

## NEW ZEALAND – WORLD HEALTH ORGANIZATION GROWTH CHARTS



New Zealand Government



## FACT SHEET 2

## ABOUT THE NZ-WHO GROWTH CHARTS

*This information sheet is based on original materials developed by and copyright © 2009 Royal College of Paediatrics and Child Health, United Kingdom. It was adapted by the New Zealand Ministry of Health in July 2010.*

Before 2008, the growth charts used by Well Child nurses and Tamariki Ora providers, and in the Well Child/Tamariki Ora Healthbook, were based on the growth patterns of a mixture of breast- and bottle-fed babies.

In 2008, new charts were introduced. These were based on growth standards developed by the World Health Organization in 2006. The new charts used the growth patterns of babies that had only been breastfed, and were based on optimal growth, rather than on average growth.

The charts now in the Well Child/Tamariki Ora Healthbook, and in the Health Professionals' Notes (introduced in mid-2010) are based on those developed for the United Kingdom. They continue to use the World Health Organization growth standards, based on the growth patterns of babies that have only been breastfed.

This fact sheet is one of a series that explains how to use the adapted growth charts. All fact sheets are available on the Ministry of Health's website: [www.moh.govt.nz/wellchild](http://www.moh.govt.nz/wellchild)

**Key points**

- The growth charts:
  - are based on growth patterns of babies that have only been breastfed
  - have a number of new features.
- Babies and children should be weighed and measured at each core Well Child/Tamariki Ora check.

**What's in the NZ-WHO growth charts?**

The growth charts include:

- nine centiles, extending from the 0.4th to the 99.6th centile
- no lines for 0–2 weeks of age
- de-emphasised 50th centile
- length/height discontinuity at 2 years
- separate preterm birth section (in the Health Professionals' Notes only, not in the Well Child/Tamariki Ora Health book)
- adult height prediction and BMI lookup (in the Health Professionals' Notes only, not in the Well Child/Tamariki Ora Health book).

Children's weight-gain patterns will appear different to those on the pre-2008 charts:

- no 'dip' on chart at 2 weeks
- weight centiles are slightly lower. This means breastfed babies will be charted as growing normally and babies that are growing too fast will be easier to identify.

The following charts are in the Well Child/Tamariki Ora Healthbook:

- Graph for head circumference for girls 0–2 years
- Graph for weight for girls 0–1 year
- Graph for length for girls 0–2 years
- Graph for weight for girls 1–5 years
- Graph for height for girls 2–5 years
- Graph for head circumference for boys 0–2 years
- Graph for weight for boys 0–1 year
- Graph for length for boys 0–2 years
- Graph for weight for boys 1–5 years
- Graph for height for boys 2–5 years.

The charts can be found on pages 75–84 of the Well Child/Tamariki Ora Healthbook.

The New Zealand Ministry of Health recommends that the amended charts are used for all new births but that there is no need to replot for older children where they already have charts.

**Are these charts accurate for Māori and Pacific children?**

The World Health Organization study found that healthy breastfed babies in a number of countries, no matter what their ethnicity, grew in a similar way, at a similar rate. The UK-adapted growth charts are based on charts developed by the World Health Organization based on that study.

Although Māori and Pacific children were not part of the development of the WHO charts, the charts appear to be appropriate for Māori children. Pacific children are often slightly bigger, but still within the range of normal shown on the charts.

**Why don't we have growth charts that use data from New Zealand children?**

The growth charts being used are based on the growth of healthy breastfed children in optimal conditions from six different countries, rather than just one country. New Zealand was not one of the countries that took part in the WHO study, in which data were collected from around 8500 children. However, the resulting charts are relevant to New Zealand children.

**When should babies and children be weighed and measured?**

Child growth and development should be assessed at each of the eight core Well Child/Tamariki Ora checks. Growth and length/height should be measured to age 5 years, and head circumference measured to age 1 year. Additional growth assessments should be undertaken where there is concern about a child's growth.

**Why are the charts 0–1 and 1–5 years for weight, and 0–2 and 2–5 years for height?**

The 0–1 weight charts enable more plotting space for weight in the first year. The height charts are 2–5 years because babies' and toddlers' length is measured until they are 2 years and because height measurements are taken from 2 to 5.

**Key features of the NZ-WHO growth charts****Term births plotted at age 0**

Average birthweight centiles for term infants are shown at age 0 on the infancy chart for use for all infants born from 37 completed weeks gestation.

**No lines for 0–2 weeks of age**

All infants show different patterns of weight gain immediately after birth and charts cannot allow for this. What is important in the first 2 weeks is looking at weight gain relative to birth weight, not centile position.

**De-emphasised 50th centile**

Sometimes parents expect all 'normal' children to grow along the 50th centile line. However, there are more centile labels and the curve labels sit on the 50th centile to assist orientation when plotting and interpreting.

**Length/height discontinuity at 2 years**

The WHO standard changes from length to height at age 2 years, resulting in a small step-down at age 2 years.

**In Health Professionals' Notes only (not in Well Child/Tamariki Ora Healthbook)**

- Separate preterm birth section: Birthweight curves do not naturally match infancy curves: eg, average weight at 2 weeks of age is not actually the same birthweight at 42 weeks gestation. So in the charts, birthweight for gestation (the preterm section) are in a separate section to be used for infants born from 32 and before 37 weeks.
- Instructions on how to calculate neonatal percentage weight loss.

- A new chart that converts the child's weight and height centiles to a BMI centile, again with no calculations needed.
- More detailed instructions including guidance on plotting.
- An adult height prediction chart that allows approximate prediction of adult height (within 6 cm above or below).

**Further Reading**

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Wright C, Lakshman R, Emmett P, Ong KK. 2008. *Implications of adopting the WHO 2006 Child Growth Standard in the UK: two prospective cohort studies.* Arch Dis Child 93(7): 566-9. 93(7): 566-9

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