Toddlers 1-3 years

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Section 8: Toddlers 1 – 3 years

Aim: To encourage and support parents in providing a safe and appropriate dietary intake for healthy development and lifelong eating behaviours.

Key points

<table>
<thead>
<tr>
<th>Table 1: Key points</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Healthy eating is important as it provides the energy and nutrients needed for growth and development.</td>
</tr>
<tr>
<td>● Offering a variety of healthy foods develops a sense of taste, acceptance and enjoyment of different foods whilst instilling positive health-promoting attitudes.</td>
</tr>
<tr>
<td>● All foods offered should be safe, hygienically prepared and served in suitable quantities, sizes and textures.¹</td>
</tr>
<tr>
<td>● Ensuring safe regular physical activity is undertaken will help to instil a healthy active lifestyle preventing overweight and obesity in later life.²</td>
</tr>
</tbody>
</table>

Overview

The toddler years (between the ages of one and three), present a busy time for children as they begin to explore life independently. It is a time when children are learning eating behaviours, skills, knowledge and attitudes relating to food. Providing appropriate amounts of a variety of nutritious foods and encouraging plenty of physical activity in both a supportive and safe environment for the toddler will assist in building life-long healthy eating and physical activity practices which are essential for optimal growth and development.³

Compared to younger infants, toddlers grow at a slower rate and often have a reduced appetite. Developmentally they are at a stage where independence is very important to them and food refusal can provide a sense of control. These reasons can make meal and snack time challenging for parents and carers who want to provide a healthy start to life.³

Fussy eating is very common in toddlers and can be considered a normal part of their development. Parental role modelling is particularly important during these years.

Generally, toddlers will consume as much food as they require, satisfying their hunger. The parent-child feeding relationship can be complex at this time and needs patience and dedication. It is the responsibility of the parent to offer food and the child’s responsibility to decide how much food they will eat.⁴
Recommendations for practice

Parents and carers can help children establish positive eating habits by setting regular meal patterns, modelling positive food behaviours and providing a wide range of tastes and textures in appropriate amounts. Developing these healthy eating patterns will reduce the risk of lifestyle related chronic diseases in later life. Parents and caregivers are encouraged to:

- Offer a variety of fruits, vegetables, cereals and foods from the milk, yoghurt, cheese and/or alternatives food group with different texture and flavour.
- Limit foods containing saturated fat and added salt and sugar.
- Offer small healthy snacks in-between meals as a toddler’s stomach is only small and fills quickly.
- Encourage physical activity in a safe, supervised and nurturing environment.
- Provide water and avoid sweet drinks such as fruit juice, sports drinks, cordials and soft drinks.
- All drinks (including breastfeeds) should be offered to toddlers after their meal to prevent filling up on fluids.
- Incorporate the toddler into the family meal setting.
- Allow toddlers to self-feed at the beginning of the meal/snack before they tire.

Understanding how children approach eating

It is important to understand the bigger picture of normal toddler development when assessing nutritional needs. During the toddler years, children will:

- want to explore and play; they may feel there are more exciting things to do than eating
- want some form of control in their lives and choosing not to eat is a way they can assert themselves; “no” can become their favourite word
- have small appetites and a routine of small frequent meals and snacks are a better option than three larger meals per day.
- have a smaller appetite compared to when they were infants as their rate of growth slows down
- have likes and dislikes and will be very firm about them
- have bouts of independence and dependence where they can self-feed with no assistance one day then want to be fed by their care giver the next.
### Table 2: Typical development characteristics for toddlers in relation to eating

<table>
<thead>
<tr>
<th>Age</th>
<th>Physical characteristics</th>
<th>Social/personal characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 – 18 months</td>
<td>Uses fingers to grasp and release food</td>
<td>Interested and wants foods others are eating</td>
</tr>
<tr>
<td></td>
<td>Holds spoon and places in mouth but coordination is poor</td>
<td>Loves to perform and receive attention</td>
</tr>
<tr>
<td></td>
<td>Drinking from a cup will certainly be attainable but release is poor</td>
<td></td>
</tr>
<tr>
<td>18 months – 2 years</td>
<td>Decrease in appetite</td>
<td>Routine is important</td>
</tr>
<tr>
<td></td>
<td>Enjoys eating with hands</td>
<td>Shows food preferences</td>
</tr>
<tr>
<td></td>
<td>Enjoys different textures</td>
<td>Easily distracted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Begins developing a negative behaviour</td>
</tr>
<tr>
<td>2 – 3 years</td>
<td>Can drink from a cup without assistance</td>
<td>Firm likes and dislikes</td>
</tr>
<tr>
<td></td>
<td>Can feed self with a spoon</td>
<td>Insists on being independent</td>
</tr>
<tr>
<td></td>
<td>Messy eating and spills a lot</td>
<td>Goes through food fads</td>
</tr>
<tr>
<td></td>
<td>Chewing is more functional</td>
<td>Insists on food being in certain shapes or sizes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enjoys helping in the kitchen</td>
</tr>
</tbody>
</table>

**Healthy eating for toddlers**

The Australian Guide to Healthy Eating provides the recommended number of daily serves from the five food groups with specific serve size amounts. Appendix A provides details of serves and serving sizes. Consuming the recommended amount of food daily provides the body with adequate energy to undertake functioning of metabolic processes, physiological functions, muscular activity, heat production, growth and synthesis of new tissues. One unit of energy is expressed as one kilojoule (kJ).

The amount of energy toddlers require on a daily basis is dependent on factors such as age, gender, weight, height and physical activity. The average toddler aged 12 months requires approximately 3200kJ/day for females and 3500kJ/day for males. A female aged two years could require approximately 4200kJ/day and males 4400kJ/day. Over the age of three years, height and physical activity information is necessary to calculate energy requirements; therefore a blanket estimate cannot be made in this context. At this stage, hunger can be used as a gauge to determine a toddler’s energy requirements.

Offering smaller serves can be more effective for toddlers. The accomplishment of finishing their plate and the autonomy in asking for more may assist with a higher
success rate at meal and snack time.\(^3\) Food and drinks should be provided in easy to handle forms with appropriate sized utensils, including cups which are easy to hold.\(^5\)

**Drinks**

Each toddler has an individual fluid requirement to avoid dehydration. From 12 months of age, water and whole cow’s milk should be the main drinks offered. Where available, clean and safe tap water should be offered, especially if it contains fluoride. Milk and water at this age should be offered in a cup rather than a bottle.\(^1\) Toddlers who drink from a bottle for too long are at an increased risk of tooth decay and ear infections.\(^3\)

**Water**

Water is essential for good health and children should be encouraged to choose water as their main drink. Fluoridated tap water helps to protect the teeth from decay and beginning a water drinking routine at a young age will instil good practice for later life. Other family members and caregivers should be encouraged to drink water with the toddler to set a good example.\(^3\) In Western Australia all drinking water service providers must comply with the Australian Drinking Water Guidelines to ensure safe drinking water.\(^11\)

**Milk**

From 12 months of age, the consumption of cow’s milk should be limited to around 500 - 600ml because of the high protein and low iron content and the risk of reducing diversity in the diet.\(^1\)

Following the tips will assist with healthy and safe milk consumption:

- Plain cow’s milk in the full cream variety (4% fat) can be offered as a drink to toddlers 12 months and over.\(^1\) The extra kilojoules in full cream milk are needed for growth.
- For children 2 years and older, reduced fat milk is recommended.\(^5\)
- Soy milk can be offered as long as it is fortified with calcium to a minimum value of 100mg of calcium per 100g and contains the age-appropriate fat content.\(^3\)
- Milk drinks which are not recommended due to being nutritionally incomplete include goat’s milk, sheep’s milk, coconut milk and almond milk.\(^1\)
- All milk sold in Australian supermarkets is pasteurised and safe for toddler consumption.\(^12\)
- Milk direct from the cow needs to be boiled and stirred before the toddler can drink it safely as it contains harmful bacteria.\(^4\)
- ‘Toddler milks’ or ‘follow on’ formulas are not required for healthy children.\(^1\)

A toddler should be referred to a medical practitioner if they show any signs of milk allergy or intolerance.
Other drinks

Plant-based milk substitutes such as, full-fat, calcium-enriched, rice and oat drinks can be consumed in conjunction with other forms of dietary protein and vitamin B12 providing it is done under a health professional’s supervision.¹

Inappropriate and unnecessary drinks such as full strength fruit juice, cordial and sugar-sweetened beverages can cause tooth decay and excess weight gain. Caffeinated drinks (tea, coffee, energy drinks, chocolate drinks, herbal teas and cola) are not recommended as they can cause irritability due to sleep problems and iron malabsorption.¹ If juice is offered, dilute it with water to reduce sweetness and intake should be limited to about 125ml (½ cup) in a day. Too much fruit juice in particular can cause diarrhoea and displacement of food. Always offer drinks to toddlers after their meal to prevent ‘filling’ up on fluids rather than food.³,⁸

Foods not suitable for toddlers

Foods and drinks that are not suitable for toddlers, or that should be used with care, include:

- **Tea** contains tannins and other compounds that bind minerals (e.g. iron) and impair the body’s ability to absorb them. In addition, sugar is often added to tea, which increases the risk of dental caries. Excessive tea intake may also displace intake of other nutrient-dense foods in the diet.

- **Coffee, cola drinks, soft drinks, cordials, energy drinks** have low nutrient density, high in sugar, cause tooth decay and can displace other nutritious foods in the diet. Caffeine is not suitable for children.

- **Whole nuts and seeds** - are not suitable for small children because of the risk of inhalation and choking.

- **Raw carrot, celery sticks and chunks of apple** - these should be avoided for the first 3 years as their consistency and/or size increases the risk of inhalation or choking.

A number of foods increase the risk of infection and/or illness in infants and young children, and should be avoided, including:

- raw or partially cooked eggs, even in home-made ice cream or mayonnaise
- raw meat
- raw sprouts
- freshly prepared juice from juice bars
- unpasteurised milk and products made from unpasteurised milk.¹

Healthy eating behaviours

In order to provide positive food associations, foods from the five food groups should be referred to as ‘every day’ foods and the discretionary foods (cakes, confectionary)
as 'sometimes' foods in preference to using the terms 'good' or 'bad'. Parents should avoid using 'sometimes' food as rewards or bribes/punishment as this can promote unhealthy eating habits.\(^9\)

**Breakfast**

Beginning the day with a wholesome breakfast provides toddlers with the energy to play and learn. This is also a good opportunity for fibre and calcium intake. Encourage parents to provide an adequate and suitable breakfast for their child and to be good role models by eating breakfast too. Research has shown that children (and adults) who do not consume breakfast are more likely to be overweight.\(^9\) Aim to include foods from three food groups for breakfast.

Whole grain cereals such as wheat biscuits and oats (porridge) are nutritious breakfast foods that are high in fibre and low in sodium and sugar. High sugar cereals are often marketed towards children but should be limited. Some cereals also contain high amounts of sodium so label reading is encouraged.

Sample breakfast ideas are listed in Appendix B.

**Meal patterns (meals and snacks)**

Toddlers rarely follow a traditional meal pattern. They tend to need small meals and regular snacks. This suits their small stomach sizes and provides them with energy to keep moving all day. The amount eaten at mealtimes, in particular the evening meal may be smaller than parent and caregivers expect. However, children have capacity to balance the amount of food eaten with exactly how much they need if they are not forced to overeat or finish all the food on the plate. This means that healthy snacks at regular intervals are important to help provide the energy and nutrition the child needs during the day.\(^3\) (See Appendix B for ideas for healthy meals and snacks).

Ensuring that meal times are fun and relaxed is vital to promote healthy food associations. This can be done by:

- being prepared for mess
- eating as a family – this is a time for learning the social skills of eating as a family and learning courtesy at the meal table
- serving new foods together with foods the toddler already enjoys
- asking family members and other caregivers to avoid distractions such as television, toys and games \(^3\)
- providing plenty of positive encouragement - children should not be bribed with food nor should they be force-fed
- continuing to offer foods which are rejected, without comment or criticism - it may take eight to 30 repeated exposures before acceptance occurs.\(^6\)
Salt intake

Children in Australia consume large amounts of salt (sodium). One hundred per cent of children aged 2 to 16 years consumed salt in quantities that exceeded the recommended upper level of intake in the 2007 Australian National Children’s Nutrition and Physical Activity Survey. Consumption increased with age of children being surveyed. Sodium in the diet comes mostly from processed foods, therefore limiting these foods help to prevent excessive salt consumption.

Fussy eating and food refusal

‘Fussy eating’ is common among toddlers and often worries caregivers. Usually it is a stage in normal development, but it can be aggravated by parental response. When growth and development are normal and a variety of foods are offered to the child, reassurance for the child’s caregivers may be all that is needed.

Some food refusal tips include:

- If the toddler refuses meat, and low protein intake is of concern, try serving minced meat, cold meats or meat cut into strips. Otherwise try eggs, smooth nut butter, baked beans, fish or dairy foods.
- If the toddler refuses vegetables, try mashing or grating vegetables into mince dishes, pancakes, soups, pizza and dips. If the toddler likes mashed potato then add in other mashed vegetables. Offer steamed vegetables with a dipping sauce.
- If the toddler refuses milk, and low calcium is of concern, then offer milkshakes, fruit smoothies or yoghurt. Cheese may be added to vegetable dishes.
- Offer meals and snacks at regular times to provide a routine.
- If the toddler is hungry at meal time; offer more food. If the toddler is not very hungry do not force them to eat.
- Make the food interesting by using different colour and shapes. Encourage toddlers to help with simple food preparation.
- If the toddler is not hungry between meals then don’t offer snacks.
- Offer new foods with at least one familiar food.

Autonomy is important to toddlers, therefore offer the toddler the choice between two foods, i.e. at morning tea would you like yoghurt or an apple? If the toddler chooses not to eat either, do not make them another snack or meal just wait until the next meal or snack time.

Important nutrients for toddlers

Iron

Iron deficiency is the most common nutritional deficiency in childhood. Iron is an important dietary mineral that is vital for brain development and various body functions. Iron forms part of haemoglobin in red blood cells and helps to transport oxygen in the blood. The iron component of enzymes is necessary for the
production of energy from glucose, which is the main fuel for the brain and the rest of the body.\(^1\)\(^{15}\) Iron in foods comes in two forms: haem (from animal sources) and non-haem (mainly from plant sources). The haem form of iron is more easily absorbed by the body than non-haem iron. The presence of vitamin C can increase the absorption of non-haem iron when consumed in the same meal. Consumption of meat, fish and poultry can also increase non-haem iron absorption from plant foods consumed at the same time.\(^10\) The best sources of iron in foods are shown in Table 3.

### Iron recommendation

The current Australian recommended dietary intake of iron for children aged 1 - 3 years is 9mg/day.\(^10\)

### Table 3: Iron content of foods (per 100 grams)\(^10\)

<table>
<thead>
<tr>
<th>Food</th>
<th>Iron(mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kangaroo 100 grams</td>
<td>4.1</td>
</tr>
<tr>
<td>Breakfast cereal (iron fortified) 1 cup</td>
<td>3.0</td>
</tr>
<tr>
<td>Lean beef (cooked) 100 g</td>
<td>2.0-3.0</td>
</tr>
<tr>
<td>Lean lamb (cooked) 100 g</td>
<td>2.0 - 2.5</td>
</tr>
<tr>
<td>Legumes – cooked ½ cup</td>
<td>2.0 -2.5</td>
</tr>
<tr>
<td>Baked beans (small can 130g)</td>
<td>1.66</td>
</tr>
<tr>
<td>Salmon (canned or grilled) 100 g</td>
<td>1.1 - 1.3</td>
</tr>
<tr>
<td>Tuna (canned in water) 100 g</td>
<td>1.0 -1.3</td>
</tr>
<tr>
<td>Egg – large 65-70g</td>
<td>1.0</td>
</tr>
<tr>
<td>Lean pork (cooked) 100 g</td>
<td>0.6 – 1.0</td>
</tr>
<tr>
<td>Skinless chicken breast (cooked no skin)100g</td>
<td>0.4 - 0.9</td>
</tr>
</tbody>
</table>

NB: The WA Women’s Health and Family Services pamphlet ‘High Iron Foods’ outlines additional sources of iron.

### Iron deficiency

The most likely cause for iron deficiency in childhood is an inadequate amount of iron in the diet, coupled with the extra requirements for growth.\(^1\) Children may be at risk of iron deficiency in the following situations:

- **Vegetarian household:** even though meat foods are the richest and most absorbable sources of iron, a well planned vegetarian diet can adequately supply enough iron throughout childhood. This requires using the appropriate sources of non-haem (plant) iron. Good sources of non-haem iron include breakfast cereals fortified with iron, wholegrain breads and cereals, legumes, peas and beans. Eating foods containing vitamin C in the same meal (e.g.
citrus fruit) can significantly improve non-haem iron absorption.\textsuperscript{16, 17} See Vegetarianism section in this chapter on page 14.

- ‘Milkaholics’: toddlers who drink an excessive amount of cow's or other milks (more than 500 ml/day) can develop iron deficiency, as milk is a poor source of iron and can reduce a child’s appetite for other foods.\textsuperscript{16}

- Tea drinkers: tannins in tea inhibit iron absorption.\textsuperscript{15, 16}

**Treatment of iron deficiency anaemia**

Parents should be encouraged to seek a diagnosis of iron deficiency anaemia from a medical practitioner.

Dietary modification is the main treatment of iron deficiency in children, with an emphasis on iron-rich food sources, especially sources of haem iron (such as red meat, chicken and fish) consumed with foods high in vitamin C. High consumption of absorption inhibitors should be avoided (such as tea, coffee or fibre).\textsuperscript{17}

Iron supplements should only be given if recommended by a medical practitioner. They should be stored out of reach of children because of the risk of accidental overdose, which can be fatal.\textsuperscript{17}

**Calcium**

Calcium is vital for achieving and maintaining peak bone mass and preventing osteoporosis, a condition where bones become weak and break easily. In Australia, osteoporosis is a major public health problem in adulthood.\textsuperscript{10} Adequate intake of calcium rich foods in childhood is key to providing bones with the density and strength required to assist in osteoporosis prevention.\textsuperscript{18}

Toddlers require a large intake of calcium containing foods as their bones are constantly growing. Offering calcium rich dairy foods and ensuring a toddler’s recommended dairy serves are met, will likely provide enough calcium.\textsuperscript{3}

**Calcium recommendation**

A toddler needs 500mg of calcium daily. Undertaking regular physical activity also aids in building strong bones.\textsuperscript{10}

The best sources of calcium are cow’s milk, yoghurt, custard, cheese and calcium-fortified soy beverage. Other calcium sources include legumes, some vegetables, fortified soy products and breakfast cereals. See Table 4 for specific high calcium food sources.\textsuperscript{10, 19}
Table 4: Calcium content of selected foods\textsuperscript{19}

<table>
<thead>
<tr>
<th>Best sources of calcium</th>
<th>Calcium (mg)</th>
<th>Other calcium sources</th>
<th>Calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain yoghurt 200g serve (1 small tub)</td>
<td>437</td>
<td>Sardines, canned in water with bones, (100g)</td>
<td>540</td>
</tr>
<tr>
<td>Cheese, cheddar, reduced fat, 40g*</td>
<td>380</td>
<td>Salmon, canned in water with bones (100g)</td>
<td>310</td>
</tr>
<tr>
<td>Reduced fat milk (2%) 1 cup (250ml)*</td>
<td>313</td>
<td>Dark green leafy vegetables, cooked 1 cup</td>
<td>138</td>
</tr>
<tr>
<td>Custard, reduced fat, 250ml</td>
<td>338</td>
<td>Dried figs, 3</td>
<td>114</td>
</tr>
<tr>
<td>Skim milk powder, ¼ cup</td>
<td>312</td>
<td>Almonds 20 raw</td>
<td>60</td>
</tr>
<tr>
<td>Soy beverage calcium-fortified, 1 cup (250ml)</td>
<td>312</td>
<td>Legumes cooked, ½ cup</td>
<td>43-65</td>
</tr>
<tr>
<td>Full cream milk (4%) 1 cup (250ml)**</td>
<td>300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Reduced fat milk products are not suitable for children 2 years and under, unless on medical advice.

**Full cream milk products are recommended for toddlers one to two years of age.

Fibre and constipation

Fibre

Dietary fibre is the part of plant food which cannot be digested by the stomach or intestines and it is essential for laxation and proper gut function. Fibre also plays a role in stabilising blood glucose levels and cholesterol.\textsuperscript{10} In toddlerhood, preventing constipation is an important benefit. It is important toddlers drink plenty of fluid with high fibre foods.\textsuperscript{20, 21}

Fibre recommendations

The NHMRC\textsuperscript{10} recommends the following dietary fibre intake for children aged:

- 1–3 years = 14 g/day
- 4–8 years = 18 g/day

Signs of constipation

- Constipation is not just reduced frequency of bowel actions, but also refers to how hard the stool is when it is passed.
- Constipation is often accompanied by pain upon defecation. Children may also experience associated abdominal pain and bloating.
- Faecal soiling is often secondary to constipation and may occur during spontaneous relaxation of the sphincters precipitated by rectal distension.  

**Causes of constipation**

Factors contributing to childhood constipation may include:

- inadequate fibre intake through solid foods (sometimes caused by drinking too much milk) - see Table 5 for fibre content of selected foods
- a tear in the skin next to the anus caused by straining; the child may then try to delay elimination because of pain experienced on defecation
- a child may ignore the urge to go to the toilet when they are busy playing
- the child may hold back when they are being toilet trained
- inadequate fluid intake
- inadequate exercise.

**Table 5: Fibre content of selected foods**

<table>
<thead>
<tr>
<th>Sources of fibre</th>
<th>Grams of fibre</th>
<th>Sources of fibre</th>
<th>Grams of fibre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baked beans, 220g</td>
<td>10.5</td>
<td>Apple, 1 medium</td>
<td>3.0</td>
</tr>
<tr>
<td>Wholemeal pasta, 1 cup</td>
<td>8.5</td>
<td>Brown rice, 1 cup</td>
<td>3.0</td>
</tr>
<tr>
<td>Mango, 1 medium</td>
<td>5.0</td>
<td>Dried apricot, 6 small</td>
<td>2.5</td>
</tr>
<tr>
<td>Corn on cob</td>
<td>5.0</td>
<td>Banana, 1 small</td>
<td>2.5</td>
</tr>
<tr>
<td>Prune, 6 medium</td>
<td>4.5</td>
<td>Wholemeal bread, 1 slice</td>
<td>2.0</td>
</tr>
<tr>
<td>Peas, ½ cup</td>
<td>4.5</td>
<td>Shredded wheatmeal, 2 biscuits</td>
<td>2.0</td>
</tr>
<tr>
<td>Strawberries, ½ punnet</td>
<td>4.5</td>
<td>Peanut paste, 20g* (1tbs)</td>
<td>2.0</td>
</tr>
<tr>
<td>Porridge, ½ cup</td>
<td>4.0</td>
<td>High-fibre white bread</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Treating constipation**

Suggestions for parents and caregivers to improve their child’s diet include:

- offering more wholegrain or wholemeal breads, rice and cereals
- offering more fresh fruits, dried fruits and vegetables
- providing and encouraging water as the main drink.

Note: Fibre intake should be increased gradually.
Parents also need to:

- Encourage their child to exercise or be active every day.
- Establish a regular toilet routine. ‘Bowel training’ requires encouragement to help the child become used to going to the toilet at a similar time every day. Toilet training usually happens between 18 months and 3 years of age. Night time training can take an additional few years.
- Try to solve the problem quickly as it may worsen and take longer to treat if the child remains constipated for any great length of time.
- Seek medical practitioner review if constipation is a long term problem.23

**Food allergy and food intolerance**

**Food allergy**

The incidence of food allergy in children under 5 years of age is around 4 to 8%.24 While any food can cause an allergic reaction, around 90% of food allergic reactions are caused by nine allergens, which include eggs, milk, peanuts, tree nuts, sesame, fish, crustaceans, wheat and soy.25

Around 85% of children with allergy to cow’s milk, egg, soy and wheat will outgrow their allergy sometime in childhood. Allergies to peanut, tree nuts, sesame, fish and shellfish tend to persist into adulthood.26

**IgE-mediated food allergy**26

IgE mediated food reactions are usually of rapid onset and, in infants and children, usually occur within 30 minutes of ingestion of the causative food. The reactions result from the release of histamine and other inflammatory mediators which are released from mast cells when allergens bind to IgE antibodies on the mast cells.

Symptoms are classed as mild-moderate, or severe (anaphylaxis which requires immediate treatment with adrenaline and emergency medical aid):

Mild to moderate symptoms may include:

- swelling of lips, face and/or eyes
- hives or welts
- tingling mouth
- abdominal pain, vomiting
- eczema or rashes.

Anaphylaxis is defined by any one of the following which may occur in isolation or in conjunction with the mild to moderate symptoms listed above:

- difficult/noisy breathing
- swelling of tongue
- swelling/tightness in throat
- difficulty talking and/or hoarse voice
- wheeze or persistent cough
- persistent dizziness or collapse
- pale and/or floppy in young children.

Non IgE-mediated food allergy

Non IgE mediated food allergy usually results in symptoms 2-24 hours after ingestion. These reactions are the result of an immune response that results in delayed inflammation in the skin or gastrointestinal tract. Symptoms may include eczema; vomiting; loose, frequent bowel actions; blood or mucus in stools; irritability and unsettledness in infants; proctocolitis; food protein induced enteropathy and/or food protein induced enterocolitis (FPIES), a condition characterised by profuse vomiting 2-4 hours after ingestion of the causative food and resulting in hypovolemic shock.

Some allergic syndromes are classified as 'mixed IgE and non IgE mediated' and include oesinophilic oesophagitis and eczema.

For further information refer to the ASCIA Health Professional Information Paper: Nutritional Management of Food Allergy (2013) for details on symptoms and causative foods for the various allergic syndromes.

Food intolerance

Food intolerance and food allergy are commonly confused due to similarity and overlapping in some symptoms. It is important to note that the symptoms of food intolerance are not a result of an immune mediated reaction.

Most food intolerances are:

- Metabolic – such as lactose intolerance which is the result of an enzyme deficiency and can cause bloating and diarrhoea.
- Pharmacological – reactions to components in food such as caffeine, monosodium glutamate and naturally occurring food chemicals such as salicylates and amines.
- Reactions to toxins in foods (such as scombroid fish toxin).
- The result of an unclear reaction, such as reactions to sulphite preservative.

The exception to this is ceoliac disease, which is an immune mediated intolerance to the dietary protein gluten.

There are no reliable skin or blood tests to diagnose food intolerance (apart from coeliac disease). It is therefore imperative that diagnosis of food allergy and risk of anaphylaxis is medically confirmed for an infant or young child before proceeding to investigate whether symptoms are due to a possible food intolerance.
Diagnosis

If an infant or child has symptoms suggestive of an adverse food reaction, the child should be referred via medical practitioner to a specialist paediatric allergist or immunologist for diagnosis.

Diagnosis of IgE mediated food allergy involves taking a detailed medical and dietary history, which is used in conjunction with validated allergy tests, including skin testing and Serum Specific IgE testing (formerly known as RAST). These tests are usually positive for IgE mediated food allergy. It should be noted that only allergists and immunologists are qualified to interpret these tests to inform the diagnosis of food allergy.

Non IgE mediated food allergy is diagnosed by exclusion of IgE mediated diagnosis, and dietary elimination with or without an oral food challenge to confirm the diagnosis. Elimination diets should only be undertaken with the supervision of the child’s medical practitioner and an accredited practicing dietitian, to ensure nutritional adequacy of the diet and appropriate development of feeding practices.

Food intolerances are also diagnosed by elimination and challenge and should be supervised by a medical practitioner and dietitian. Highly restrictive diets can adversely affect nutritional status and affect feeding development. It is important to exclude the presence of true food allergy or other underlying medical conditions that could be responsible for symptoms in the infant or child prior to undertaking exclusion diets for the investigation of food intolerance.

There are a number of tests conducted by alternative health practitioners that claim to diagnose food allergy. These include IgG testing, Vega testing and cytotoxic testing. More information on unorthodox allergy tests can be found at the ASCIA website.

Management of diagnosed food allergy

Food allergies are managed by complete avoidance of single or multiple food allergens that cause reactions. Families with allergic children need relevant health professionals to provide individualised advice and support regarding:

- emergency action plans
- environmental controls
- allergen avoidance education
- ensuring the child's diet is nutritionally adequate for growth and developmental needs, and
- monitoring/optimising treatment of asthma and eczema.

All children with suspected or diagnosed food allergy should be referred to a paediatric allergist or immunologist for accurate diagnosis, and appropriate follow up of their condition.
Food safety

Toddlers are more vulnerable to becoming sick from spoilt food as their immune systems are still immature. Food spoilage can occur through exposure to factors such as hair, chemicals, cleaning products, pests and bacteria. Hygiene in the kitchen is important to prevent the spread of bacteria and viruses; it includes appropriate preparing, storing and cooking of foods as well as maintaining hand hygiene and clean work areas.

Some key tips for preventing food borne illness are:

- Wash and peel fruits and vegetables before use.
- Foods which are easily spoiled, such as milk, meat, fish and cooked rice should be covered and stored in the fridge.
- When cooking meat, chicken, fish and eggs, ensure they are thoroughly cooked through.
- Avoid re-heating foods more than once. When reheating, the food should be heated all the way through.
- Foods should be defrosted in the microwave or thawed out in the refrigerator on the bottom shelf to avoid leakage onto other foods; always avoid thawing foods on the kitchen bench.
- Discard food which has been out of the fridge for more than two hours. Knives and boards which have been in contact with raw meat or fish should always be washed before being used with other foods.
- Only offer dairy foods which have been pasteurised.
- Do not offer foods past their ‘use by’ dates.

Toddlers are at more risk of choking compared to older children as they are still learning to eat and do not have the back teeth needed to chew and grind food. To keep toddlers safe from choking parents/carers should:

- supervise meal and snack time
- have toddlers seated when eating
- never force a toddler to eat
- do not provide a toddler with whole nuts, popcorn, hard lollies or hard foods
- encourage toddlers to chew their food slowly and well
- keep food pieces small so they are easily swallowed.

Vegetarian diets

A toddler’s nutritional needs for growth and development may be met by a well-planned vegetarian diet. Vegetarian mothers should be advised to breastfeed their infants for as long as possible, up to two years or more.

The different categories of vegetarians include:

- Lacto-ovo vegetarian: includes dairy products and eggs in the diet but excludes animal flesh.
- Lacto vegetarian: includes dairy products in the diet but excludes eggs and animal flesh.
- Vegan: consumes plant foods only. Vegan diets are not usually recommended for children as they are very low in vitamin B<sub>12</sub> and iron.<sup>27</sup>

Toddlers on a vegan diet who are not breastfed or are partially breastfed, should be given a commercial soy-based infant formula during the first two years of life.<sup>1</sup>

The advice and support of an accredited practicing dietitian may be required for toddlers following a restrictive vegetarian diet. Following dietary assessment, some vegetarian infants and mothers (particularly those on vegan diets) may require nutritional supplements, particularly vitamin B<sub>12</sub> and iron. This is an important issue as iron is vital for neurocognitive development.<sup>1</sup>

Vegetarian toddlers should obtain iron from foods such as legumes, wholemeal pasta, cereals, rice and bread. Vitamin C-rich food should be included as part of the meal to increase the child’s non-haem iron absorption.

Vegetarian toddlers should consume protein-rich foods such as tofu, cottage cheese, yoghurt or soy yoghurt, eggs and legumes (e.g. beans, peas, chickpeas, and lentils) to ensure they receive nutrients otherwise obtained from meat.<sup>1</sup>

**Physical activity for toddlers**

As well as healthy eating, parents and their children should be encouraged to be physically active and limit the time they spend being sedentary. The benefits of physical activity for toddlers include helping to maintain a healthy weight, building strong bones, muscles and heart, improving balance and coordination, developing the brain, improving self-confidence and promoting independence. Toddlers who undertake physical activity in their early years have a higher likelihood of participating in physical activity as teenagers and adults. This therefore makes them more likely to maintain a healthy weight as adults.<sup>2</sup>

Healthy behaviours established from a young age are likely to be sustained into adulthood. The National Physical Activity Guidelines (2014) suggest the following:

- **Toddlers (1 to 3 years)** should be physically active every day for at least three hours, spread throughout the day.
- **Pre-schoolers (3 to 5 years)** should be physically active every day for at least three hours, spread throughout the day.<sup>2</sup>

Sedentary activities (e.g. screen time) are not recommended for children under 2 years old and a limit of 1 hour per day is recommended for children aged 2-5 years.<sup>2</sup>

Refer to the ‘**National Physical Activity Recommendations for Children 0-5 Years**’ for more tips and ideas for active play.<sup>2</sup>

**Dental health and oral care**

**Teething**

An infant’s first tooth usually appears at around six months of age; however, this can differ between individuals. By the age of three years, a toddler has usually acquired
a full set of 20 teeth. It is not uncommon for infants and toddlers to experience some discomfort when new teeth erupt the gums. Signs that teething may be occurring include:

- red swollen gums
- flushed cheeks
- dribbling
- irritability or restlessness
- a slight fever
- pulling the ear on the same side as the erupting tooth
- sucking the fingers and fists.

Teething is often accompanied by pain. Actions which may assist in relieving teething pain include:

- gently rubbing a clean finger or back of a cold spoon on the toddler’s gum
- offering a dummy or a teething ring which has been refrigerated (not frozen) or a wet washcloth to bite.

If symptoms persist or a fever occurs caregivers should seek review by a medical practitioner.28

Oral health care

Oral health care should begin even before the teeth start to erupt.

**Birth to 18 months**

- A baby’s gums can be wiped with a clean, damp cloth or finger brush after each feed.
- A child’s teeth should be cleaned from the time they appear in the mouth. At first, a moistened soft cloth may be used to gently wipe the teeth around the gum line.
- When a few teeth are present, the cloth should be replaced by a toothbrush with a small head and soft bristles.29 Cleaning should be done at least once a day following the last feed with plain water only.30
- No toothpaste should be used for children up to 17 months of age.29
- A toddler’s first visit to the dentist should take place around the time of their first birthday,30 and no later than their second birthday.29

**From 18 months of age**

- Use a small pea-sized amount of low-strength fluoride toothpaste. Too much fluoride exposure affects young teeth and milk mottling of permanent teeth can occur.31
- Caregivers should continue to brush a toddler’s teeth, once in the morning and again before going to bed ideally for a total of two minutes per brushing session.30
Encourage the toddler to spit out, not swallow and not rinse after brushing. This routine should continue until the child is five years old along with continued supervision to ensure the toothpaste is not swallowed, as some children enjoy the taste of toothpaste.

**Sugar and tooth decay**

Dental decay occurs when plaque, an almost invisible film of bacteria that forms on teeth, use available sugars to produce acids that attack teeth. When the acid attack occurs often, teeth can decay over time. The enamel on infant’s and toddler’s teeth is softer than adult teeth therefore making the decay process quicker and easier. Saliva has an important role in washing away the harmful plaque acids. When a child goes to bed with a bottle, or sweetened dummy, less saliva is produced during sleep, resulting in potential damage to the enamel.

Infants are not born with decay-causing bacteria in the mouth. Bacteria are usually introduced to them by care givers through food tasting and or cleaning a dummy or teat in their own mouths. Ensuring effective oral hygiene can help prevent or reduce the risk of decay for both caregivers and their children.

**Preventing tooth decay**

- Offer a wide variety of nutritious foods, plenty of fresh fruit and vegetables, wholegrain cereals, lean meat and high-calcium foods (dairy products).
- Avoid high acid and sugar containing soft drinks and fruit juices.
- Milk and cheese can protect teeth; offer these foods generously.
- Limit sugary snacks, including sultanas and other dried fruit.
- Water should be the primary thirst quencher.
- Drink from a cup from 6 months of age.
- If using a bottle, avoid giving any drink in a bottle in bed.
- Clean a toddler’s teeth by brushing morning and night.

At the 8 month, 18 month and 3 year child health universal contacts, child health nurses conduct an oral health assessment and encourage parents to do the same more regularly. A referral to a dentist can be made if dental problems are seen.

**Related policies, procedures and guidelines**

The following can be read in conjunction with this document.

<table>
<thead>
<tr>
<th>Policy Number</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>3.4.1</td>
<td>Growth in childhood</td>
</tr>
<tr>
<td>3.4.3</td>
<td>Overweight and obesity</td>
</tr>
<tr>
<td>6.1.4</td>
<td>Oral Health Examination of Children</td>
</tr>
<tr>
<td>3.3.7</td>
<td>18 month meeting</td>
</tr>
<tr>
<td>3.3.8</td>
<td>3 year meeting</td>
</tr>
<tr>
<td>4.5.9</td>
<td>Faecal incontinence (Encopresis)</td>
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</tbody>
</table>

Date Issued: 2010
Date Reviewed: May 2014
Next Review: May 2017
NSQHS Standards: 1.7
References


Professional resources

- Australian Society of Clinical Immunology and Allergy, Inc (ASCIA)  
  Allergy prevention in children- Food Allergy  
  Health Professional Information Paper – Nutritional Management of Food Allergy - Nutritional Management of Food Allergy ASCIA

- National Health and Medical Research Council (NHMRC)  
  Healthy eating for children pamphlet and Australian Dietary Guidelines (2013)  

- Australian Dental Association  
  Oral Health for Babies and Infants – fact sheets  

- Women’s Health and Family Services (WA) - www.whfs.org.au  
  Nutrition resources – High Iron and High Calcium pamphlets (2013)

- Dental Health Service (WA)  
  Dental health information sheets and pamphlets  

- Women's and Children's Health Network - Government of South Australia. Tucker for toddlers - a guide to healthy eating for 1-3 year olds.

Resources for families

- Dietitians Association of Australia  
  Find a Dietitian in your area - Website: http://daa.asn.au/

- Raising Children Network - Raising Children Network  
  Health information for all ages and stages of child development

  Terrific toddlers

- Health Department of WA – Healthy WA website  
  Toilet training fact sheet
### Appendix A: Daily number of serves with recommended serving sizes of foods for children aged 1-3 years

<table>
<thead>
<tr>
<th>Food group</th>
<th>Number of serves per day for 1-2 years</th>
<th>Number of serves per day for 2-3 years</th>
<th>Recommended serve size…</th>
<th>Approx. energy per serve (kJ/serve)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties</strong></td>
<td>4</td>
<td>4</td>
<td>1 slice (40g) of bread = ½ medium (40g) roll or flat bread = ½ cup (75-120g) cooked rice, pasta, noodles, barley, buckwheat, semolina, polenta, bulgur or quinoa = ½ cup (120g) cooked porridge = ⅔ cup (30g) wheat cereal flakes = ¼ cup (30g) muesli = 3 (35g) crispbreads = 1 (60g) crumpet = 1 small (35g) English muffin or scone</td>
<td>500</td>
</tr>
<tr>
<td><strong>Vegetables and legumes/beans</strong></td>
<td>2-3</td>
<td>2.5</td>
<td>½ cup cooked green or orange vegetables (for example, broccoli, spinach, carrots or pumpkin) = ½ cup cooked dried or canned beans, peas or lentils = 1 cup green leafy or raw salad vegetables = ½ cup sweet corn = ½ medium potato or other starchy vegetables (sweet potato, taro or cassava) = 1 medium tomato</td>
<td>100-350</td>
</tr>
<tr>
<td><strong>Fruit</strong></td>
<td>0.5</td>
<td>1.0</td>
<td>2 small apricots, kiwi fruits or plums = 1 medium apple, banana, orange or pear = 2 small apricots, kiwi fruits or plums = 1 cup diced or canned fruit (no added sugar) Or only occasionally: 125ml (⅔ cup) fruit juice (no added sugar) 30g dried fruit (for example, 4 dried apricot halves, 1½ tablespoons of sultanas) = 1 medium tomato</td>
<td>350</td>
</tr>
<tr>
<td><strong>Milk, yoghurt, cheese and/or alternatives, mostly reduced fat</strong></td>
<td>1-1.5</td>
<td>1.5</td>
<td>1 cup (250ml) fresh, UHT long life, reconstituted powdered milk or buttermilk = ½ cup (120ml) evaporated milk = 2 slices (40g) or 4x3x2cm cube (40g) of hard cheese, such as cheddar = ½ cup (120g) ricotta cheese = ¼ cup (200g) yoghurt = 1 cup (250ml) soy, rice or other cereal drink with at least 100mg of added calcium per 100ml</td>
<td>500-600</td>
</tr>
<tr>
<td><strong>Lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans</strong></td>
<td>1</td>
<td>1</td>
<td>65g cooked lean meat such as beef, lamb, veal, pork, goat or kangaroo (about 90-100g raw) = 80g cooked lean poultry such as chicken or turkey (100g raw) = 100g cooked fish fillet (about 115g raw) or one small can of fish = 2 large (120g) eggs = 1 cup (150g) cooked or canned legumes/beans such as lentils, chick peas or split peas = 170g tofu = 30g nuts, seeds, peanut or almond butter or tahini or other nut or seed paste</td>
<td>500-600</td>
</tr>
<tr>
<td><strong>Unsaturated spreads</strong></td>
<td>1</td>
<td>0.5</td>
<td>10g polysaturated spread</td>
<td>250</td>
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<td>and oils</td>
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<tr>
<td>= 10g monounsaturated spread</td>
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<tr>
<td>= 7g monounsaturated or polyunsaturated oil, for example olive, canola or sunflower oil</td>
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</tr>
</tbody>
</table>
Appendix B: Healthy meal and snack ideas

Breakfast ideas:
- Wholegrain cereals (Wheat biscuits, porridge)
- Yoghurt and fruit
- Baked beans on toast
- Cheese on toast
- Boiled or scrambled eggs
- Pikelets with yoghurt and fruit

Snack ideas:
- Wholegrain bread and cereals
- Chopped up soft fruit and vegetables
- Yoghurt
- Raisin toast
- Cheese cut into sticks
- Custard
- Bite-sized pieces of fish, chicken or small meatballs
- Hard-boiled egg quarters

Lunch ideas:
- Soup with a bread roll
- Pasta with sauce and cheese
- Left overs
- Toasted sandwich
- Fruit and cheese or yoghurt

Dinner ideas:
- Soup – chicken, pea and ham, pumpkin and lentil with a bread roll
- Eggs – scrambled, boiled or omelettes
- Baked potatoes with vegetable or tuna or baked beans
- Pasta with vegetables and tuna
- Patties - sweet potato, chick pea, lentil or tuna (or a combination)
- Stir fry meat with vegetables
- Curries or stew with rice