NEW ZEALAND – WORLD HEALTH ORGANIZATION GROWTH CHARTS

FACT SHEET 1

WHAT ARE GROWTH CHARTS AND WHY DO WE NEED THEM?

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 breast fed, and were based on optimal growth, rather than on average growth. They were felt to be a better measure of growth, as healthy breastfed babies all around the world, no matter what their ethnicity, grow in a similar way, at a similar rate.

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

Key points

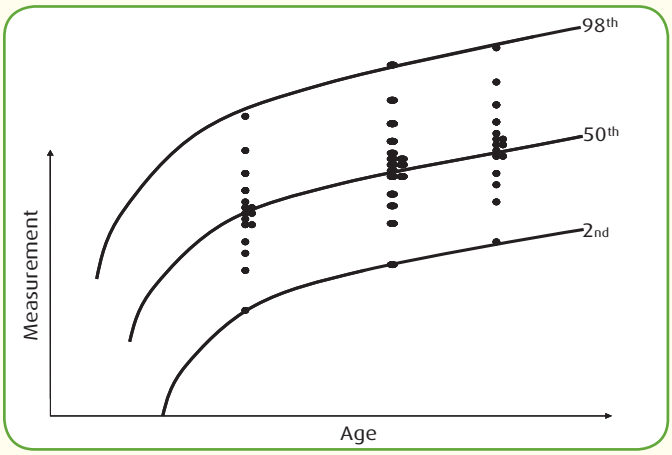
- Growth is an important measure of health and wellbeing.
- Measurements in children can only be evaluated if plotted on a growth chart.
- Growth charts allow a health professional and parent to see at a glance the growth pattern of a child as the child gets older.
- The adapted growth charts use nine centiles.

Historically we have used regular weighing to monitor the sufficiency of infant feeding. In the longer term, growth in height is an index of health and wellbeing, with slow or stunted growth associated with many disorders of childhood. Both acceleration and slowing of head growth can be a sign of important underlying disorders.

Because children grow at varying rates at different ages, we can only understand whether a measurement is normal by comparing it with the normal range of measurements for other children of the same age and gender, and this is what growth charts allow us to do. They enable a child's growth pattern to be assessed over time.

Making a growth chart

These growth charts are constructed using measurements from a large number of children followed up and measured and weighed at different ages. A series of these longitudinal samples of measurements are then used to construct the chart by 'joining the dots' between key points at each age.



What do centile lines mean?

Each line at a particular centile marks the weight or height below which that percent of children of that age and gender fall. For example, 25 percent of children are lighter than the 25th centile for weight or shorter than the 25th centile for height. The 50th centile represents the median (middle) of the population.

Why do the growth charts have new centiles?

The growth charts previously used in New Zealand extended from the 3rd to the 97th centile and used five centiles. The new growth charts extend from the 0.4th to the 99.6th centile and use nine centiles. They are spaced two-thirds of a standard deviation score apart, rather than the previous unit spacing. This is to ensure the centiles are all spaced evenly, and to provide extreme centiles that more effectively identify children truly outside the normal range.

WHO growth charts

All previous growth charts have been based on data from a mixture of breast- and bottle-fed babies, and differences in weight gain were seen between breastfed infants and these previous charts. At the same time it was found that healthy breastfed infants showed very similar growth patterns around the world. The WHO therefore decided to produce charts that set breastfeeding as the norm and described *optimal* rather than average growth, that could be used worldwide.

The process of planning, data collection and analysis took 15 years and charts were finally published in 2006. Infants were only included if they were healthy and born at term, were breastfed exclusively for at least four months, with continued partial breastfeeding for a year and complementary foods started by six months. Mothers had to be non-smoking and living in comfortable economic circumstances.

Data were collected from birth to age five in six countries (USA, Norway, India, Ghana, Brazil, Oman) and very similar growth patterns were found in all six. The chart for birth measurements is based on British children measured around 1990.

Further Reading

De Onis M, Garza C, Victora CG, et al. 2004. The WHO multicentre growth reference study: planning, study design, and methodology. Food Nutr Bull *25(1): S15–S26.*

Wright C, Booth I, Buckler J, et al. 2002. Growth reference charts for use in the United Kingdom. Archives of Disease in Childhood *86:11–14.*