

Childhood Growth Measurement Training Module Public Health (Sept 2016)



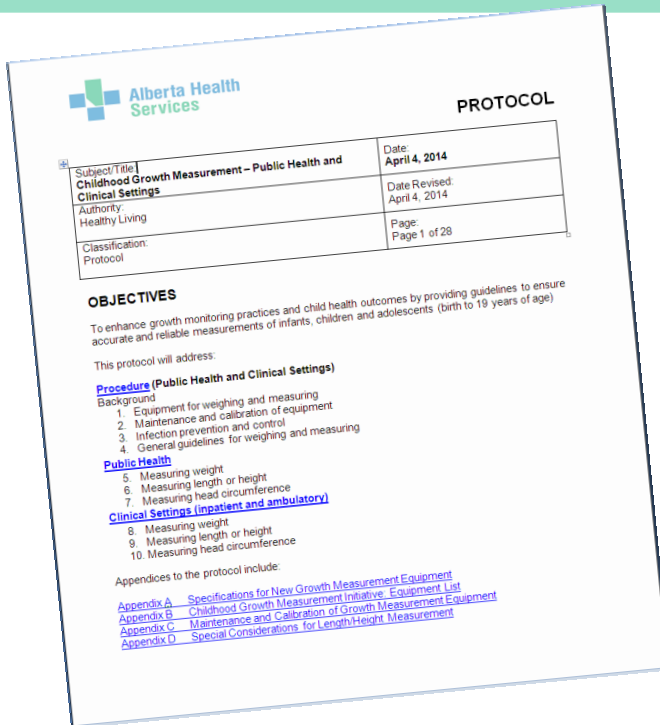
Purpose of the Training Module:

- to increase awareness of the importance of taking accurate and reliable weights and measures
- to increase knowledge and skills in standard techniques
- to increase the accuracy and reliability of childhood growth measurement
- to increase staff confidence in the ability to use the techniques accurately

Outline

1. Childhood Growth Measurement Protocol
2. Background
3. Equipment for Weighing & Measuring and Calibration
4. General Guidelines
5. Weighing & Measuring-Infants Birth to 24 Months of Age
6. Weighing & Measuring-Children 2 to 19 Years of Age
7. Measurement Technique Assessments
8. Key Messages
9. Resources
10. Questions

1. Childhood Growth Measurement Protocol



Alberta Health Services

PROTOCOL

Subject/Title Childhood Growth Measurement – Public Health and Clinical Settings	Date: April 4, 2014
Authority: Healthy Living	Date Revised: April 4, 2014
Classification: Protocol	Page: Page 1 of 28

OBJECTIVES

To enhance growth monitoring practices and child health outcomes by providing guidelines to ensure accurate and reliable measurements of infants, children and adolescents (birth to 19 years of age)

This protocol will address:

Procedure (Public Health and Clinical Settings)

Background

1. Equipment for weighing and measuring
2. Maintenance and calibration of equipment
3. Infection prevention and control
4. General guidelines for weighing and measuring

Public Health

5. Measuring weight
6. Measuring length or height
7. Measuring head circumference

Clinical Settings (inpatient and ambulatory)

8. Measuring weight
9. Measuring length or height
10. Measuring head circumference

Appendices to the protocol include:

[Appendix A – Specifications for New Growth Measurement Equipment](#)
[Appendix B – Childhood Growth Measurement Initiative Equipment List](#)
[Appendix C – Maintenance and Calibration of Growth Measurement Equipment](#)
[Appendix D – Special Considerations for Length/Height Measurement](#)

Objective:

To enhance growth monitoring practices and child health outcomes by providing guidelines to ensure accurate and reliable measurements of infants, children and adolescents (birth to 19 years of age).

Childhood Growth Measurement Protocol

The Growth Measurement (GM) Protocol addresses:
Procedure (Public Health and Clinical Settings)

1. Equipment for weighing and measuring
2. Maintenance and calibration of equipment
3. Infection prevention and control
4. General guidelines for weighing and measuring

Childhood Growth Measurement Protocol

Public Health

5. Measuring weight
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Clinical Settings (inpatient and ambulatory)

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Childhood Growth Measurement Protocol

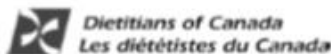
Appendices include:

- Appendix A - Specifications for New Growth Measurement Equipment
- Appendix B - Childhood Growth Measurement Initiative: Equipment List
- Appendix C - Maintenance and Calibration of Growth Measurement Equipment
- Appendix D - Special Considerations for Length/Height Measurement

2. Background



Why Focus on Growth Measurement?



PROMOTING OPTIMAL MONITORING OF CHILD GROWTH IN CANADA: USING THE NEW WHO GROWTH CHARTS

A COLLABORATIVE STATEMENT FROM: DIETITIANS OF CANADA
CANADIAN PAEDIATRIC SOCIETY
THE COLLEGE OF FAMILY PHYSICIANS OF CANADA
COMMUNITY HEALTH NURSES OF CANADA

Available from: <http://www.cps.ca/english/statements/N/growth-charts-statement-FULL.pdf>.

Accurate Measurements are Used to:

- monitor the growth of an individual
- detect growth abnormalities
- monitor nutritional status
- track the effects of medical or nutritional intervention
- provide descriptive information for program planning and evaluation

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

3. Equipment for Weighing & Measuring



Equipment for Weighing and Measuring

Infants - Birth to 24 months of age		Children - 2 to 19 years of age	
Measure	Equipment to be used	Measure	Equipment to be used
Weight	Infant scale	Weight	<ul style="list-style-type: none"> •Child and adolescent (adult) scale •*Wheel chair scale for non ambulatory children
Recumbent length	Infant length board	Standing height	<ul style="list-style-type: none"> •Stadiometer •*Recumbent length board for non ambulatory children
Head circumference	Head circumference tape		

Maintenance and Calibration

Maintenance is a regular daily event:

- zero scales prior to each clinic and prior to use with each child
- ensure length boards and stadiometers pieces are firmly joined

When to Check Calibration

Equipment	Check Calibration	Responsible	Calibration equipment used:
Stationary equipment			
Infant scales	Upon installation and monthly thereafter	End user	Calibration weights
Length board (pediatric) and stadiometers	Upon installation and monthly thereafter	End user	Calibration rod
Wheel chair scale for non ambulatory children	Upon installation and yearly	Professional calibration	Professional calibration
Child/adolescent scale	Upon installation and yearly thereafter	Professional calibration	Professional calibration

When to Check Calibration

Equipment	Check Calibration	Responsible	Calibration equipment used:
Portable equipment			
Infant scales	At least once per day if used daily Before each use, if used less frequently	End user	Calibration weights
Length board (pediatric) and stadiometers	At least once per day if used daily Before each use, if used less frequently	End user	Calibration rod
Child/adolescent scale	Upon installation and yearly thereafter	Professional calibration	Professional calibration

Infection Prevention and Control

- refer to AHS, Infection Prevention and Control (IPC) policies and protocols for current standards on:
 - hand hygiene
 - cleaning and disinfecting of measuring equipment
 - cleaning/transporting of portable equipment

4. General Guidelines



- explain all procedures and enlist help as needed
- respect personal, religious or cultural perspectives
- respect privacy
- ensure equipment is placed on a flat, hard, stable and even surface

Acceptable Standard for Measurement Accuracy:

Infants	Children
Birth to 24 months of age	2 to 19 years of age
Infant weight: 0.01 kg (10 g) Infant length: 0.5 cm Head circumference: 0.2 cm	Child weight: 0.1 kg (100 g) Child height: 0.5 cm

5. WEIGHING AND MEASURING INFANTS BIRTH TO 24 MONTHS



When To Measure



- birth and postnatal period
- routine well-child visits:
2, 4, 6, 12 and 18 months
- follow-up visits
- when a child's health or
nutritional status warrants

Measurement & Equipment

Infants – Birth to 24 months of age

Measure	Equipment to be used
Weight < 20 kg	Infant scale
Recumbent length	Infant length board
Head circumference	Head circumference tape

Measure Weight



- weigh infants *birth to 8 weeks* nude
- weigh infants *2 to 24 months* in a clean, dry diaper
- put paper barrier in place and 'zero' scale, place infant in middle of the scale
- measure and immediately record the weight to the nearest 0.001kg or 0.01kg

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

Measure Length - Preparation



- remove or undo hair styles and hair accessories
- light clothing and/or diaper
- two people are required to get an accurate measurement
- cover the length board with a paper barrier
- place infant on back in centre of length board

Measure Length – Positioning

Frankfort Horizontal Plane



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

Measure Length – Positioning



- 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

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"> • Measure standing height • Add 0.7 cm to convert to length • Immediately record the height to the nearest 0.1 cm 	Stadiometer

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.

6. WEIGHING AND MEASURING - CHILDREN 2 TO 19 YEARS



When To Measure



- routine well-child visits:
4-6 years of age
- follow-up visits
- when a child's health or nutritional status warrants

Measurement & Equipment

Children 2 to 19 years of age

Measure	Equipment to be used
Weight	•Child and adolescent (adult) electronic scale
Standing height	•Stadiometer

Measure Weight



- remove shoes, hats or bulky items like coats and sweaters
- lightweight outer clothing or light undergarments
- place a paper barrier on the scale
- with the paper barrier in place “zero” the scale

Measure Weight



- child/adolescent should stand in the middle of the scale
- child/adolescent must be able to stand without assistance
- measure and immediately record the weight to the nearest 0.1 kg

Modified Measurement Technique

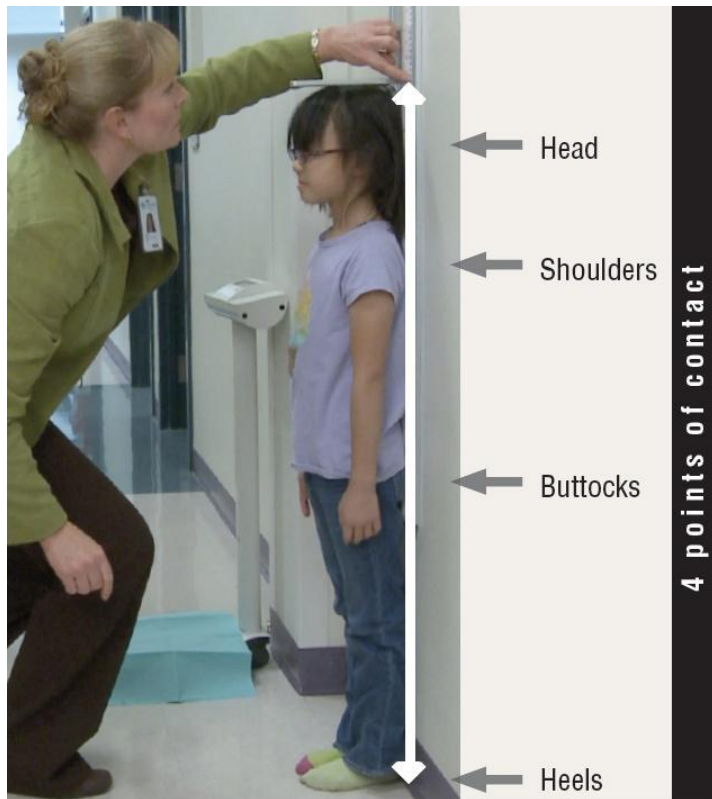
Children 2 to 19 years of age	
Unable to Stand Unassisted	Alternate Equipment
< 20 kg	<ul style="list-style-type: none"> • Infant scale
> 20 kg	<ul style="list-style-type: none"> • Child and adolescent scale for tare weight, • Sit-down, wheelchair scale

Measure Height - Preparation



- remove or undo hair styles and hair accessories
- remove shoes, hat and bulky clothing such as coats and sweaters

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 Frankfort Horizontal Plane

Measure Height - Positioning



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

Modified Measurement Technique

Children 2 to 19 years of age

Cannot Stand Unassisted

- Measure length on a recumbent length board
- Subtract 0.7cm to convert it to height
- Immediately record the length to the nearest 0.1cm

Alternate Equipment

Recumbent length board

Special Considerations – 2 to 19 Years of Age

- **vertical plane-** 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

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 0.1 cm



7. Measurement Technique Assessment



Assess the Technique: Weight



Is the technique:

- Appropriate
- Inappropriate

Assess the Technique: Weight



The technique is:
 Inappropriate

Weight will be inaccurate:

- too many clothes
- holding a book
- not centred on the scale

Assess the Technique: Weight



Is the technique:

- Appropriate
- Inappropriate

Assess the Technique: Weight



The technique is:
 Inappropriate

Weight will be inaccurate:

- parent touching infant
- foot is touching wall

Assess the Technique: Length



Is the technique:

- Appropriate
- Inappropriate

Assess the Technique: Length



The technique is:
 Inappropriate

Length will be inaccurate:

- inappropriate equipment
- feet are not flat against footboard
- toes are not pointed upward
- head is not in the Frankfort Horizontal Plane

Assess the Technique: Length



Is the technique:

- Appropriate
- Inappropriate

Assess the Technique: Length



The technique is:
 Inappropriate

- Length will be inaccurate:
- trunk and legs are not aligned
 - hand only on one knee

Assess the Technique: Head Circumference



Is the technique:

- Appropriate
- Inappropriate

Assess the Technique: Head Circumference

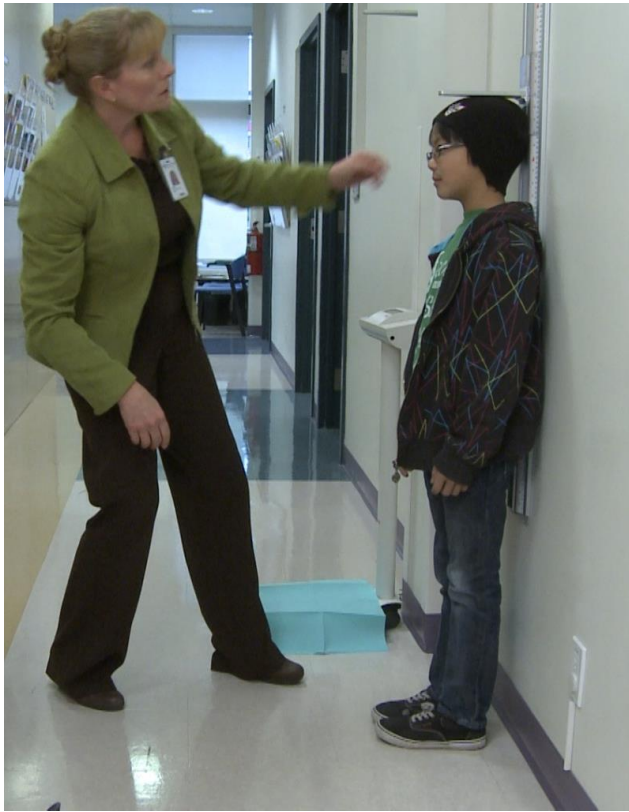


The technique is:
 Inappropriate

Head circumference will be inaccurate:

- tape over ear
- tape too low
- tape not pulled snugly

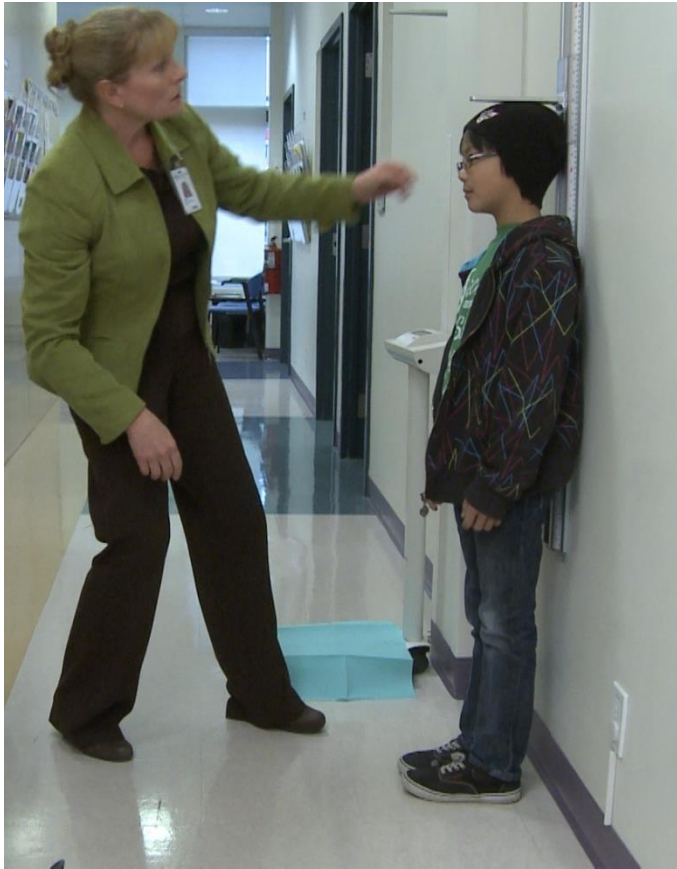
Assess the Technique: Height



Is the technique:

- Appropriate
- Inappropriate

Assess the Technique: Height



The technique is:

Inappropriate

Height will be inaccurate:

- shoes, hat and jacket on
- heels are not against the flat surface
- head not in Frankfort Horizontal plane
- measurer not reading at eye level

8. Key Messages



- use the right equipment for the child's age and size
- double-check measurements when reading the equipment
- record measurements immediately

Weight

- check that the child is wearing the right amount of clothing
- ‘zero’ the scale with the barrier in place before weighing

Length/Height

- ask for assistance when measuring infant length
- fully extend both legs when measuring infants
- check that the head is in the Frankfort Horizontal Plane
- make sure shoes, hats and hair accessories are removed

9. Resources

- AHS Childhood Growth Measurement - Public Health and Clinical Settings Protocol
- Public Health Childhood Growth Measurement Training Module (PPT)
- Childhood Growth Measurement Posters
- Training Videos
- Calibration Recording Form
- FAQ Childhood Growth Measurement (on insite, AHS intranet)
- AHS Website <http://www.albertahealthservices.ca/info/cgm.aspx>

10. Questions



References

Dietitians of Canada, Canadian Paediatric Society, the College of Family Physicians of Canada, Community Health Nurses of Canada. Promoting optimal monitoring of child growth in Canada: using the new WHO growth charts [collaborative statement on the Internet]. 2010 [cited 2011 Jan 6]. Available from: <http://www.cps.ca/english/statements/N/growth-charts-statement-FULL.pdf>.

Dietitians of Canada, Canadian Paediatric Society, the College of Family Physicians of Canada, Community Health Nurses of Canada. A Health professional's guide for using the new WHO growth charts [document on the Internet]. 2010 [cited 2011 Jan 6]. Available from: http://www.dietitians.ca/Downloadable-Content/Public/DC_HealthProGrowthGuideE.aspx.

United States Department of Health and Human Services, Human Resources and Services Administration, Maternal and Child Health Bureau. Growth charts training: accurately weighing and measuring infants, children and adolescents: equipment [training module on the Internet]. [cited 2010 Nov 16]. Available from: <http://depts.washington.edu/growth/index.htm>.

United States Department of Health and Human Services, Human Resources and Services Administration, Maternal and Child Health Bureau. Growth charts training: accurately weighing and measuring infants, children and adolescents: technique [training module on the Internet]. [cited 2011 Jan 6]. Available from: <http://depts.washington.edu/growth/index.htm>.

References (cont'd)

Runge, W. Infection Control Professional, Calgary Urban Community Infection Prevention and Control, Calgary Area. Personal communication. 2011 Jan 18.

Provincial Infectious Diseases Advisory Committee. Best practices for environmental cleaning for prevention and control of infections in all health care settings. December 8, 2009. [cited 2011 Feb 17].

Available from:

http://www.health.gov.on.ca/english/providers/program/infectious/diseases/best_prac/bp_enviro_clean.pdf

Alberta Health Services. Infection prevention & control practice recommendations seasonal influenza. Source control to prevent transmission of influenza-like illness in emergency departments, Urgent Care Centres, Acute Assessment Centres and Ambulatory Clinics [practice recommendations on the Internet]. 2010 Oct 12 [cited 2011 Jan 26]; Reference: 01-004.. Available from:

<http://www.albertahealthservices.ca/Diseases/hi-dis-flu-source-ctrl-prevent-trans.pdf>.

World Health Organization. Training course on child growth assessment: interpreting growth indicators [training module on the Internet]. 2008 [cited 2011 Jan 10]. Available from:

<http://www.who.int/childgrowth/training/en/>.