Using the new UK–World Health Organization 0–4 years growth charts

Information for healthcare professionals about the use and interpretation of growth charts
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Introduction

New UK–World Health Organization (WHO) 0–4 years growth charts have been introduced in England for all new births from May 2009. The charts, which have been developed for the Department of Health by the Royal College of Paediatrics and Child Health, are based on the growth of breastfed infants and replace previous charts that were based on the growth of predominantly formula-fed babies.

The new charts have been constructed using the WHO standards for infants aged 2 weeks to 4 years. These used data from healthy children from around the world with no known health or environmental constraints to growth who were breastfed exclusively for at least 4 months and partially for one year. For the first time, they provide a description of optimal growth which will help to establish breastfeeding as the norm. The WHO found that infants worldwide have very similar patterns of linear growth; and the new charts describe the ideal patterns of growth that we should aspire to for all UK children, whatever their ethnic origin and however they are fed in infancy. These have been combined with birth data for gestations 23 to 42 weeks from the UK 1990 growth reference, as the WHO dataset did not include preterm infants.

The new charts will have an impact on the interpretation of weight patterns in children. UK children match the charts well for length and height at all ages and for weight in the early weeks, but after the age of 6 months roughly twice as many children will be above the 98th centile for weight compared with the UK 1990 charts, and only about 1 in 200 children will be below the 2nd centile.

This leaflet provides instructions particularly for users of the personal child health record (PCHR) charts; a shorter version of these instructions can also be found on the A4 chart.
Key new features of the new UK–WHO growth charts:

- A separate preterm section for infants of 32 to 36 weeks’ gestation.
- A new low birthweight chart available for preterm infants born before 32 weeks’ gestation.
- No centile lines between 0 and 2 weeks.
- The 50th centile has been de-emphasised.
Weighing and measuring

**Weight:** use only class III clinical electronic scales in metric setting. For children up to 2 years, remove all clothes and nappy; children older than 2 years should wear minimal clothing only. Always remove shoes.

**Length:** (before 2 years of age): proper equipment is essential (length board or mat). Measurers should be trained. The child's shoes and nappy should be removed.

**Height:** (from 2 years): use a rigid rule with T piece, or stadiometer; the child's shoes should be removed.

**Head circumference:** use a narrow plastic or paper tape to measure where the head circumference is greatest. Any hat or bonnet should be removed.
When to weigh and measure length

- Babies should be weighed in the first week as part of the assessment of feeding and thereafter as needed.
- Length or height should be measured whenever there are any worries about a child’s weight gain, growth or general health.
- If parents wish, or if there is professional concern, babies can be weighed at 6–8 weeks, 12 and 16 weeks. Babies should usually be weighed at 12–13 months at the time of routine immunisations. Measurements need to be interpreted in relation to length, growth potential and any earlier measurements of the baby.
- If there is concern, weigh more often; however, weights measured too closely together are often misleading, so babies should be weighed no more than:
  - once a month from 2 weeks to 6 months of age
  - once every two months from 6 to 12 months of age
  - once every three months over the age of 1 year.

However, most children do not need to be weighed this often; families should be reassured that they can attend for advice without having their baby weighed.

When to measure head circumference

Head circumference should be measured around birth, at the 6–8 week check and at any time after that if there are any worries about the child’s head growth or development.
Plot each measurement on the relevant chart by drawing a small dot in pencil 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, providing orientation for ease of plotting (see page 2).

For babies born at term (37 weeks or later)

Plot birthweight (and, if measured, length and head circumference) at age 0 on the 0–1 year chart. The coloured arrows at age 0 represent UK birthweight data and show the child’s birth centile.
Weight gain in the early days varies a lot from baby to baby, so there are no lines on the chart between 0 and 2 weeks. Weight collected in this period should still be plotted but for interpretation should be compared with birth weight (see page 11).

For preterm infants

* A separate low birthweight chart is available for infants of less than 32 weeks' gestation and any other hospitalised neonate or infant requiring detailed assessment.

* For healthy infants born after 32 weeks and before 37 weeks, plot all measurements in the preterm section (to the left of the main 0–1 year chart) until 42 weeks' gestation, then plot on the 0–1 year chart using gestational correction.

* The preterm section can also be used to assess the relative size of infants at the margin of 'term' (e.g. 37 weeks' gestation), but these measurements should also be plotted at age 0 on the 0–1 year chart.