6.1.3 Growth Monitoring

6.1.3.4 Conducting height assessment in children 2-5 years

Aim
To correctly measure, interpret and monitor the standing height of children 2-5 years of age.

Background
Monitoring of growth is an important means to identify whether a child is growing normally or deviating from normal parameters. Growth monitoring is especially important during infancy to detect and monitor slow or excessive growth, check the impact of illness and treatment, and to identify or monitor those at higher risk.¹

For monitoring of growth to be meaningful, serial measurements should be taken and plotted onto a growth chart over a period of time.² Along with growth measurements, the child should always be assessed according to their overall health and wellbeing, and developmental progress. Consideration of the combined factors of overall rate of growth, or growth trajectory, the actual position on the growth chart, and clinical judgement, including a knowledge of the child’s history, are required to determine whether further investigation is required.³

Additional monitoring should be undertaken and referral should be considered when the direction of growth falls downwards or tracks upwards within or across a percentile.⁴

Low height for age or stunting may be caused by chronic under-nutrition, frequent infections, congenital or non-congenital illness, or intrauterine growth conditions.¹,⁵ Poverty, food insecurity, poor access to, or uptake of, services and increased exposure to infections may be contributory factors.⁵ The irreversible effects of stunting usually occur between 2-3 years of age.⁶

Children who are tall for their age can also be identified using growth assessment. Occasionally excessive height for age may be indicative of uncommon endocrine disorders.¹

The measurement of weight and height can be used in an equation to calculate the Body Mass Index (BMI), which identifies underweight, healthy weight, overweight and obese status. BMI is especially useful for screening for wasting and thinness, and overweight and obesity in children over 2 years of age.⁶

For further information on growth monitoring refer to the Community health policy, procedures and guidelines manual:

- 3.4.1 Growth in childhood
- 3.4.2 Growth faltering
- 3.4.3 Overweight and obesity

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Next Review: 2017
6.1.3.4 Conducting height assessment in children 2-5 years
NSQHS Standards: 1.7,1.8
Number of pages: 7
6.1.3 Growth monitoring

Policy

Height assessment is not routinely offered as a component of the 3 year old Universal child health scheduled contact or the school entry health assessment.

Targeted height assessment should be offered and conducted with parent/carer consent at any scheduled or unscheduled contact over 2 years of age, where there is parent/carer and/or professional concern regarding growth, or any other identified risk.

For children receiving the Enhanced Aboriginal Child Health Schedule height assessment is offered and conducted with parent/carer consent at each scheduled contact from 2.5 years until 5 years of age.

Key points

- To be performed by staff with appropriate training and assessment skills.
- Standing height measurement is recommended for children over the age of 2 years of age.
- For children close to 2 years of age, standing height may be measured rather than recumbent length, if appropriate for the individual.
- Height status in children over the age of 2 years should be assessed using age and sex specific reference values.\(^7\)
- It is important to record whether length or height stature has been measured when documenting findings. Recumbent length is approximately 1 – 2 cm greater than standing height. This is accounted for in the formatting of the WHO 0-5 growth charts, and can be visualised as a small dip in the alignment of the centile curves.
- To ensure height measurement accuracy, reliable and sensitive equipment should be used along with good technique. Small errors during the measuring, recording or plotting can have a large impact on the child’s growth assessment.
- Community health staff should follow the organisation’s overarching infection prevention and management policies and perform hand hygiene in accordance with WA Health guidelines at all appropriate stages of the procedure.

Equipment

- Height measurer consisting of a vertical metric rule or a correctly installed ‘pull down’ measure designed for the intended purpose.
  - A height measurer consists of a vertical board with an attached metric ruler and a moveable horizontal headboard.
• The height measurer must have a 0.5 kg weight on top of the horizontal headboard to apply sufficient pressure to compress hair. Ideally the headboard should be spring loaded.
• There should be a non-compressible flat even floor base (uncarpeted) on which the child stands.
• The graduations on the height measurer should be at 1 mm intervals and the metric rule should be at least 220 cm.
• Equipment should be accurately and firmly mounted to the wall with an easy to read, stable tape or digital readout in 0.1 cm increments.

- The height measurer should be checked prior to each measurement session to ensure that both the headboard and floor are at 90 degrees to the vertical rule.
- Calibration should be performed according to manufacturer recommendations.
- For portable stadiometers, it is necessary to check the correct alignment of the headboard during each measurement, according to manufacturer recommendations.

**Procedure**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Additional Information</th>
</tr>
</thead>
</table>
| 1. Engagement and consent:  
Explain the procedure to the parent/carer and child. Allow sufficient time for discussion of concerns.  
Ensure verbal parental consent has been obtained prior to proceeding with testing. | Encourage parent/carer support and involvement with the procedure where possible. |
| 2. Preparation:  
• Explain the stadiometer/height measurer to the child and how you are going to use it to see how tall they are.  
• Assist the child in removing their hat, shoes, socks, hair/head accessories.  
• Take the child over to the stadiometer and make sure they face away from the equipment or wall. | If the child is hesitant, measure the parent first where possible. |
| 3. Measuring:  
• Ask or assist the child to stand;  
• With bare feet close together, legs straight, arms at sides, eyes straight  
  Foot markers are useful to assist in correct placement of the child’s feet.  
  The head must be positioned in the Frankfort plane. The Frankfort plane is achieved when the lower edge of the eye | |

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NSQHS Standards: 1.7, 1.8
ahead and shoulders relaxed.
- Ask the child to take a big breath in and out to relax.
- Check that their arms are still by their sides, knees straight, heels on the floor and shoulders relaxed.
- Check there are three contact points between the body and the stadiometer; shoulder blades, bottom and heels.
- Bring the measuring device down to rest on the child’s head.
- Ensure your eyes are in line with the height.

4. Recording:
- Record the height to the nearest 0.1 cm.
- Plot the height on the appropriate height for age and gender chart.
- Record that standing height/stature has been measured.
- Ensure documentation of any factors which may have interfered with accuracy in measurement.

socket (Orbitale) is in the same horizontal plane as the notch above the flap of the ear (Tragion).

(Reproduced with permission from Marfell-Jones et al., 2006).

For any child, length measurement is approximately 1 – 2 cm greater than height measurement.

There will be a staggered uptake of WHO growth charts over the course of 5 years:
- Newborns from 2014 will be plotted onto the WHO charts located within the PHR and the Child health record.
- Children new to the service in 2014, where a new Child health record is established, should be plotted onto the WHO growth charts within that record.
- Children’s growth will only be plotted onto ONE type of growth chart.

If they begin on CDC they stay on CDC.
If they begin on WHO they stay on WHO.
5. Explain growth plotting to parent/carer.
   - Interpret the growth chart with regard to the pattern of growth trajectory.
   - Identify if there are any tracking changes within or across percentiles.
   - Explain the pattern of growth to the parent/carer.

Staff should refer to 3.4.1 Growth in childhood located within the Community health policy, procedures and guidelines manual, and the Using WHO growth charts eLearning package for guiding information on interpretation of growth charts.

1. Calculating the BMI
   - To calculate the BMI, weight is measured in kilograms and height is measured in metres using the formula below:
   - \[ \text{BMI} = \frac{\text{Weight (kg)}}{\left(\text{Height (m)}\right)^2} \]

Example: Weight 18.2 kg Height 1.083 m

\[
\begin{align*}
\text{BMI} &= \frac{18.2}{(1.083 \times 1.083)} \\
\text{BMI} &= \frac{18.2}{1.172} \\
\text{BMI} &= 15.52 \text{ kg/m}^2
\end{align*}
\]

Outcome

Measuring and recording height onto growth charts helps to confirm a child’s healthy growth for parents. It also assists in identification of deviations from the norm such as stunting or excessive growth.

Close monitoring should be in place for children where weight/length is less than 3rd centile or greater than 97th centile, although this does not necessarily indicate a problem.

The use of clinical pathways allows a comprehensive and evidence based guidance for Community health professionals to help identify, manage and refer appropriately. Where growth is faltering or there is excessive gain staff should refer to the clinical pathway for further assessment and treatment: Universal Child Health Services: Weight and Growth Referral and Follow Up

Additional monitoring and possible referral should occur when the direction of length/height trajectory tracks downwards or upwards within or across a percentile.

Continued over page
Referral pathway

Discuss any abnormal findings with the parent / carer and seek verbal consent for referral to a medical practitioner using the CHS 663- Referral from Community Health form.

Related policies, procedures and guidelines

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4.1 Growth in childhood</td>
<td></td>
</tr>
<tr>
<td>3.4.2 Growth faltering</td>
<td></td>
</tr>
<tr>
<td>3.4.3 Overweight and obesity</td>
<td></td>
</tr>
<tr>
<td>6.1.3 Growth monitoring</td>
<td></td>
</tr>
</tbody>
</table>

Useful resources

- Using WHO growth charts eLearning package
- Royal Children’s Hospital Melbourne Child Growth learning resource

Policy Owner | Portfolio
---|---
Director - Statewide Policy Unit. | Birth to School Entry

References


NSQHS Standards: 1.7, 1.8