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# Childhood Growth Measurement Training Module

Clinical

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# Why a focus on growth measurement?

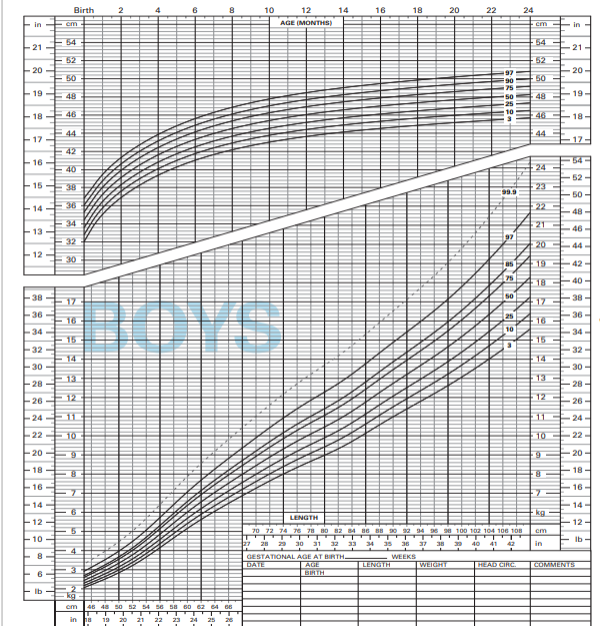
- accurate and reliable measurements are fundamental to growth monitoring
- if measurements are in error, then the foundation of the growth assessment is also in error
- erroneous or missing measurements lead to:
  - incorrect interpretation of growth patterns
  - missed or unnecessary referrals

# Errors in Length Measurements

## Case Example

- 10mo boy had been growing along 25<sup>th</sup>% weight-for-length, 10<sup>th</sup>% weight-for-age and 10<sup>th</sup> % length-for-age
- Last 2 length measurement errors
- Result in wt-for-length dropping to 3%ile
- Unnecessary referral

## Weight-for-length



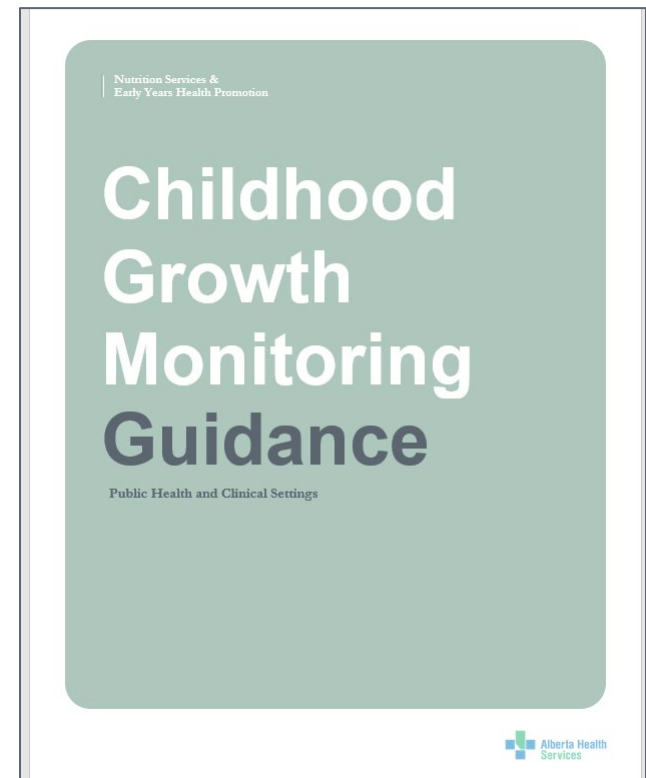
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# Childhood Growth Monitoring Guidance

Purpose: to optimize growth monitoring practices and therefore child health outcomes.

Addresses:

- Growth measurement
- Interpretation
- Growth discussions



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# Components of accurate measurements

- quality equipment which is calibrated and accurate
- a standardized measurement technique
- trained measurers who are reliable and precise in their technique

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# General guidelines

- follow procedures and maintain/calibrate equipment
- explain procedures to caregiver and child
- use sensitive language “let’s check your weight”
- respect personal, religious, cultural perspectives
- respect the need for privacy
- place equipment on a hard, stable, even surface
- record measurements immediately
- repeat measurements if needed

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# Measurements and equipment

Infants – Birth to 24 months of age	
Measure	Equipment to be used
weight <20kg	beam or electronic Infant scale
length	infant length board or infantometer
head circumference	head circumference tape

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# Measure weight



- put paper barrier in place and 'zero' scale
- place infant in middle of the scale
- measure and record to the nearest 0.001 or 0.01 kg



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# Modified measurement technique



- weigh the infant being held on a standing scale
- subtract the weight of the person holding the child from their combined weight
- measure and immediately record the weight to the nearest 0.1 kg

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# Measure length

- cover the length board with a paper barrier
- place infant on back in centre of length board



## **Positioning Head**

- head against headboard
- eyes looking straight up
- chin not tucked or stretched

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# Measure length



## Positioning Legs

- align trunk and legs
- extend both legs (keep knees down) with toes pointed up
- bring footboard against the heels
- measure and immediately record the length to nearest 0.1 cm

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# Modified measurement technique

Birth to 24 months of age	
Unable to measure in recumbent position	Equipment to be used
<ul style="list-style-type: none"><li>• Measure standing height</li><li>• Add 0.7 cm to convert to length</li><li>• Immediately record the height to the nearest 0.1cm</li></ul>	Stadiometer

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# Measure head circumference

- remove hair accessories and place infant on lap or flat surface
- tape measure above the eyebrows and ears and around the prominent part on the back of the head
- pull the tape snugly to compress the hair
- measure and record to the nearest 0.1 cm.



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# Measurements and equipment

Children 2 to 19 years of age	
Measure	Equipment to be used
weight	beam balance or child and adolescent (Adult) electronic scale
height	stadiometer

# Measure weight: 2-19 years of age



- put paper barrier in place and 'zero' scale
- remove shoes, hats and other bulky items
- child should stand unassisted in the middle of the scale
- measure and record to the nearest 0.1 kg



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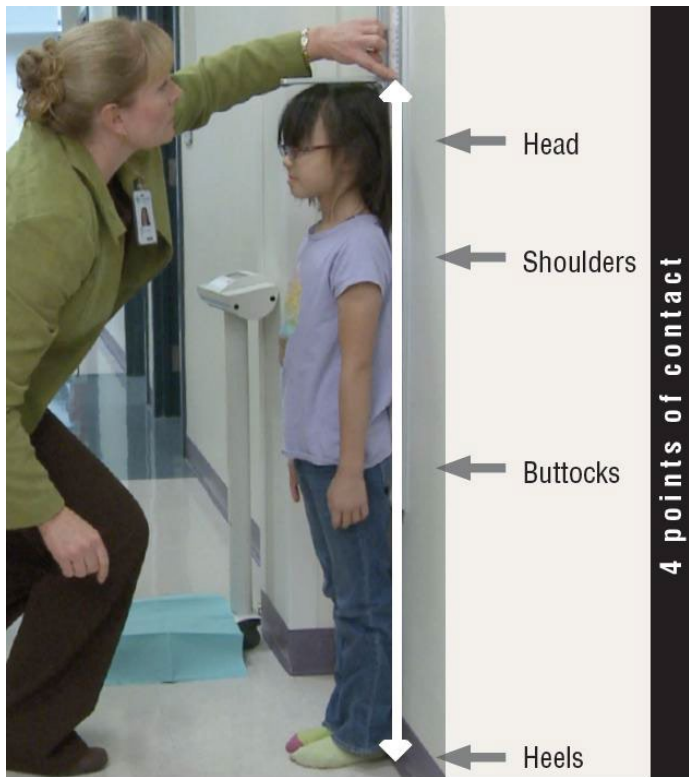
# Modified measurement technique

Unable to Stand Unassisted	Alternate Equipment
< 20 kg	<ul style="list-style-type: none"><li>• Infant scale</li></ul>
> 20 kg	<ul style="list-style-type: none"><li>• Child and adolescent scale for tare weight,</li><li>• Sit-down, wheelchair scale</li></ul>



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# Measure height - Positioning



- heels almost together, legs straight, arms at sides, and shoulders relaxed
- heels, buttocks, shoulders and head touching surface
- child looking straight ahead in Frankfurt Horizontal Plane

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# Measure height



- move the headpiece down to touch the crown of the head
- view the measurement with eyes parallel to the headpiece
- measure to the nearest 0.1 cm and record

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# Modified measurement technique

<b>Cannot Stand Unassisted</b>	<b>Alternate Equipment</b>
<ul style="list-style-type: none"><li>• Measure length on a recumbent length board</li><li>• Subtract 0.7cm to convert it to height</li><li>• Immediately record the length to the nearest 0.1cm</li></ul>	Recumbent length board

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# Special considerations – length/height measures

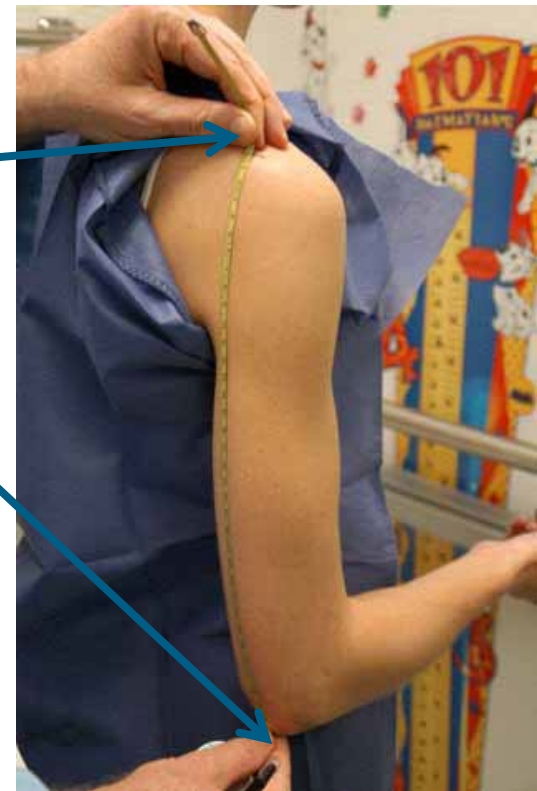
- **Obesity** - aim for at least 2 points of contact
- **Leg Asymmetry** - stand on longer leg with shorter leg supported
- **Cultural Headpiece**
  - topknot - measure to the side of the topknot
  - turban - upper arm length with equation
- **Physical Disabilities**
  - pediatric length board
  - upper arm length with equation

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# Upper Arm Length (UAL)

## - Measurement

- arm at 90°, palm up
- mark the **acromion process**
- measure to the **olecronon process**
- immediately record the UAL to the nearest 0.1cm



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# Upper Arm Length - Calculation

**Standing height**

$$= (4.35 \times \text{UAL cm}) + 21.8$$

If 10yr 6mo girl has an UAL  
measure of 30.5 cm

Standing Height=

$$= (4.35 \times 30.5 \text{ cm}) + 21.8$$

$$= 154.5 \text{ cm}$$

# How often should we measure?

	Inpatients	Ambulatory
	<b>Measure</b> At birth or within 24 hours of admission as able and,	<b>Measure</b> at each clinic visit, or as per clinic protocol
<b>Weight</b>	*Prems daily < 2 yrs at least 3 x / wk > 2 yrs at least 2 x / wk	
<b>Length</b>	*Prems weekly < 2 yrs 2 x / month > 2 yrs 1 x / month	
<b>Head Circumference</b>	*Prems weekly < 2 yrs 2 x / month	0-2 mo monthly 2-6 mo q 2 months 6-24 mo q 3 months

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# AHS Resources

- Childhood Growth Monitoring Guidance
  - specifications for purchasing equipment
  - maintenance and calibration guidelines
    - contact site clinical engineering or facilities
- training resources (module and videos)
- growth measurement posters

Available from: [www.ahs.ca/cgm](http://www.ahs.ca/cgm)



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