

Growth, feeding & nutrition related issues in children with Down's syndrome

Growth

Children with Down syndrome have a different pattern of growth to that of the general population, their average height is shorter, their head circumference is smaller and their growth rate is slower between the ages of 3months - 3years. Adolescents with Down syndrome do not have the same growth spurt and tend to have a lower resting metabolic rate of 10-15% than the general population which is one of the factors that can predispose them to excess weight gain.

As like all other children it is essential that growth in children with Down syndrome is carefully monitored. There are specific growth charts available for children with Down syndrome; they describe typical growth, not necessarily ideal growth. Your doctor, public health nurse and dietitian can discuss your child's growth with you.

Feeding

Feeding and drinking difficulties can occur in children with Down's syndrome due to a smaller oral cavity, low muscle tone in the facial muscles and teeth appearing at a later stage. The tongue may also appear larger due to a high arched palate and reduced muscle tone in the tongue. Many children are also mouth breathers due to smaller nasal passages and may have difficulties coordinating sucking, swallowing & breathing whilst feeding. A of the above factors can impact feeding skills and therefore early intervention by the relevant health professionals is vital (Speech & Language Therapy & Dietitians if there are any concerns with weight gain, weaning etc.). Despite this the majority of children will be independent feeders by early childhood. Some children will still have problems with chewing, poor lip seal, choking & gagging on food. A range of food textures should be given to help develop oromotor skills. Children with Down's syndrome often have increased oral sensitivity, interfering with the acceptance of new foods, and a high incidence of aspiration, which is possibly related to the high incidence of respiratory disease. As for the general population solids should be introduced to a baby's diet between 17-26 weeks. If weaning is delayed beyond 26 weeks, in particular the introduction of iron rich foods, there may be a risk of iron deficiency anaemia. A wide variety of both foods, flavours and textures should be encouraged.

Nutrition related issues:

- **Constipation**

Children with Down syndrome have generalized low muscle tone which predisposes them to constipation. The onset of walking & improvement in abdominal muscle tone can help to alleviate difficulties with constipation. Including sufficient fluids and age appropriate amounts of fibre rich foods can help manage constipation but often laxatives are also required. Some children can have difficulty drinking sufficient fluids so including foods with a high water content (yogurt, fruit, yogurt drinks, smoothies etc.) can help. Including plenty of fruit, vegetables, pulses, wholegrain cereals and wholegrain bread will increase fibre content but be cautious of giving too much fibre particularly to younger infants which can lead to uncomfortable gastrointestinal side effects. Current recommendations for children 2 years of age & older for fibre is their age in years plus 5 grams a day (e.g. a 4year old needs 9g fibre per day).

- **Undernutrition secondary to heart defects**

40-50% of babies with Down syndrome have congenital heart defects ranging from a heart murmur to more severe conditions requiring cardiac surgery. Infants requiring cardiac surgery will benefit from nutritional support prior to and post corrective cardiac surgery as they often experience fatigue whilst feeding and

therefore inadequate food intake and poor weight gain. Paediatric dietitians can advise on whether high calorie formulas or supplements may be needed in addition to advising on increasing the calorie & protein content of your child's diet. The dietitian will also advise on feeding routine & schedules. At times it is not possible to meet all of your child's nutritional needs by mouth and a feeding tube may be recommended. Feeding tubes can be temporary (through the nasal passage e.g. nasogastric tube) or more permanent (directly into the stomach through the abdominal wall e.g. PEG tube). Children are often allowed to continue to eat as much as they are able and the feeding tube will be used to make up the shortfall. Various tube feeds are available and your dietitian will advise on the most suitable one for your child's nutritional needs.

- **Gastro-oesophageal reflux (GOR)**

GOR is one of the most common gastrointestinal problems in childhood and is defined as the passage of gastric contents into the oesophagus with or without regurgitation & vomiting. Many babies with & without Down syndrome have GOR. Once diagnosed first line advice focuses on frequent small feeds (usually no more than 5oz per feed if bottle feeding), keeping the infant upright after feeding and avoiding tight fitting clothing. Anti-reflux formula and feed thickeners decrease visible regurgitation episodes but often not the reflux itself. 30-40% of infants with GOR resistant to treatment have cow's milk allergy, with symptoms significantly improving on a cow's milk protein free diet. Advice should be given on suitable formula's (extensively hydrolysed or amino acid based) for formula fed infants and maternal cow's milk exclusion for breastfed infants. Pharmacological therapies may also be recommended by your doctor such as the use of medicines such as zantac, losec etc.

- **Food Allergies & Intolerances**

Some parents often wish to exclude cow's milk from their child's diet due to symptoms such as a blocked or runny nose, irritability or colic. However, cow's milk has not been scientifically proven to increase mucous production and there is no reason to exclude cow's milk from your child's diet on this basis alone. Unsupervised dietary restrictions can affect a child's growth and bone health leading to nutritional deficiencies and poor growth. Prevalence of food allergies (IgE mediated) in Irish children is approximately 5% whereas the prevalence of non IgE mediated or delayed food allergies is unknown.

- **Infection**

Infants and children with Down syndrome can be more vulnerable to infections, in particular chest, ear, nose, throat & eye infections. Repeated infections requiring antibiotics can impact a child's appetite and gut flora. The inclusion of a daily probiotic (whether yogurt based, yogurt based drink or probiotic capsule / liquid / drops) can help promote growth of healthy bacteria in the gut following a course of antibiotics. Probiotics should be given for a minimum of four weeks.

