**Data Recording**

| Measurement 1 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 2 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 3 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 4 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 5 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 6 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 7 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 8 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 9 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

| Measurement 10 |
|---|
| Recording Date |
| Weight |
| Length/Height |
| Location |
| Health worker name |

# GIRLS
# UK Growth chart 2-18 years

RCPCH Royal College of Paediatrics and Child Health
Leading the way in Children's Health

DH Department of Health

healthier scotland

Anyone who measures a child, plots or interprets charts should be suitably trained or supervised. For further information and training materials see fact sheet and presentation on www.growthcharts.rcpch.ac.uk

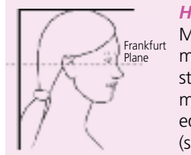
This chart is mainly intended to assess the growth of school age girls. It combines data from the UK 1990 growth reference for children at birth and from 4 -18 years[1], with the WHO growth standard for children aged 2 years to 4 years[2]. The growth of children under 2 years of age should be plotted on the more detailed UK-WHO 0-4 years growth charts.

As well as simply using this chart for plotting growth data, it also includes a number of new features which you may wish to use to help interpret the growth data.

- birth centile plotting scale
- BMI look-up and plotting grid
- scales to estimate adult height and mid-parental centile
- guide to assessing puberty

### Measurement procedure

Accurate measurement is essential and shoes must be removed for all measurements




***Height:***
Measure height recorded to the last millimetre. A correctly installed stadiometer or approved portable measuring device is the only equipment that can be reliably used (see illustration). If a child cannot stand, measure lying down, using an approved length measuring device and plot as for height.

Position head and feet as illustrated with child standing as straight as possible.

***Weight:***
Remove heavy clothing and shoes and weigh using class III clinical electronic scales in metric setting.

### Plotting

Plot each measurement by placing a small dot where a vertical line through the child's age crosses a horizontal line through the measured value.

The lettering on the charts ('weight', 'length' etc.) sits on the 50th centile to provide orientation.

### Birth centile plotting scale

The chart starts at age 2 years, but there is a plotting scale on the left of the chart where for term infants, birth weight (and if measured, length) can be plotted to allow comparison of the birth centile with later growth.

Please place sticker (if available) otherwise write in space provided.

Name: _____

NHS/CHI No: | | | | | | | | | | |

Hospital No: | | | | | | | | | | |

Date of Birth: | | / | | | / | | | | |

## *When is further assessment required? If any of the following:*

- Where weight or height or BMI is below the 0.4th centile, unless already fully investigated at an earlier age.
- If the height centile is more than 3 centile spaces below the mid-parental centile.
- A drop in height centile position of more than 2 centile spaces, as long as measurement error has been excluded.
- Smaller centile falls or discrepancies between child's and mid-parental centile, if seen in combination, or if associated with possible underlying disease.
- If there are any other concerns about the child's growth.

## *Adult Height Predictor*

This allows you to predict the child's adult height based on their current height, but with a regression adjustment to allow for the tendency of very tall and short children to be less extreme in height as adults. Four girls out of five will have an adult height within ±6 cm of the predicted adult height.

### Instructions for use

Plot the most recent height centile on the centile line on the Adult Height Predictor (on the flap to the right of the height centile chart) and read off the predicted adult height for this centile.

## *Mid-Parental Centile*

The 'mid-parental centile' is the average adult height centile to be expected for all children of these parents. It incorporates a regression adjustment to allow for the tendency of very tall and short parents to have children with less extreme heights. Comparing this to the child's current height centile can help assess whether the child's growth is proceeding as expected. The larger the discrepancy between the two, the more likely it is that the child has some sort of growth disorder. Most children's height centiles (nine out of ten) are within ±two centile spaces of the mid-parental centile, and only 1 percent will be more than three centile spaces below.

### Instructions for use

The Mid-parental Centile Comparator is on the flap to the right of the height centile chart. If possible measure both parents' heights, or else use reported heights. Plot their heights on the Mother's and Father's height scales. Join the two points with a line between them. The mid-parental centile is where this line crosses the centile line in the middle. Compare the mid-parental centile to the child's current height centile, plotted on the adult height predictor centile scale.

### Mid-parental target height

This can be obtained by plotting the mid-parental centile on the main chart at age 18 and reading off the corresponding height. Four girls out of five will have an adult height within ±7 cm of this target height. However the predicted adult height (above) is usually closer than mid-parental target height to the child's final height.

## *Pubertal Assessment*

The puberty 'phase' may be ascertained through simple questions about the appearance of secondary sexual characteristics as well as by clinical examination.

### By history from parents, carers or young person

| **Pre-puberty** (Tanner stage 1) | **In Puberty** (Tanner stages 2-3) | **Completing Puberty** (Tanner stages 4-5) |
|---|---|---|
| No signs of pubertal development | Any breast enlargement pubic or armpit hair | Started periods with signs of pubertal development |

### Is the timing of puberty normal?

The three vertical black lines (puberty lines) on the right hand page (8-18 years) of the chart indicate the normal age limits for the phases of puberty described above.

- Girls with measurements plotted on the left page will usually be in the 'Pre-puberty' phase. Puberty before 8 years in girls is likely to be precocious and further assessment is necessary.
- Between 8-13 years most girls will be either 'Pre-puberty' or 'In puberty'. If there are no signs of puberty by 13 years, then puberty is delayed and further assessment is indicated.
- From 13-16 years most girls will be either 'In puberty' or 'Completing puberty'.
- After 16 years girls will usually be 'Completing puberty'. If this is not the case, maturation is delayed and further assessment may be needed.

### Growth patterns before and during puberty

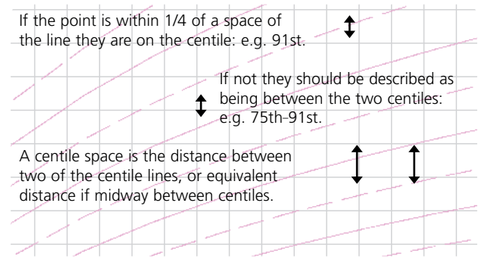
Successive height measurements can show wide variation, because it is difficult to measure height accurately. If there are concerns it is useful to measure on a few occasions over time. Assessing growth during puberty is complex because the age when puberty starts varies.

### What does a height in the shaded area below the 0.4th centile mean?

This chart provides some extra guidance about the lower limit (0.4th centile) for height in girls 8-13 years. If a plot falls within the shaded area on the height chart between 8 and 13 years, pubertal assessment will be required and mid-parental centile should be assessed.

If they are **In** puberty or **Completing** puberty, they are below the 0.4th centile and should be referred. In most instances a **Pre-**pubertal girl plotted in this area is growing normally, but comparison with the mid-parental centile and growth trajectory will assist the assessment of whether further investigation is needed.

### Centile terminology




## *Body Mass Index (BMI) centile look-up*

If weight is above the 75th centile or if weight and height centiles differ, the BMI centile should be calculated, as the BMI centile is the best indicator of thinness and fatness. The BMI look-up allows you to read off the BMI centile, accurate to a quarter of a centile space. There is a BMI centile grid at the top of the growth chart where the centiles for children with high or low values can be plotted.

### Instructions for use

1. Note the weight and height centiles from the growth chart.
2. Plot the weight centile against the height centile on the the BMI look-up.
3. If between centiles, read across in this position.
4. Read off the corresponding BMI centile from the pink slanting lines.
5. Plot the centile in the BMI grid at the top of the growth chart at the appropriate age.


### What does a high or low BMI mean?

A BMI above the 91st centile suggests overweight. A child above the 98th centile is very overweight (clinically obese). BMI below the 2nd centile is unusual and may reflect undernutrition, but may simply reflect a small build.


**References**

1. Freeman JV, Cole TJ, Chinn S, Jones PRM, White EM, Preece MA. Cross sectional stature and weight reference curves for the UK, 1990. Arch Dis Child 1995; 73:17-24.
2. www.who.int/childgrowth/en

For further relevant references see fact sheet downloadable from www.growthcharts.RCPCH.ac.uk





Harlow Printing Limited Tel: 0191 455 4286 www.healthforallchildren.co.uk
Manufacture 4 Jan. 13 UK2-18A4G Issue 2

# GIRLS
## 2-8 years

Very Overweight (obese)
Overweight
BMI CENTILE FROM LOOKUP OVERLEAF

99.6th
98th
91st
75th
50th
25th
9th
2nd
0.4th

Transit point from UK-WHO to UK90 data.

Age in years

Birth centiles

Length: 99.6th 56, 98th 54, 91st 52, 75th 50, 50th 48, 25th 46, 9th 44cm

Weight: 99.6th 5, 98th 4.5, 91st 4, 75th 3.5, 50th 3, 25th 2.5, 9th 2, 2kg



# GIRLS
## 8-18 years

Very Overweight (obese)
Overweight
BMI CENTILE FROM LOOKUP OVERLEAF

Puberty starting before 8 years is precocious

Puberty is delayed if no signs are present by 13 years

Puberty completing after 16 years is delayed

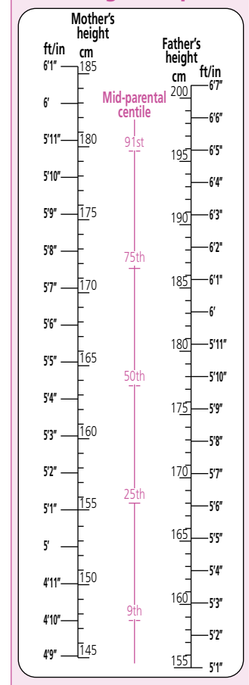
Pre-puberty 0.4th

For all Children plotted in this shaded area see instructions.

Age in years



## Parent Height Comparator



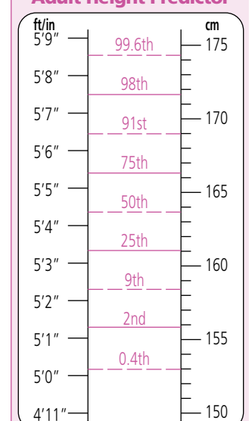

**Father's height:** _____

**Mother's height:** _____

**Mid-parental Centile**

- Plot the the Mother's and Father's heights on their respective scales and join the two points with a line. The mid-parental centile is where this line crosses the centile line in the middle.
- Compare the mid-parental centile to the child's current height centile, plotted on the adult height predictor centile scale.
- Nine out of ten children's height centiles are within ±two centile spaces of the mid-parental centile.

### Adult Height Predictor




**Predicted Adult Height**

- Plot the most recent height centile on the relevant centile line and
- Read off the predicted adult height for this centile.
- Four out of five children will be within ±6 cm of this value.