

# Baby Fat

By Dr Warren Lee, Consultant paediatrician at Dr Warren Lee Paediatrics, Growth & Diabetes Centre and Senior Consultant Paediatrician at KKH Endocrinology Service



As a pediatric endocrinologist, parents often bring their children to see me because they feel that one or more of their children are not growing. To their surprise, I sometimes have to tell them that the child they are concerned about is normal or even overweight, while another child in the same family whom parents thought was normal, is actually obese.

So what do we mean by the terms normal, overweight and obese?

Obesity in adults is defined by BMI (the figure given by weight in kg divided by the square of the height or  $BMI = Wt / (Ht)^2$ ). The optimum population BMI is less than 21 and this is particularly true in Asia and Latin America where

the populations are very prone to developing abdominal obesity, type 2 diabetes and hypertension. There are substantial numbers of cohort studies showing that, for individuals, the lowest risk of diabetes, hypertension, and other conditions may be at BMIs less than 21. (James, 2008)<sup>2</sup>. The World Health Organization (WHO) has decided that for western populations, a  $BMI > 30$  defines obesity and  $BMI > 25$  defines overweight. Asians have a different body shape and fat distribution for a given BMI, and in fact each ethnic group is likely to be a little different. In Singapore, the BMI cut-off figures for adults were revised in 2005 : normal weight for height is when BMI is 18-22.9  $kg/m^2$  overweight for adults is from BMI 23-27.5 and obesity is given by a  $BMI > 27.5-40$ , while morbid obesity is when BMI is  $> 40$ .

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Children change in body proportions as they go from infancy to adulthood. An infant or a young child has a relatively long chest and abdomen but short legs in relation to the trunk, but an older child has longer legs in relation to the trunk, so the normal BMI for a child changes with age. A child whose BMI that is less than the 5th percentile is considered underweight, while a BMI between the 85th and 95th percentile is considered to be overweight and above the 95th percentile is considered obese for people 20 years and under. Another way to define obesity is to say that those children who are >120% of the ideal weight for height for a given population are obese.

At the end of the day, it is not actually the weight but the accumulation of fat which presents a risk to health.

Overweight children and adolescents are more likely than non-overweight children and adolescents to have high blood pressure, high cholesterol, and type 2 diabetes mellitus starting in childhood and adolescence. Overweight children and adolescents are also more likely to suffer from asthma, fatty liver, obstructive sleep apnea. Obesity also puts children at long-term higher risk for other debilitating chronic conditions such as stroke; breast,

colon, and kidney cancers; musculoskeletal disorders; and gall bladder disease.. An American study showed that around 80% of children who were overweight at 10 to 15 years of age were obese adults at 25 years of age (Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. N Engl J Med. 1997;337:869–873) .

How do you know if your child is obese? Well first measure the child's height in cm and weight in kg. The BMI =Wt/(Ht)<sup>2</sup>.

Next, look up the relevant tables.

1. The US Centres for Disease Control have BMI for age charts for children two to 20 years old. Their website address is [www.cdc.gov/healthyweight/assessing/bmi/childrens\\_bmi](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi).

2. For Singaporean children six years and older, look up the Health Promotion Board's website: [www.hpb.gov.sg/uploadedFiles/HPB\\_Online/News\\_and\\_Events/News/2010/fact%20sheet%20bmi.pdf](http://www.hpb.gov.sg/uploadedFiles/HPB_Online/News_and_Events/News/2010/fact%20sheet%20bmi.pdf), or

3. If you want to know how your child's ideal body weight for height, try Ministry Of Education's website: e.g. [www.moe.gov.sg/education/programmes/holistic-health-framework/files/weight-height-table-boys.pdf](http://www.moe.gov.sg/education/programmes/holistic-health-framework/files/weight-height-table-boys.pdf)

## What if your child is overweight or obese?

Consider your family's risk profile. If there is a family history of Type 2 diabetes mellitus or mum had diabetes during pregnancy (gestational diabetes or pre-existent diabetes in pregnancy), if the child's birth weight was lower than expected (small for gestational age) or the child was a big baby (defined as >4kg at term) or if mummy had a history of anorexia, then the child is particularly at risk. If your child is severely overweight or you can see an area of dark skin around the neck, the armpits or between the thighs, your child may benefit from a formal screening, including tests for high cholesterol, fatty liver, blood pressure, diabetes and even sleep apnoea and asthma. If diabetes is suspected, then an oral glucose tolerance test and HbA1c and not just a fasting glucose is advised. Children with impaired glucose tolerance and diabetes typically will have normal fasting glucose levels even when their post meal glucose levels have started to rise to abnormal levels.

If the child is not doing much exercise, then start the child on a consistent and appropriate exercise regime which may be as simple as ensuring enough playground running around time. If the child is already into sport, remember that weight loss requires consistency. Calories expended are a function of exercise intensity, duration and consistency. A child starting out an exercise programme may not manage a high intensity, so weight loss will only happen if the duration of exercise is long enough. For example, at walking pace, we may expect to burn 0.5 kcal/kg/km of walking, but if we were running, we could be burning as much as 1 kcal /kg/km, depending on our pace. As we become fitter, we will be able to burn off more calories in the same time, but we all have to start somewhere, so don't put it off. It is important for us to model behaviours we want our children to learn. So mum and dad should exercise too, especially since about 40-80% of obese children will have at least one obese parent.

However, we need to remember that weight gain and weight loss is a function of caloric intake and output. A dietitian's help may be necessary to work out how much is really only needed for a normal child of the same age.

It is sad but true that some people may gain weight more easily than others. Many theories have been put forward as to why there is a difference in rates of metabolism and the propensity to gain weight. Some people have blamed viruses, otherwise have looked into different levels of brown fat, and yet others find explanations in our gut bacteria and our mitochondria. Whatever the reason, if you are overweight or obese, you should try to lose weight and also prevent excessive weight gain.

Nevertheless, if you are one of those people who loves food, then there is no choice if your child is very young. Remember that childhood obesity can start during infancy. Not all children can easily lose that chubby infant look.

