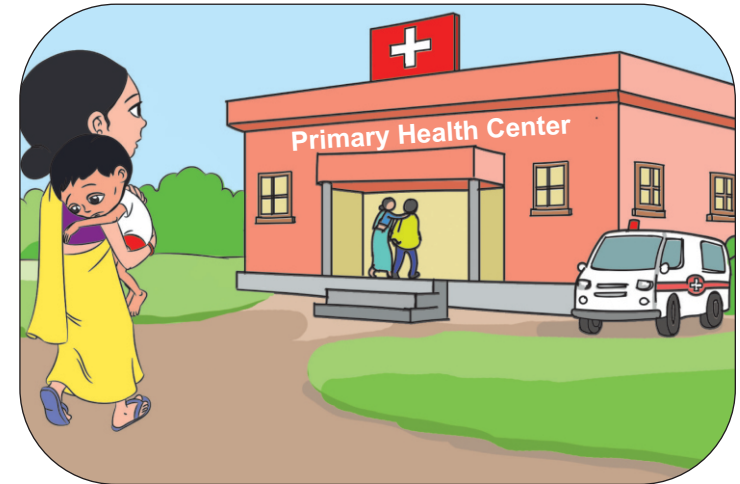
- Measure the weight according to height and refer the baby to hospital who falls in the red zone of growth chart.
- If the child is sick or severely malnourished, we will refer to the nearest hospital which has child specialist facility available.
- If the child is hungry, and does not appear to be sick, we will refer her/him to the NRC if available.
- If NRC is not available in the district, or the family is not willing to take the child, we can help the baby above 6 months by doing the following:
 - We will advise the family to feed the child as much as she or he can eat.
 - Feed all kinds of food that is available at home.
 - We will advise adding oil or ghee to the food.
 - We will advise for ensuring variety in food.
 - Increase the frequency of feeding, 5 – 6 times in a day
 - Households that are non-vegetarian can continue to consume food items that are rich in protein, Iron, Vitamin A, D and B12 .



What should we do when a child has wasting or low weight for height?



If the child is sick....
Refer child to NRC/PHC



If the child is hungry....
Feed any food available at home





ACTIVITY 1: Measure height/length and weight of children 6-24 months of age



Discuss with participants:-



Now we will undertake a practical exercise of measuring children.

- Divide the participants into 2-3 teams.
- Ask each team to repeat step 1 to 4 for at least two children.

Identifying children for measurement

- Arrange 2 children (one boy and one girl) of 6-7 months and two children (one boy and one girl) of 22-24 months.
- Ask the participants to follow the steps below:
 - **STEP 1:** note down the name, gender and age of the child.
 - **STEP 2:** Weigh the child following the steps explained earlier. Note down the readings.
 - **STEP 3:** Measure the height/length following all the precautions. Note down the readings.
 - **STEP 4:** Repeat step1 to step 4 for the other child.

Steps for measurement and interpretation of readings

- The readings should be interpreted across different groups.
- Ask the participants to divide the children into the categories of SAM, MAM, stunted, wasted or underweight.
- By the end of this exercise the participants should be able to understand the different categories of malnutrition and the counseling points associated with each of them.



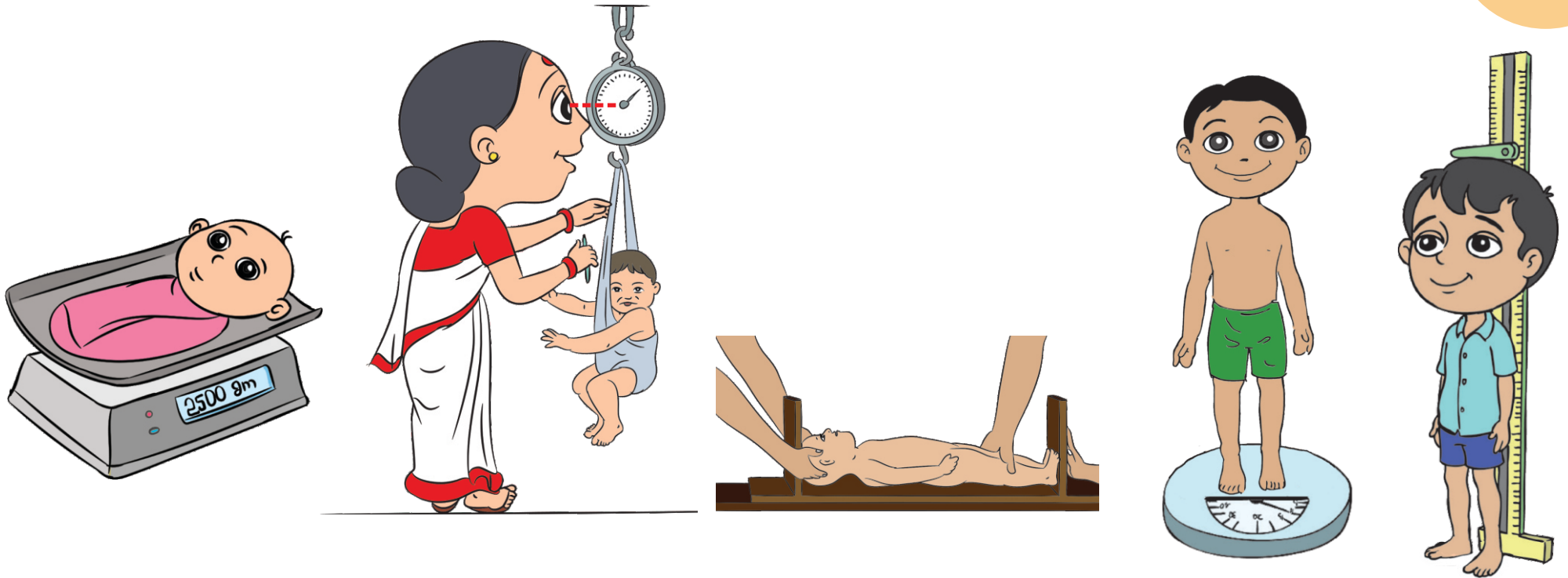
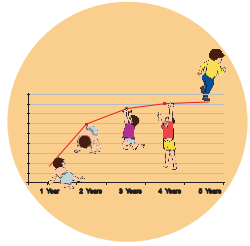
25 Minute

M8

Assessment of growth in children

F10

ACTIVITY 1: Measure height/length and weight of children 6-24 months of age



Note down the readings in the following table:

Name	Age	Gender	Height	Weight





ACTIVITY 2: Quiz Time



Display the card and ask the participants to read the question.



Ask the participants to answer one by one.

Ask the participants to look at the table and take the discussion ahead by using the points given on right side.

Right Answer: A

Maximum growth happens in the first two years of life. Make use of the table given below to discuss about the gain in weight, height/ length during the first 5 years.

Age	Growth
	Growth in weight (per week)
0–3 Month	200 gm
4–6 Month	150 gm
7–9 Month	100 gm
10–12 Month	50–75 gm
	Growth in weight (per year)
1–2 Year	2.5 Kg
3–5 Year	2.0 Kg
	Growth in length (per year)
First Year	25 cm
Second Year	12 cm
Third Year	9 cm
Forth Year	7 cm
Fifth Year	6 cm

- At the time of birth the baby's length is around 50 cm. Expected gain in length in the first year after birth is 25 cms. (50cm to 75 cm approximately) and in the second year is 12 cms, contributing to a total increase of 37 cms length/height in the first two years of life. From the 2nd year onwards, this increase in height is approximately 6 to 7 cms per year.
- The weight gain in first 3 months of life should be around 500 gms per month. A healthy child is approximately double than her birth weight at 5th month and 3 times the birth weight by the completion of first year. The child gains approximately 7 kg weight in the first year and by the end of second year the weight is 4 times the birth weight.



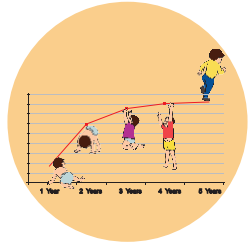
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M8

Assessment of growth in children

F11

ACTIVITY 2: Quiz Time

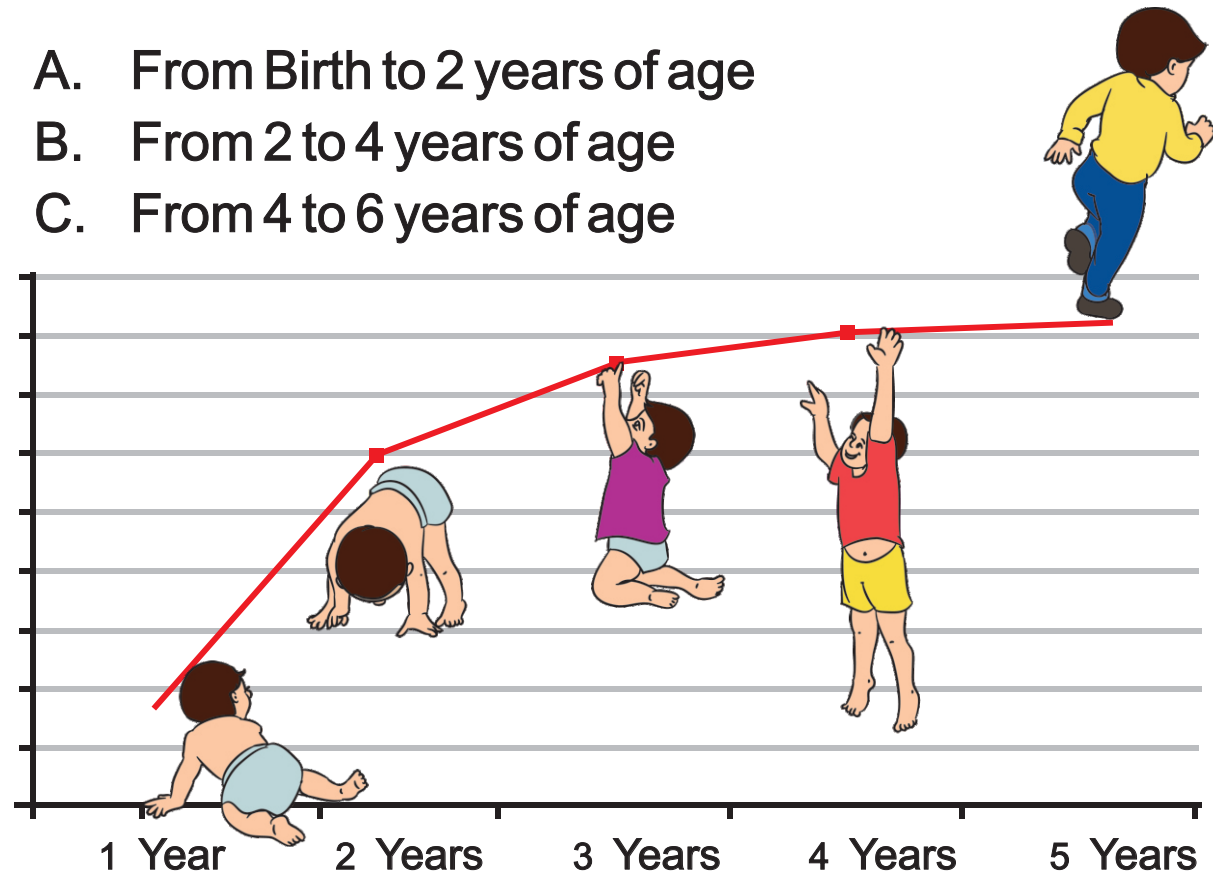


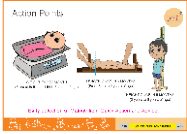
Age	Growth
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	Growth in length (per week)
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Second Year	12 cm
Third Year	9 cm
Forth Year	7 cm
Fifth Year	6 cm

Choose the right answer...

When does a child have maximum growth?

- A. From Birth to 2 years of age
- B. From 2 to 4 years of age
- C. From 4 to 6 years of age





Action Points



Display the card and ask the participants to read the points one by one.

Make use of the information given on the right side to explain each point in brief.

Our Role:

- Measure the weight of all children below 3 years every month.
- Measure length of children every three months in the first two years.
- Measure height of children every six months between 2 and 5 years or the children who are able to stand.
- During home visits, explain the parents about the importance of assessing growth in children.

If the child falls in yellow or red zone of the growth chart, provide following advice to the parents:

- Inform the mother/parents of the child that their child's height is less for his age (growth is slow).
- Tell the parents to pay greater attention on proper food and cleanliness.
- Advice parents to keep a regular track of the growth of the child.
- If the child is sick or severely malnourished, refer her to the nearest hospital which has child specialist facility available.
- If the child is hungry, and does not appear to be sick, refer her to the NRC, if available.
- Ensure regular follow up of the malnourished children who are being taken care of, at home.



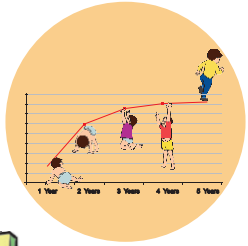
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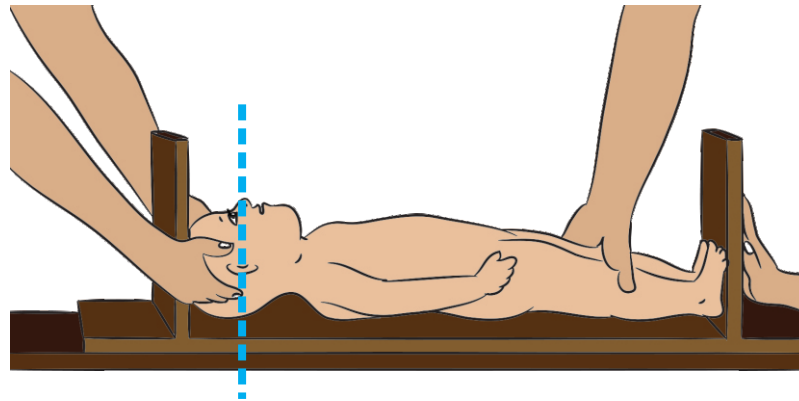
Assessment of growth in children

F12

Action Points



WEIGHT EVERY MONTH
(From birth till the child is 3 years of age)



LENGTH ONCE IN 3 MONTHS
(From Birth to 2 years of age)



HEIGHT ONCE IN 6 MONTHS
(2 years to 5 years of age)

Early detection of Malnutrition, Quick Action and Advice



- 1 *Why this Monthly Meeting ?*
- 2 *Making or updating Home Visit Planner & Initiating Home Visits*
- 3 *Planning and Organizing Community Based Events at AWC*
- 4 *Observing Breastfeeding in Newborn Babies - Why and How*
- 5 *Identification and Care of a Weak Newborn baby*
- 6 *Complementary Feeding: Diet Diversity*
- 7 *Preventing Anemia in Women*
- 8 **Assessment of Growth in Children**
- 9 *Ensuring that Complementary Feeding improves over time*
- 10 *Ensuring Exclusive Breastfeeding*
- 11 *Care of the Weak Newborn Baby - How many weak babies are we missing?*
- 12 *How to ensure timely initiation of Complementary Feeding*
- 13 *Identifying and preventing Severe Acute Malnutrition*
- 14 *Feeding During Illness*
- 15 *Supporting mothers with issues in Breastfeeding*
- 16 *How to take care of weak newborn with the help of Kangaroo Mother Care*
- 17 *Identification & Referral of Sick Newborn*
- 18 *Preventing illnesses to avert Malnutrition and Death*
- 19 *Prevention of Anemia in girls and adolescents*
- 20 *Birth Preparedness- For Institutional and Home Delivery*
- 21 *Preparation During Pregnancy: For NewBorn Care & Family Planning*

