

Boys 2-18 years



Surname

Identification No.

Given Names

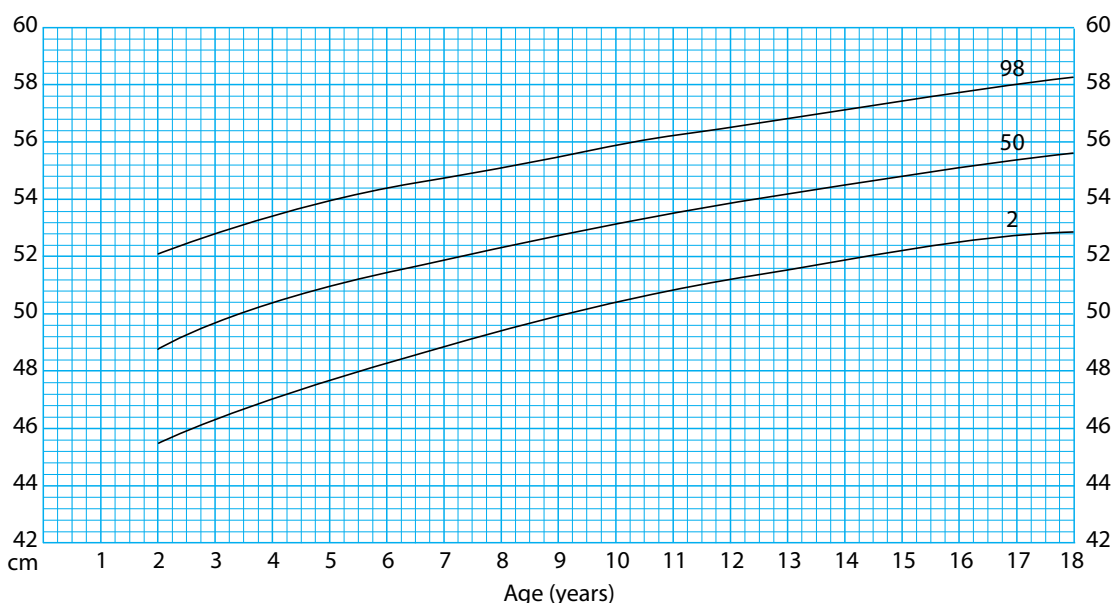
Date of Birth

Endorsed by:



Head Circumference

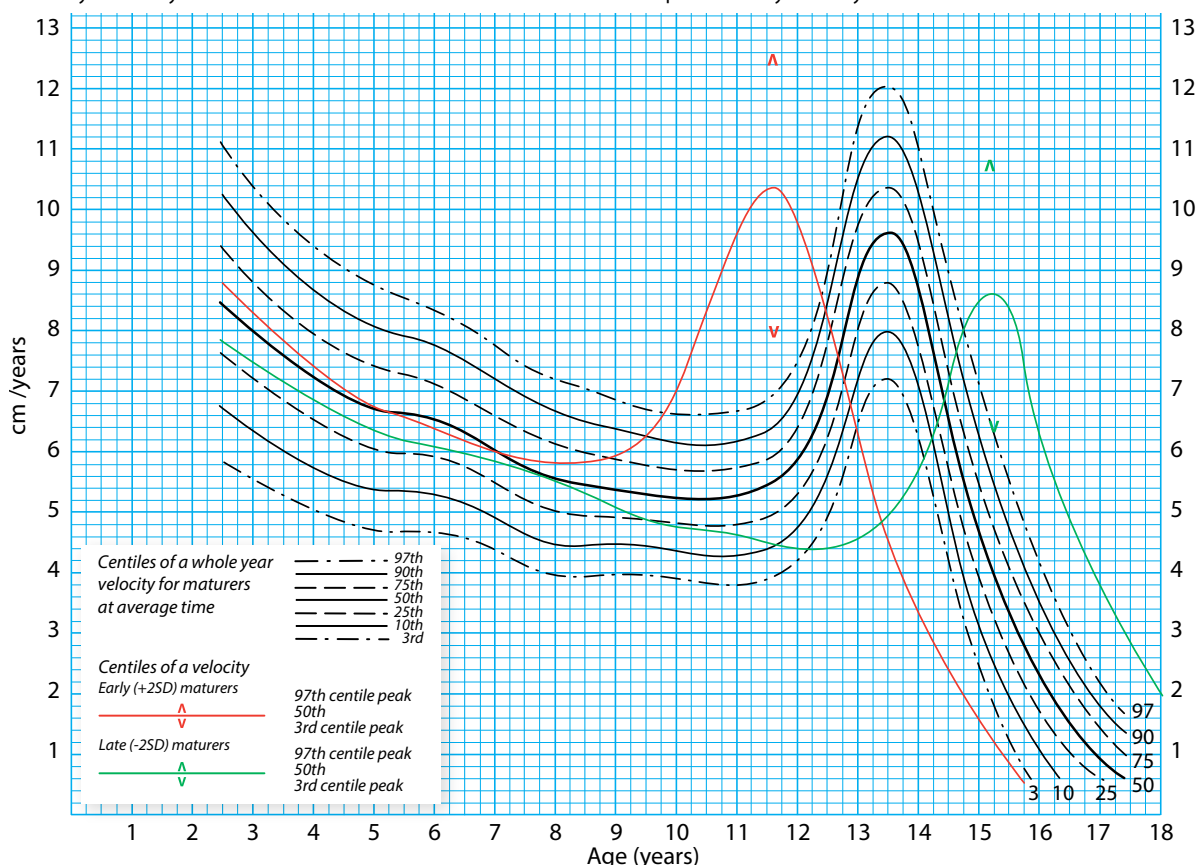
Measuring Technique: The tape should be placed over the eyebrows, above the ears and over the most prominent part of the occiput taking a direct route. A paper tape is preferable to plastic, which stretches unacceptably under tension. The maximum measurement should be recorded to the nearest 0.1 cm.



Adapted from World Health Organization (WHO) head circumference for age chart, and Nellhaus G, *et al.* 1968.^{1,2}

Height Velocity

The standards are appropriate for velocity calculated over a whole year period, not less, since a smaller period requires wider limits (the 3rd and 97th centiles for a whole year being roughly appropriate for the 10th and 90th centiles over six months). The yearly velocity should be plotted at the mid-point of a year. The centiles given in black are appropriate to children of average maturational tempo, who have their peak velocity at the average age for this event. The red line is the 50th centile line for the child who is two years early in maturity and age at peak height velocity, and the green line refers to a child who is 50th centile in velocity but two years late. The arrows mark the 3rd and 97th centiles at peak velocity for early and late maturers.



Adapted from Tanner J, *et al.* 1985.³ © Reproduced by permission of Castlemead Publications.

Height Percentile

Mother's Height

Father's Height

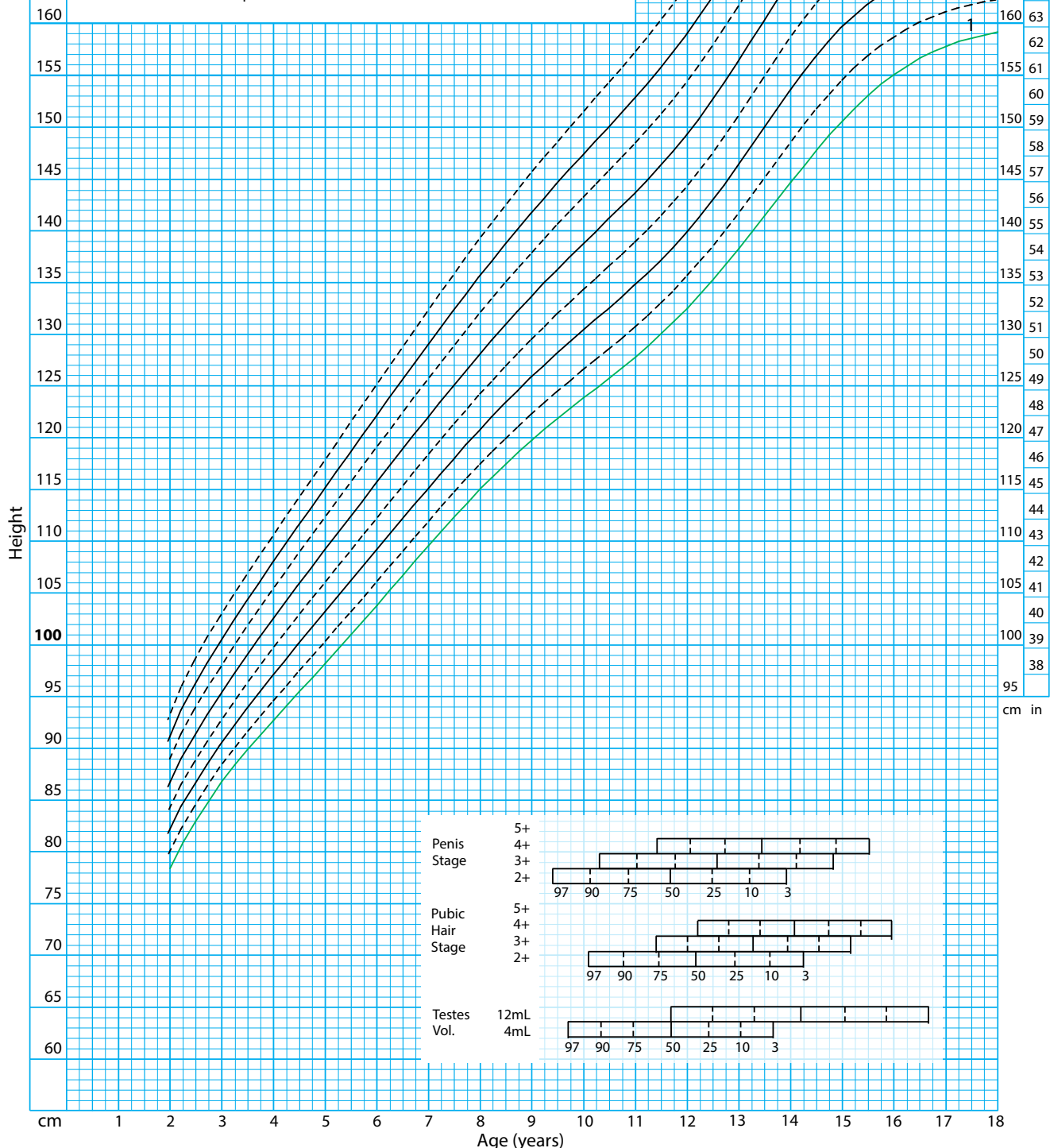
Body Surface Area (BSA) Calculation⁶

$$BSA (m^2) = \sqrt{\frac{Ht (cm) \times Wt (kg)}{3600}}$$

Supine Length (recommended up to the age of 3 so that there is overlap with standing height at 2 to 3) is taken on a flat surface, with the child lying on his back. One observer holds the child's head in contact with a board at the top of the table and another straightens the legs and turns the feet upward to be at right angles to the legs and brings a sliding board in contact with the child's heels.

Standing Height (recommended from age 2 onwards) should be taken without shoes, the child standing with his heels and back in contact with an upright wall. His head is held so that he looks straight forward with the lower borders of the eye sockets in the same horizontal plane as the external auditory meati (i.e. head not with the nose tipped upward). A right-angled block (preferably counter-weighted) is then slid down the wall until its bottom surface touches the child's head and a scale fixed to the wall is read.

During the measurement the child should be told to stretch his neck to be as tall as possible, though care must be taken to prevent his heels coming off the ground. Gentle but firm pressure upward should be applied by the measurer under the mastoid processes to help the child stretch. In this way the variation in height from morning to evening is minimised. Standing height should be recorded to the last completed 0.1 cm.



Adapted from CDC stature for age clinical chart, and Tanner J, *et al.* 1985.^{3,4} © Reproduced by permission of Castlemead Publications.

$$C = M [1 + L.S.Z]^{1/L}$$

Where C is the centile required, LMS are those parameters published by CDC and Z is the standard deviation equivalent to the centile required.⁵

1st Centile calculated by Associate Professor Peter Davies, Children's Nutrition Research Centre, Brisbane.

Weight should be taken in the nude, or as near thereto as possible. If a surgical gown or minimum underclothing (vest and pants) is worn, then its estimated weight (about 0.1 kg) must be subtracted before weight is recorded. Weights are conventionally recorded to the last completed 0.1 kg above the age of six months. The bladder should be empty.

Figure 1 is a line graph showing the relationship between Age (years) on the x-axis and kg/m^2 on the y-axis. The x-axis ranges from 2 to 18 years, and the y-axis ranges from 12 to 31 kg/m^2 . Four curves are plotted, labeled 5, 50, 85, and 95, representing different values of a parameter. All curves show a minimum value around age 6-8 years and then increase. The curve for 95 is the highest, followed by 85, 50, and 5 is the lowest.

Age (years)	5	50	85	95
2	14.5	16.5	18.0	19.5
4	13.8	15.8	17.2	18.0
6	13.5	15.5	17.0	18.5
8	13.5	15.5	17.5	19.5
10	13.8	16.0	18.5	21.5
12	14.5	17.0	20.0	24.0
14	15.5	18.5	22.0	26.5
16	16.5	20.0	24.0	28.5
18	17.5	21.5	25.5	29.5

[illegible]

Stages of Puberty

Ages of attainment of successive stages of pubertal sexual development are given in the Height Percentile chart.³

The stage Pubic Hair 2+ represents the state of a child who shows the pubic hair appearance stage 2 but not stage 3 (see below).

The centiles for age at which this state is normally seen are given, the 97th centile being considered as the early limit, the 3rd centile as the late limit. The child's puberty stages may be plotted at successive ages.⁸ Testis sizes are judged by comparison with the Prader orchidometer.⁹

Genital (Penis) Development

Stage 1. Pre-adolescent. Testes, scrotum and penis are of about the same size and proportion as in early childhood.

Stage 2. Enlargement of scrotum and testes. Skin of scrotum reddens and changes in texture. Little or no enlargement of penis at this stage.

Stage 3. Enlargement of the penis which occurs at first mainly in length. Further growth of the testes and scrotum.

Stage 4. Increased size of penis with growth in breadth and development of glans. Testes and scrotum larger; scrotal skin darkened.

Stage 5. Genitalia adult in size and shape.

Pubic Hair Development

Stage 1. Pre-adolescent. The vellus over the pubes is not further developed than that over the abdominal wall, i.e. no pubic hair.

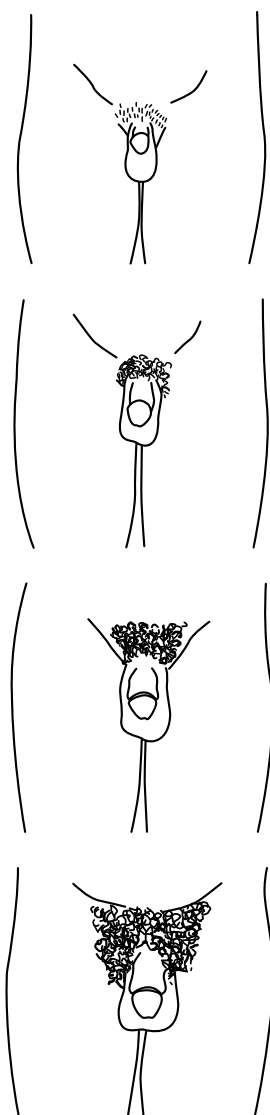
Stage 2. Sparse growth of long, slightly pigmented downy hair, straight or slightly curled at the base of the penis.

Stage 3. Considerably darker, coarser and more curled. The hair spreads sparsely over the junction of the pubes.

Stage 4. Hair now adult in type, but area covered is still considerably smaller than in the adult. No spread to the medial surface of thighs.

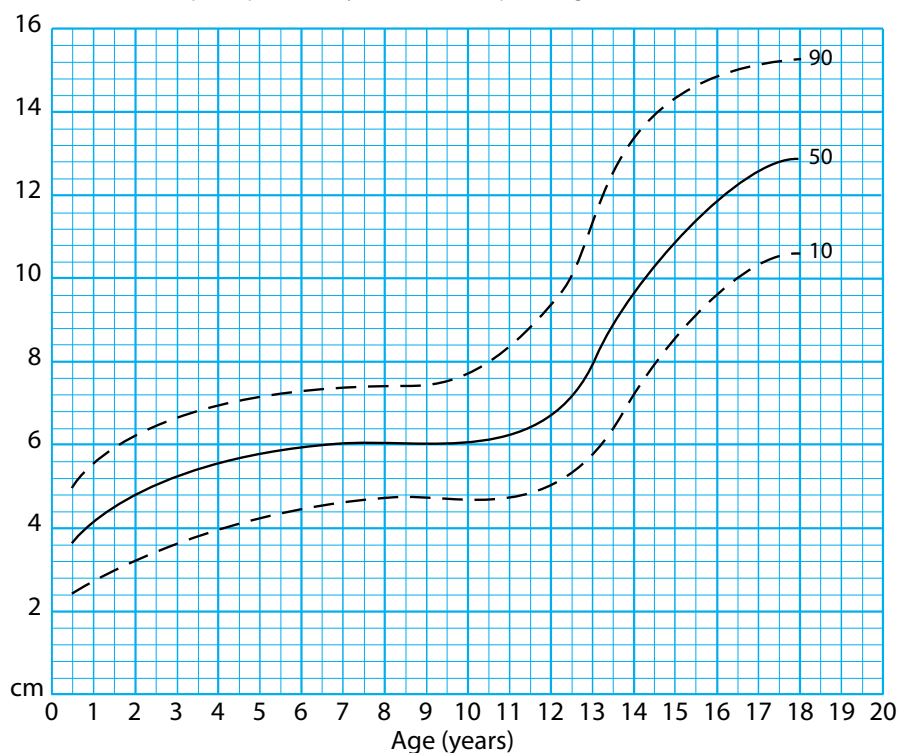
Stage 5. Adult in quantity and type with distribution of the horizontal (or classically 'feminine') pattern. Spread to medial surface of thighs but not up linea alba or elsewhere above the base of the inverse triangle (spread up linea alba occurs late and is rated stage 6).

Genital and Pubic Hair Development Stages



Stretched Penile Length

Measured from the pubo-penile skin junction to the tip of the glans.¹⁰



Adapted from Schonfeld WA and Beebe GW, 1942.¹⁰

The opinions, views and recommendations expressed in this publication do not necessarily reflect those of the sponsor or publisher. Pfizer Australia accepts no responsibility for treatment decisions based upon these charts.

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References: 1. World Health Organization (WHO). Head circumference for age: Birth to 5 years (percentiles). Boys chart. 2. Nellahus G. *Pediatrics*. 1968;41:106–14. 3. Tanner JM and Davies PS. *J Pediatr*. 1985;107:317–329. 4. U.S. Centres for Disease Control and Prevention (CDC). Stature for age and weight for age (clinical charts with 3rd and 97th percentiles). Boys: 2 to 20 years. 5. U.S. Centres for Disease Control and Prevention (CDC). Growth chart data files. Available at: <https://www.cdc.gov/growthcharts/cdc-data-files.htm>. Accessed August 2025. 6. Mosteller RD. *N Engl J Med*. 1987;317:1098. 7. U.S. Centres for Disease Control and Prevention (CDC). BMI for age (clinical charts with 3rd and 97th percentiles). Boys: 2 to 20 years. 8. Tanner JM. *Growth at adolescence*, 2nd Ed. Oxford: Blackwell. 1962. 9. Zachmann M, et al. *Helv Paediatr Acta*. 1974;29:61–72. 10. Schonfeld WA and Beebe GW. *J Urol*. 1942;48:759–777.

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