CHAPTER 9

The determinants of health and individual human development of Australia’s children

WHY IS THIS IMPORTANT?
The determinants of health and individual human development are important to Australia’s children as they significantly influence health status and physical, social, emotional and intellectual development. How effectively the body functions, the lifestyle choices made by parents and children, the physical environment in which children live and their social environment, can have an effect on the health and individual human development of Australia’s children. Social determinants such as the capacity of parents to cope with the responsibilities associated with supporting and caring for a family, including being informed about and accessing the range of services available within the community, are important for promoting the health and individual human development of children.

KEY KNOWLEDGE

2.4 determinants of the health and individual human development of Australia’s children, including at least one from each of the following:

- biological, such as genetics, birth weight and body weight (pages 260–9)
- behavioural, such as eating habits, level of physical activity, oral hygiene, breastfeeding and vaccination (pages 270–83)
- physical environment, such as tobacco smoke in the home, housing environment, fluoridation of water and access to recreational facilities (pages 284–91)
- social, such as parental education, parenting practices, media and access to health care (pages 292–301).

2.5 determinants that act as risk and/or protective factors in relation to one health issue such as asthma, falls and injuries, food allergies, juvenile arthritis or type 1 diabetes

2.6 government, community and personal strategies and programs designed to promote the health and human individual development of children

KEY SKILLS

- explain the determinants of health and individual human development and their impact on children using relevant examples.
- describe a specific health issue facing Australia’s children and draw informed conclusions about personal, community and government strategies and programs to optimise child health and development.
KEY TERM DEFINITIONS

autoimmune when the immune system attacks and destroys healthy body tissues

carrier a person who has inherited a genetic trait or condition but does not display the trait or symptoms. They are able to pass the gene onto their children, who may or may not display the trait or symptoms.

chromosomes strands of DNA that contain genetic information

chronic obstructive pulmonary disease refers to a number of conditions that restrict the airways and therefore make breathing difficult

congenital malformations defects or damage to the developing foetus

diabetes the system in the body that regulates the production and release of hormones (through the glands)

disease the blueprint of the body that controls growth, development and how the body functions

gingivitis early stage of gum disease characterised by bleeding, redness and swelling of gums

hormone a chemical in the body that causes a change in the functioning of a specific tissue or organ

meningococcal disease a potentially fatal infection that occurs when meningococcal bacteria invade the body, usually from the throat or nose

multicausal refers to a range of factors that together determine and influence health

periodontitis advanced stage of gum disease resulting in bleeding, swelling, receding gums, bad breath, a bad taste in the mouth and loose teeth

protective factors influences that help guard against ill-health

recessive describes a trait that must be contributed by both parents in order to appear in the offspring

risk factors influences that increase the likelihood of ill-health

sex-linked chromosome genetic material that determines the sex of the developing baby

vaccination the administration of a micro-organism of a disease to bring about an immune response
9.1 The determinants of health and individual human development during the childhood stage of the lifespan: biological

KEY CONCEPT Understanding the biological determinants of health and individual human development of Australia’s children

The childhood stage of the lifespan is when the foundations for later health and individual human development are established. Some of the chronic diseases suffered in adulthood have risk factors that originate during the infancy and childhood stages of the lifespan. For example, the development of cardiovascular disease and chronic obstructive pulmonary disease in adulthood are associated with infant and childhood food intake, poor growth, low socioeconomic status, quality of the housing environment and parental smoking.

As in all lifespan stages, some determinants have a positive effect on health and individual human development and are referred to as protective factors, while others have a negative effect and are known as risk factors. Understanding the determinants that impact children’s health and individual human development allows us to understand why some children have better health than others and to develop programs and policies to help prevent disease and promote health and individual human development across the lifespan. Figure 9.3 highlights some of the determinants that are particularly relevant to the childhood stage of the lifespan.

In most instances, health and individual human development is not affected by just one factor but a combination of several (or multicausal) factors. While you are required to explore only one example from each determinant, the chapter provides an overview of how each determinant can influence the health and individual human development of children.

Biological determinants refer to factors relating to the body that impact on health and individual human development such as genetics, hormones, body weight and blood pressure. Biological factors do not act in isolation and are influenced by other determinants such as environmental factors and health behaviours.

Genetics

In chapter 6, you learnt about the role of conception in determining the genetic make-up of the unborn child. The genes that a child inherits from their biological parents have a significant impact on the child’s health and individual human development. Genes are the blueprint of the body because they control growth, development and how the body functions.

A child’s genetic make-up determines:
- the rate and timing of physical development as a result of the production of hormones from the glands of the endocrine system
- whether the child is male or female (their sex)
• the development of genetic conditions such as cystic fibrosis
• predisposition to diseases such as asthma, food allergies and type I diabetes.

Rate and timing of physical development: hormones

Hormones are the chemical messengers within the body that transport a signal from one cell to another to bring about certain changes in the body. Hormones are secreted into the bloodstream by the glands of the endocrine system (figure 9.5). The glands of most interest in childhood are the thyroid gland, parathyroid glands, pituitary gland and the pancreas. Each gland releases hormones that act on specific target sites within the body to bring about physical changes. The rate and timing of hormone secretion is genetically determined. During childhood, the actions of hormones affect the amount of growth that occurs.

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Site of secretion</th>
<th>Effect on physical development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth hormone</td>
<td>Pituitary gland</td>
<td>Stimulates protein synthesis required for growth of soft tissue (e.g. muscle) and hard tissue (e.g. bone)</td>
</tr>
<tr>
<td>Thyroid-stimulating hormone</td>
<td>Pituitary gland</td>
<td>Stimulates the thyroid gland to secrete thyroxine</td>
</tr>
<tr>
<td>Thyroxine</td>
<td>Thyroid gland</td>
<td>Sets the rate at which the metabolism of food into energy takes place. Energy is required for growth.</td>
</tr>
<tr>
<td>Calcitonin</td>
<td>Thyroid gland</td>
<td>Increases the rate of calcium deposition in bones</td>
</tr>
<tr>
<td>Parathyroid hormone</td>
<td>Parathyroid glands (located behind the thyroid gland)</td>
<td>Regulates the amount of calcium and phosphorus in the bones and blood. Calcium and phosphorus are required for strengthening bones.</td>
</tr>
<tr>
<td>Insulin</td>
<td>Pancreas</td>
<td>Stimulates the cells to convert glucose to energy. Energy is required for growth.</td>
</tr>
</tbody>
</table>

The hormones that regulate growth and physical development during childhood are shown in table 9.1.

Most children grow to a height similar to that of their parents. How each child grows is dependent on the genes that determine the rate of secretion of hormones from the glands of the endocrine system. The pituitary gland secretes growth hormone, which affects the bone development and height of a child. In conjunction with this, the pituitary gland also releases thyroid-stimulating hormone that prompts the thyroid to secrete thyroxine. Thyroxine plays an important role in metabolising food into energy. This energy is also required for bone development and the increasing height of the child.

Hormones also determine the age of onset of puberty, which signals the end of childhood. This age varies from one person to another.

Genetic conditions

As you saw in chapter 6, a range of genetic conditions that can affect children’s health and individual human development can be inherited from parents. One example that can have a significant impact during childhood is cystic fibrosis. Cystic fibrosis is the most common life-threatening recessive genetic condition affecting Australian children. This condition results in the secretion of a thick mucus that affects the lungs, pancreas, liver and reproductive system. In the lungs, the mucus clogs small air passages and traps bacteria. This causes repeated bouts of infection, and the blockages can result in irreversible damage to the lungs. In the pancreas, the mucus blocks the passage of the enzyme that is required for
9.1 The determinants of health and individual human development during the childhood stage of the lifespan: biological

digestion in the intestines. This can cause vitamin deficiencies, malnutrition and/or severe constipation. Thickened secretions in the reproductive system can result in obstructions that can affect the development and function of the sexual organs. A child suffering from cystic fibrosis will have a shortened life expectancy, and from birth will undergo constant medical treatment and physiotherapy.

Children with cystic fibrosis experience a range of symptoms including:

- persistent coughing that requires enormous physical effort
- breathing difficulties
- a lack of energy resulting in limited capacity for physical activity
- a frequent need to go to the toilet
- muscle cramping or weakness
- poor appetite.

In Australia, one in 25 people carry the cystic fibrosis gene without showing any symptoms of the condition. If a male and a female who are both carriers of the gene have a child together, their chance of having a child with cystic fibrosis is one in four. They have a two-in-four chance of having a child who will not have the condition but will carry the gene, and a one-in-four chance of having a child who will neither have the gene nor be a carrier (figure 9.6).

Every newborn baby in Australia can undergo a simple blood test to screen for cystic fibrosis.

![Flowchart: How cystic fibrosis is inherited](image)

**Genetic predisposition to disease**

A number of conditions that affect the health and individual human development of children will arise due to a genetic predisposition. A genetic predisposition is an increased likelihood of developing a particular disease or illness based on a person's genetic make up. A genetic predisposition results from specific genetic variations that are often inherited from a parent. These genetic changes contribute to the development of a disease but do not directly cause it. Children can therefore inherit an increased risk of suffering from a disease, but they may in fact, not develop it due to the influence of other behavioural and environmental factors.
determinants. Type 1 diabetes and asthma are two childhood conditions that have a genetic predisposition.

Type 1 diabetes, also referred to as ‘insulin-dependent diabetes mellitus’ or ‘juvenile diabetes’, can occur at any age. However, it is more common in people under 30. In fact, it is one of the most common childhood diseases in developed countries such as Australia.

Type 1 diabetes is a chronic condition that affects the body’s ability to maintain blood glucose levels. Blood glucose levels are regulated in the body by insulin, a hormone that is secreted by the pancreas. The role of insulin is to stimulate the cells of the body to convert glucose molecules to energy. Insulin also enables excess glucose to be stored in the liver as glycogen, which can then be used for energy when needed. For people with type 1 diabetes, the pancreas is no longer able to produce insulin and the glucose accumulates in the bloodstream. When there is insufficient insulin and the glucose levels in the bloodstream remain high for several hours, the condition can become life threatening.

People with type 1 diabetes must regularly monitor their blood glucose levels and receive regular doses of insulin by injection or an insulin pump. Physical activity and diet are also key factors in the management of type 1 diabetes. It is important for children with type 1 diabetes to consume a regular and consistent amount of foods containing carbohydrates, in particular, carbohydrates with a low glycaemic index. Before children with type 1 diabetes engage in physical activity, they should consume an extra carbohydrate snack. If the exercise session continues over a prolonged period of time, then a carbohydrate snack may be required during the activity as well.

Blood glucose levels can be monitored by taking a small sample of blood via a pinprick of the finger and testing it on a blood glucose meter (figure 9.7). Diabetics who take too high a dose of insulin may experience low blood glucose levels, which can have serious health consequences. Ideally, blood glucose levels should range between 3.5 and 8 millimoles per litre, or mmol/L. Table 9.2 lists the health effects of both high and low blood glucose levels.

**Table 9.2** The impact of high and low blood glucose levels on health

<table>
<thead>
<tr>
<th>Effects of high blood glucose levels</th>
<th>Effects of low blood glucose levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive thirst</td>
<td>Weakness, trembling, shaking</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>Headache</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Light-headedness, dizziness</td>
</tr>
<tr>
<td>Weight loss</td>
<td>Sweating</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>Hunger</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Tingling around the lips</td>
</tr>
<tr>
<td>Frequent urination</td>
<td>Racing heartbeat</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>Lack of concentration</td>
</tr>
<tr>
<td>Increased risk of infections</td>
<td>Loss of coordination</td>
</tr>
<tr>
<td>Kidney damage</td>
<td>Confusion</td>
</tr>
<tr>
<td>Eye damage</td>
<td>Slurred speech</td>
</tr>
<tr>
<td>Nerve damage to feet and other parts of the body</td>
<td>Loss of consciousness</td>
</tr>
<tr>
<td>Heart disease</td>
<td>Fitting</td>
</tr>
<tr>
<td>Circulation problems in the legs</td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td></td>
</tr>
<tr>
<td>Impotence</td>
<td></td>
</tr>
<tr>
<td>Coma</td>
<td></td>
</tr>
</tbody>
</table>
Asthma is another common childhood condition that has a genetic predisposition. Asthma affects the small air passages (bronchi) of the lungs. When exposed to certain triggers (e.g., cigarette smoke and air pollution), the lining of the air passages becomes inflamed and swollen, and extra mucus is produced. The muscles of the airways also tighten (bronchoconstriction), resulting in a narrowing of the airways that makes it difficult for the child to breathe.

The symptoms of asthma include:
• a dry, irritating cough
• shortness of breath
• tightness of the chest
• wheezing.

With the appropriate treatment and management of asthma, almost all children will be able to participate in physical activity and lead active lives. Two main types of medication are used for asthma:
• relievers — quick-acting and used during an asthma attack to open the airways
• preventers — slow-acting and used to prevent attacks from occurring.

**Birth weight**

Birth weight is a key indicator of infant health and has a major influence on a baby’s chance of survival and health status. Babies are classed as ‘low birth weight’ if they weigh less than 2500 grams at birth. Low birth-weight babies can be further classified as ‘very low birth weight’ if they weigh 1000–1500 grams, and as ‘extremely low birth weight’ if they are below 1000 grams (table 9.3). Very low and extremely low birth weights occur in infants who are born very prematurely.

<table>
<thead>
<tr>
<th>Classification of birth weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low birth weight</strong></td>
</tr>
<tr>
<td>Below 2500 grams</td>
</tr>
</tbody>
</table>

Babies can be born with low birth weight because they are born prematurely, or have experienced some disruption to their growth within the uterus.

In Australia in 2012, there were 19,243 (6.2 per cent) of babies born with low birth weight. There were 3071 (1 per cent) very low birth weight babies and 1299...
(0.4 per cent) extremely low birth weight babies (AIHW, 2012). Babies with a very low birth weight, or an extremely low birth weight, have a greater risk of dying prematurely or developing a range of conditions and developmental problems. Table 9.4 outlines the health and development effects of a baby having a very low birth weight or an extremely low birth weight.

### TABLE 9.4 The impact on health and individual human development of very low or extremely low birth weight

<table>
<thead>
<tr>
<th>Impact of very low or extremely low birth weight:</th>
<th>On health</th>
<th>On individual human development</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduced lung function</td>
<td>• Reduced muscle bulk</td>
<td></td>
</tr>
<tr>
<td>• Increased risk of bronchiolitis (an inflammation of the small airways in the lungs)</td>
<td>• Reduced coordination</td>
<td></td>
</tr>
<tr>
<td>• Decreased exercise capacity</td>
<td>• Poor sucking and swallowing reflexes</td>
<td></td>
</tr>
<tr>
<td>• Feeding difficulties leading to lack of nutritional intake</td>
<td>• Greater likelihood of impaired growth and motor skill development</td>
<td></td>
</tr>
<tr>
<td>• Increased risk of bradycardia (a slowing of the heart rate)</td>
<td>• Greater likelihood of impaired learning capabilities</td>
<td></td>
</tr>
<tr>
<td>• Apnoea (a short-term suspension of breathing)</td>
<td>• Damage to the retina of the eye resulting in sight difficulties including blindness</td>
<td></td>
</tr>
<tr>
<td>• Jaundice (yellowing of the skin due to the immature liver being unable to process the compound bilirubin, which is found in the blood)</td>
<td>• Increased risk of cerebral palsy</td>
<td></td>
</tr>
<tr>
<td>• Increased probability of a lengthy hospital stay following birth</td>
<td>• Increased risk of deafness</td>
<td></td>
</tr>
<tr>
<td>• Increased risk of asthma during childhood</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Body weight

The maintenance of a healthy body weight is important for the optimal health and individual human development of children. Being underweight or overweight during childhood can lead to many short- and long-term health problems that can affect all aspects of individual human development.

Establishing whether children are of healthy weight, underweight or overweight is more difficult than for adults where the common measure is the body mass index or BMI. Children are still growing and they each grow at different times and rates. To make the BMI relevant to children, it needs to be compared against the BMI-for-age and gender percentile charts. These percentile charts provide an indication of a child’s BMI relative to children of the same age and sex.

The categories and percentiles for BMI-for-age are shown in table 9.5.

### TABLE 9.5 BMI-for-age weight status categories and corresponding percentiles

<table>
<thead>
<tr>
<th>Weight status category</th>
<th>Percentile range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less than the 5th percentile</td>
</tr>
<tr>
<td>Healthy weight</td>
<td>5th percentile to less than the 85th percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85th percentile to less than the 95th percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>Equal to or greater than the 95th percentile</td>
</tr>
</tbody>
</table>


The chart in figure 9.10 shows how BMI can be measured relative to children of the same age and sex. In this example, different BMI calculations for a 10-year-old boy are marked on the chart.
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### Body mass index-for-age percentiles: Boys, 2 to 21 years

- A 10-year-old boy with a BMI of 23 would be in the obese category (95th percentile or greater).
- A 10-year-old boy with a BMI of 21 would be in the overweight category (85th to less than 95th percentile).
- A 10-year-old boy with a BMI of 18 would be in the healthy weight category (5th percentile to less than 85th percentile).
- A 10-year-old boy with a BMI of 13 would be in the underweight category (less than 5th percentile).

**FIGURE 9.11** An example of how sample BMI calculations would be interpreted for a 10-year-old boy


In 2011–12, findings from the Australian Health Survey found that an estimated 26 per cent of children were either overweight (19 per cent) or obese (7 per cent). This is equivalent to around 716,000 Australian children aged 5–14. Over two-thirds (69 per cent) of children had a healthy weight, with the remaining 5 per cent being underweight. There was no significant difference between boys and girls, or between age groups 5–9 years and 10–14 years.

### The impact of obesity on the health and individual human development of children

Overweight and obesity can be caused by a genetically low metabolic rate, lack of physical activity, a dietary intake consisting of a large proportion of saturated fats and simple carbohydrates, or the overconsumption of carbohydrates, fats and protein. Social factors (such as the types of food eaten due to a child’s culture), as well as environmental factors (such as access to recreational facilities), also
impact on the development of obesity in childhood. Childhood obesity rates have increased significantly over the past two decades. The 2007–08 National Health Survey results indicate that 24.9 per cent of children aged 5–17 years are overweight or obese.

Childhood obesity has serious short-term consequences for the health and individual human development of children. Obesity during childhood significantly increases the risk of illness and premature death in adulthood. Table 9.6 outlines the short- and long-term consequences to health and individual human development of childhood obesity.

**TABLE 9.6 Consequences of childhood obesity on health and individual human development**

<table>
<thead>
<tr>
<th>Short-term consequences</th>
<th>Long-term consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health</strong></td>
<td></td>
</tr>
<tr>
<td>• Physical discomfort</td>
<td>• Twice the risk of developing cardiovascular disease (high blood pressure, angina, heart attack) in adulthood</td>
</tr>
<tr>
<td>• Bone and joint problems</td>
<td>• Three times the risk of developing type 2 diabetes in adulthood</td>
</tr>
<tr>
<td>• Asthma or shortness of breath during exercise</td>
<td>• Increased risk of premature death</td>
</tr>
<tr>
<td>• Heat intolerance</td>
<td>• Poor self-esteem can lead to an increased tendency to smoke and drink alcohol, resulting in health conditions such as lung cancer, cardiovascular disease and cirrhosis of the liver</td>
</tr>
<tr>
<td>• Tiredness/lethargy</td>
<td></td>
</tr>
<tr>
<td>• High blood pressure</td>
<td><strong>Individual human development (short- and long-term)</strong></td>
</tr>
<tr>
<td>• Abnormal cholesterol levels</td>
<td>• Decreased memory due to lack of sleep</td>
</tr>
<tr>
<td>• Interrupted sleep due to breathing difficulties (obstructive sleep apnoea)</td>
<td>• Reduced learning performance</td>
</tr>
<tr>
<td>• Social and psychological distress as obese children often experience discrimination, bullying and teasing by their peers</td>
<td>• Reduced motor skill development due to lack of physical activity</td>
</tr>
<tr>
<td>• Low self-esteem</td>
<td>• Poor self-image</td>
</tr>
<tr>
<td>• Poor peer relationships</td>
<td>• Limited social skill development</td>
</tr>
</tbody>
</table>


Being underweight can also impact children’s health and individual human development. Being underweight is not the same as being thin. There are many reasons why a child might be underweight. They may not be consuming enough food, be suffering from an underlying illness or stress, or have a lack of interest in eating; or their body may be experiencing a sudden growth spurt.

Being underweight often indicates poor nutritional intake, which puts children at risk of undernourishment. This can increase the risk of becoming ill as children’s immune systems, which are designed to fight diseases and protect the body, are weakened. Undernourished children are likely to feel weak or tired, and have trouble focusing and concentrating. They are also less likely to be fit and active, increasing their risk of diseases such as cardiovascular disease in the long term. They may also be at risk of having stunted growth or a delay in the age of onset of puberty.

**TEST your knowledge**

1. Identify four ways in which genetics can influence a child’s health and individual human development.
2. Explain the role of the following hormones in the growth and physical development of children:
   (a) growth hormone
   (b) thyroxine
   (c) calcitonin
   (d) insulin.
3. Explain how cystic fibrosis might affect the health and individual human development of children.
4. Provide one example of a disease where there is a genetic predisposition and explain how the disease might impact the health and individual human development of children.
5. List the weight classifications for low birth weight, very low birth weight and extremely low birth weight.
6 What percentage of babies born in 2012 were classified as:
(a) low birth weight?
(b) very low birth weight?
(c) extremely low birth weight?

APPLY your knowledge
7 Using information provided in table 9.4, further classify health and individual human development examples into physical, social and mental health impacts; and physical, social, intellectual and emotional development impacts.
8 Discuss four ways in which childhood obesity could affect the health of children.
9 Use the BMI for age — Girls links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
10 What are the differences between a genetically inherited condition and a genetic predisposition?
9.2 Determinants of health and individual human development of children: behavioural

**KEY CONCEPT** Understanding the behavioural determinants of health and individual human development of Australia’s children

Behavioural determinants refer to the actions or patterns of living of an individual or a group that impacts on health and individual human development. The behavioural determinants that impact on children include a mother’s decision to breastfeed, eating habits, oral hygiene, level of physical activity and vaccination status.

**Breastfeeding**

Breastfeeding is the healthiest start for infants. The benefits of breastfeeding to the health and individual human development of the developing child are well documented (table 9.7). In the first few days following birth, the breasts produce a fluid called colostrum, which contains antibodies required to resist infection from conditions such as acute diarrhoea, lower respiratory tract infections and ear infections. Within a few days, the colostrum changes to mature milk. Breastmilk contains all of the nutrients required by the baby for the first six months of life. Breastmilk can supply more than half of the nutrients required by the child between 6 and 12 months of age, and up to a third of the nutrients needed between one and two years of age. Mature breastmilk contains the right amount of fat, sugar, water and protein to promote the growth of the baby. The World Health Organization recommends exclusive breastfeeding for the first six months, with the introduction of complementary foods beginning at six months of age. Apart from the nutritional value, breastfeeding is also hygienic, convenient and inexpensive. For most babies, breastmilk is easier to digest than formula.

Breastfeeding also promotes the social and emotional attachment between mother and child. The secretion of the maternal hormones prolactin and oxytocin encourages the development of a maternal bond with the child. Oxytocin plays a role in counteracting stress, which allows both mother and baby to feel comfortable and relaxed.

**TABLE 9.7 Benefits of breastfeeding for the health and individual human development of children**

<table>
<thead>
<tr>
<th>Benefits of breastfeeding to health</th>
<th>Benefits of breastfeeding for individual human development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced risk of SIDS</td>
<td>Fatty acids within breastmilk contribute to brain development, thereby reducing the risk of learning difficulties in childhood</td>
</tr>
<tr>
<td>Reduced incidence and duration of diarrhoeal disease</td>
<td>Optimal development of eyesight</td>
</tr>
<tr>
<td>Reduced risk of juvenile diabetes in later life</td>
<td>Optimal development of the jaw and mouth</td>
</tr>
<tr>
<td>Reduced risk of heart disease in later life</td>
<td>Optimal speech development</td>
</tr>
<tr>
<td>Reduction in allergies</td>
<td>Promotes intelligence</td>
</tr>
<tr>
<td>Reduced likelihood of childhood obesity</td>
<td></td>
</tr>
<tr>
<td>Reduced risk of respiratory illnesses</td>
<td></td>
</tr>
<tr>
<td>Reduced risk of middle ear infections</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from Australian Breastfeeding Association, www.breastfeeding.asn.au.
Although breastmilk is the best option for babies, artificial formula contains the required nutrients and is readily available. Some mothers may choose to bottle feed purely because they do not feel comfortable breastfeeding. For some mothers, breastfeeding may not be an option because:

- The baby may refuse to suck at the breast.
- The baby may be unable to breastfeed because of an illness or a congenital malformation that makes it difficult for the child to suck (e.g. cleft palate).
- The mother has an illness that prevents her from breastfeeding.
- The mother has mastitis. This is an inflammation or infection in the breast commonly caused by a cracked nipple, blocked milk duct or injury to the breast.
- The breastmilk may be in low supply and not adequate for the baby.

While infant formula has been developed to contain nutrients similar to those found in breastmilk, it does not contain valuable antibodies like breastmilk. As bottle-fed babies do not have the antibodies to protect them from harmful germs or infections, it is important that bottles and other equipment are carefully sterilised in order to reduce the risk of contaminating the formula and possibly infecting the baby.

### Eating habits

The eating habits of children have a significant impact on health and individual human development during infancy, childhood and in the later stages of the lifespan. Healthy eating habits need to be established early in life. The Infant Feeding Guidelines and Australian Dietary Guidelines provide advice on what represents healthy eating for children.

From birth until six months of age, breastfeeding or infant formula provides all the nutrients an infant needs for growth and individual human development. At around the age of six months, infants are physiologically and developmentally ready for new foods, textures and modes of feeding. Their bodies now require more nutrients than can be provided by breastmilk or formula.

A variety of foods are needed to meet the increased nutritional demands and to help an infant accept a range of flavours, but the inclusion of iron-rich foods...
is important. The texture of foods should be suitable to the infant’s stage of development, progressing from a smooth puree to lumpy to normal textures across the 6–12 month period. Appropriate foods to be introduced initially include:

- infant rice cereal mixed with breastmilk or formula
- mashed potato, pumpkin or carrot
- mashed fruit such as bananas
- cooked and mashed apples and pears.

As infants get used to eating solid foods, more lumpy foods can be introduced such as:

- minced red meat and chicken
- cereals such as rice, couscous and pasta.

Breastfeeding or formula should be continued until 12 months of age. Cow’s milk can start being added to cereal or food such as custard, but should not be introduced as the main drink until 12 months of age. Avoid giving whole nuts and similar hard foods to young children aged less than three years to reduce the risk of choking. It is important that solid foods are provided without the addition of sugar, honey or salt.

From 12 months of age and beyond, toddlers should be consuming family foods according to the Australian Dietary Guidelines (figure 9.15).

Good nutrition and eating habits in children can be promoted by:

- **Encouraging a wide variety of nutritious foods.** All nutritious foods contain nutrients that are important for the health and individual human development of children. Therefore it is important for children to consume a wide variety of foods to ensure the intake of the required nutrients.
- **Introducing reduced-fat dairy products from two years of age.** Reducing the amount of fat in a child’s diet will reduce the risk of overweight and obesity.
- **Offering mostly wholegrain breads and cereals, vegetables and fruits.** Complex carbohydrates in breads and cereals are required for energy and the dietary fibre in breads, cereals, vegetables and fruits help to remove wastes from the body.
- **Limiting the intake of oil, margarine and butter.** Overconsumption of fats can contribute to childhood overweight and obesity.
- **Providing the child with fresh fruits and vegetables instead of processed snack foods.** Snack foods tend to be high in saturated fat and trans fats, simple carbohydrates (sugars) and sodium (salt).
- **Only occasionally offering treats such as cakes, chips and takeaway foods.**
- **Limiting sweet drinks such as juices, cordials and softdrinks.** These are high in sugar and overconsumption can contribute to childhood overweight and obesity.

The consumption of breakfast is an important consideration in the eating habits of children. Eating breakfast gives children energy to get through the day and provides a significant proportion of the day’s total nutrient intake. Without breakfast, a child may have difficulty concentrating and learning, and may be left with reduced energy levels for daily activities. Research indicates that children who skip breakfast tend to weigh more than those who consume breakfast daily. This may be due to the fact that hungry children tend to eat more high-fat, high-sugar foods during the day to alleviate hunger as a result of skipping breakfast.
Eating habits of children and the Australian Dietary Guidelines

In 2013, the National Health and Medical Research Council launched the revised Australian Dietary Guidelines. These Guidelines provide advice about the amounts and kinds of foods that people need to eat for health and wellbeing. While the Guidelines are relevant to the general healthy population, specific reference is made to children and adolescents. The Guidelines also set out serving numbers and sizes that should be consumed by children from each of the five food groups to promote good health and individual human development (figure 9.16).

WHAT ARE THE DIETARY GUIDELINES?
The Australian Dietary Guidelines provide up-to-date advice about the amount and kinds of foods that we need eat for health and wellbeing. They are based on scientific evidence and research.

The Australian Dietary Guidelines of most relevance to children are included below:

GUIDELINE 1
To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs.

• Children and adolescents should eat sufficient nutritious foods to grow and develop normally. They should be physically active every day and their growth should be checked regularly.

GUIDELINE 2
Enjoy a wide variety of nutritious foods from these five food groups every day:

• Plenty of vegetables of different types and colours, and legumes/beans
• Fruit
• Grain (cereal) foods. mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
• Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
• Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under the age of 2 years)
And drink plenty of water.

GUIDELINE 3
Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.

a. Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.

• Replace high fat foods which contain predominately saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominately polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.
• Low fat diets are not suitable for children under the age of 2 years.

b. Limit intake of foods and drinks containing added salt

• Read labels to choose lower sodium options among similar foods.
• Do not add salt to foods in cooking or at the table.

c. Limit intake of foods and drinks containing added sugars such as confectionary, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, energy and sports drinks.

GUIDELINE 4
Encourage, support and promote breastfeeding.

GUIDELINE 5
Care for your food; prepare and store it safely.
Fig. 9.16 Recommended serving sizes from the five food groups

9.2 Determinants of health and individual human development of children: behavioural

As parents are the ones who often choose and purchase the foods that are consumed in children’s diets, it is important that they have the information required to ensure that their children are consuming the right amount of the required nutrients and not overconsuming nutrients such as saturated fat, simple carbohydrates and sodium as these can contribute to the development of illness/disease such as obesity, cardiovascular disease and type 2 diabetes.

Most Australian children require more:
• vegetables and fruit, particularly green, orange and red vegetables, leafy vegetables and legumes/beans
• grain foods, particularly wholegrain cereals
• reduced fat milk, yoghurt and cheese (reduced fat milks are not suitable for children under the age of two years as their main milk drink)
• water rather than soft drinks, energy drinks, sports drinks and sweetened fruit juices.

Most Australian children need to consume less:
• meat pies, sausage rolls and hot chips
• potato chips, savoury snacks, biscuits and crackers
• processed meats
• cakes, muffins, sweet biscuits and muesli bars
• confectionery and chocolate
• ice-cream and desserts
• cream and butter
• jam and honey
• soft drink, cordial, sports drinks, energy drinks.

Oral hygiene

Oral hygiene is the practice of keeping the mouth clean in order to prevent bad breath and maintain healthy gums and teeth. Dental decay is the most common disease that affects teeth. Plaque is a sticky film that forms on teeth. It contains bacteria that change sugars into acids, resulting in cavities (i.e. caries, or holes) in the teeth (figure 9.18). A build-up of plaque on the teeth can also lead to gum disease — initially gingivitis which, if left untreated, can progress to periodontitis. Gingivitis is the early stage of gum disease where plaque builds up and becomes hard mainly on the area where the gum line meets the tooth. Symptoms of gingivitis are bleeding, redness and swelling of the gum. Periodontitis is advanced gum disease in which the edge of the gum that meets the tooth becomes weakened, allowing bacteria to penetrate beneath the gum line. This causes an inflammation in the structures below the gum line, affecting the root of the tooth, the bone and the fibres that connect the tooth to the bone. If left untreated, the eroded bone causes space between the gum and teeth. Periodontitis results in bleeding, swelling, receding gums, bad breath, a bad taste in the mouth and loose teeth. The teeth can fall out if the condition is not treated.

Oral hygiene during early childhood is vital for ensuring the health of teeth and gums and teaches children the daily routines required to ensure optimal dental health. Cavities can occur in children as young as six months of age if the appropriate dental care is not followed. Baby teeth have a thinner enamel coating that can result in decay being able to penetrate to the middle of the tooth. This can be extremely painful and, if left untreated, can result in a pus-filled abscess. The abscess can damage the permanent teeth that
are developing underneath the baby teeth. As baby teeth guide the permanent teeth into position, losing them early as a result of decay can result in reduced spaces between the teeth and thus the child may require orthodontic care later in life. Poor oral hygiene and decayed teeth can affect the individual human development of children by interfering with speech development and the shaping of the jaw.

When dental decay and cavities become severe and painful, they can interfere with the daily life of the child and impact health. The pain can be so severe that it may prevent the child from going to school. If the child is unable to chew or eat because of the pain, then they may lose weight or develop nutritional deficiencies. Dental decay and the unnecessary loss of teeth can impact significantly on the self-esteem of children, which may cause them to withdraw from social activities due to feeling self-conscious about how they look.

According to the Australian Institute of Health and Welfare (Australasian health 2014), in 2010:

• more than half of children aged 6 had experienced decay in their baby teeth
• almost half of children aged 12 had experienced decay in their permanent teeth
• the rate of hospitalisations for dental conditions that could have been prevented was the highest for children aged 5–9.

## Promoting oral hygiene

The inappropriate use of feeding bottles can cause dental cavities. Infants should not be given a bottle as a dummy once asleep, or be given fruit juices or sweet drinks in a bottle. Breastfeeding significantly reduces the risk of dental cavities. If a child is to be bottle fed, the following should be done:

• Remove the bottle once the child has had enough.
• If the child uses the bottle for comfort, use cooled, boiled water instead.
• Encourage the use of a feeding cup when the child is developmentally ready.
• Encourage the child to drink water instead of fruit juices and sweet drinks.

Tooth brushing should start as soon as the first tooth appears. Initially, a soft cloth can be used to wipe the front and back of each tooth. A soft toothbrush should be introduced as soon as the child can cope with it, usually around 12 months of age. Low-fluoride toothpaste can be used at approximately 18 months of age. Fluoridated water helps to protect against dental cavities because fluoride reduces the amount of acid produced in the mouth as well as helping to repair any damage to the teeth before it progresses. It is recommended that a child have two dental checkups before the age of three and a half to ensure early detection of any dental problems. Beyond the age of three and a half, the recommendation is six-monthly visits to the dentist. The application of dental sealants by the dentist can help prevent tooth decay. Sealants are clear or white plastic coatings that bond to the surface of the teeth and block the small grooves, thereby reducing the risk of dental decay.

The consumption of a healthy diet with minimal sugary substances also helps to prevent cavities and ensures good oral hygiene.

## Level of physical activity

It is important that children are physically active. Physical activity for children includes both structured and unstructured free play.
9.2 Determinants of health and individual human development of children: behavioural

Australia’s Physical Activity and Sedentary Behaviour Guidelines outline the minimum levels of physical activity required in order to gain a health benefit. For children between the ages of 5 and 12, it is recommended that they participate in at least 60 minutes of moderate to vigorous intensity exercise daily. Examples of moderate activities include brisk walking, bike riding or any form of active play. More vigorous activities include those that increase heart and breathing rates such as football, netball, ballet, running and swimming. The guidelines also recommend that children do not spend more than two hours a day on activities using electronic media such as computer games, TV or the internet. Toddlers and preschool children should be physically active for at least three hours each day, spread throughout the day.

The impact of levels of physical activity on the health and individual human development of children

According to the 2011–12 Australian Health Survey, 2–4 year olds spent an average of 6 hours and 12 minutes per day engaged in physical activity, with just under half (47 per cent) of the physical activity coming from outside activities. Most 2–4 year olds (84 per cent) averaged three hours or more of physical activity per day. However, just under three-quarters (72 per cent) of 2–4 year olds were physically active for three hours or more per day on all seven days prior to interview, meeting the physical activity recommendation. The average daily duration of physical activity for this age group is shown in figure 9.19.

![Figure 9.19: Children aged 2–4 years, average daily duration of physical activity, 2011–12](image)

At the same time, 2–4 year olds spent almost one and a half hours (83 minutes) per day in the sedentary activities of watching TV/DVDs or playing electronic games. While 43 per cent averaged no more than 60 minutes a day over the reporting week, only one in four (26 per cent) met the screen-based activity recommendation on all seven days prior to interview. The average daily duration of sedentary screen-based activity for this age group is shown in figure 9.20.
The determinants of health and individual human development of Australia’s children

CHAPTER 9

FIGURE 9.20 Children aged 2–4 years, average daily duration of sedentary screen-based activity,(a)(b) 2011–12

(a) Average over seven days prior to interview.
(b) Proportions do not add to 100 per cent, as includes children with time not known.
(c) Category 0–1 includes 1 minute to 1 hour, 1–2 includes 61 minutes to 2 hours, etc.

The results of the survey also found that children aged 2–4 who had at least one item of screen–based equipment in their bedroom — such as a TV, computer or game console — spent on average an extra 22 minutes per day engaged in screen-based activities, and were twice as likely as those without screen equipment in their bedrooms to have done more than the recommended 60 minutes per day.

Children aged 5–8 spent an average two hours per day engaged in physical activity and 1 hour 38 minutes engaged in screen-based activities. As the age of children increased, the level of physical activity decreased and the time spend engaged in screen-based activities increased. Children aged 9–11 spent an average of 1 hour 35 minutes on physical activity and 1 hour 59 minutes engaged in screen-based activities (figure 9.21).

FIGURE 9.21 Children 5–11 years, average minutes per day spent in physical activity and sedentary screen-based activity,(c) 2011–12
(c) Average over seven days prior to interview.

Regular physical activity has a range of benefits for the health and individual human development of children. These are outlined in table 9.8.
9.2 Determinants of health and individual human development of children: behavioural

TABLE 9.8 Benefits of regular physical activity for children

<table>
<thead>
<tr>
<th>Benefits of physical activity for health</th>
<th>Benefits of physical activity for individual human development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improves fitness, strength, flexibility and coordination</td>
<td>Promotes growth</td>
</tr>
<tr>
<td>Helps with relaxation and reduces stress, anxiety and depression</td>
<td>Improves balance and motor skills</td>
</tr>
<tr>
<td>Improves self-esteem</td>
<td>Improves posture</td>
</tr>
<tr>
<td>Provides opportunities to make friends</td>
<td>Develops sensory systems such as sight and hearing</td>
</tr>
<tr>
<td>Helps achieve and maintain a healthy weight</td>
<td>Develops social skills (e.g. leadership, communication, teamwork)</td>
</tr>
<tr>
<td>Builds strong bones and muscles</td>
<td>Increases knowledge (e.g., learning the rules of games)</td>
</tr>
</tbody>
</table>

Encouraging children to be physically active during childhood establishes a good routine that can stay with them throughout life. To encourage physical activity in children, parents should make sure they expose children to lots of fun activities and undertake different types of sport and physical activity themselves.

Vaccination

Parents and carers make decisions about whether or not to immunise their children.

There are two main reasons why parents should ensure their child is immunised:
1. Children are protected against a range of diseases that can have serious effects on a child’s health and individual human development and sometimes death.
2. When the majority of the community are immunised, infectious diseases can no longer spread from one person to another, and those who are not immunised are also protected. This is called ‘herd immunity’ and can also help to eliminate diseases altogether.

Each vaccine contains either a weakened or dead micro-organism of a disease so that the body will develop antibodies against that particular disease. This immune response means that when the body comes in contact with a particular infectious micro-organism, it is able to fight and overcome the organism. By vaccinating against specific diseases, the individual is able to resist those diseases if exposed to them.

In the first months of life, a baby gains its protection from infectious diseases via antibodies that have passed from the mother during pregnancy and through breastfeeding. Vaccinations become important when these antibodies are no longer effective and the child is at risk of infection. Immunisation is the process of providing vaccinations. Table 9.9 outlines vaccine-preventable diseases and their impact on health and individual human development.
### Table 9.9 Vaccine-preventable diseases and their impact on health and/or individual human development

<table>
<thead>
<tr>
<th>Disease</th>
<th>Method of transmission</th>
<th>Impact on health and/or individual human development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td>Bacteria spread by respiratory droplets</td>
<td>1 in 15 patients will die &lt;br&gt;Fever, severe inflammation of the nose, throat and windpipe causing breathing and swallowing difficulties &lt;br&gt;Nerve paralysis and heart failure</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Virus spread via blood, sexual contact or from mother to baby at birth</td>
<td>1 in 4 will develop cirrhosis of the liver or liver cancer</td>
</tr>
<tr>
<td>Haemophilus Influenzae type B (Hib)</td>
<td>Bacteria spread via respiratory droplets</td>
<td>Stiff neck, severe headache, convulsions/seizures, drowsiness, loss of consciousness, difficulty breathing &lt;br&gt;Meningitis (infection of the membranes that surround the brain and spinal cord) &lt;br&gt;Epiglottitis (infection of the epiglottis, which is the flap at the top of the windpipe) &lt;br&gt;Pneumonia &lt;br&gt;Septicaemia (infection in the bloodstream) &lt;br&gt;Osteomyelitis (infection of the bone)</td>
</tr>
<tr>
<td>Measles</td>
<td>Virus spread via respiratory droplets</td>
<td>Fever, cough, rash, respiratory infections, diarrhoea and vomiting &lt;br&gt;1 in 15 with measles will develop pneumonia &lt;br&gt;1 in 1000 with measles will develop encephalitis, with 10 per cent dying and 40 per cent having permanent brain damage</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>Bacteria spread via respiratory droplets</td>
<td>Septicaemia (infection in the bloodstream) &lt;br&gt;Meningitis (infection of the membranes that surround the brain and spinal cord) &lt;br&gt;1 in 10 will die, 1 in 30 will have severe scarring of the skin or loss of limbs, 1 in 30 will have severe brain damage</td>
</tr>
<tr>
<td>Mumps</td>
<td>Virus spread via saliva</td>
<td>Swollen neck and salivary glands, fever, weight loss &lt;br&gt;1 in 200 will develop encephalitis &lt;br&gt;Inflammation of other organs of the body (e.g. reproductive organs, heart, brain, pancreas, liver, thyroid), occasionally causes infertility and/or deafness</td>
</tr>
<tr>
<td>Pertussis (whooping cough)</td>
<td>Bacteria spread via respiratory droplets</td>
<td>Uncontrolled coughing and vomiting &lt;br&gt;Bleeding, apnoea (temporary cessation of breathing while sleeping), pneumonia, inflammation of the brain, convulsions and coma, permanent brain damage &lt;br&gt;1 in 200 children under 6 months of age will die</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>Bacteria spread via respiratory droplets</td>
<td>Septicaemia (infection in the bloodstream) &lt;br&gt;Meningitis: 1 in 10 patients with meningitis will die</td>
</tr>
<tr>
<td>Poliomyelitis (Polio)</td>
<td>Virus spread via faeces and saliva</td>
<td>Vomiting, fever, headache, paralysis &lt;br&gt;1 in 20 hospitalised patients will die, 50% who survive will be permanently paralysed</td>
</tr>
<tr>
<td>Rotavirus</td>
<td>Virus spread via faeces, and saliva</td>
<td>Gastroenteritis — vomiting and diarrhoea, fever, dehydration</td>
</tr>
<tr>
<td>Rubella</td>
<td>Virus spread via respiratory droplets</td>
<td>Fever, rash, swollen glands, 1 in 3000 will develop thrombocytopenia (bruising or bleeding), 1 in 6000 will develop inflammation of the brain</td>
</tr>
<tr>
<td>Tetanus</td>
<td>Bacteria (that live in soil, dust and manure) enter the body through a break in the skin</td>
<td>Muscle spasms, inability to open the mouth, swallowing and breathing difficulties, convulsions, abnormal heart rhythm, suffocation, respiratory failure, high or low blood pressure, heart attack &lt;br&gt;3 in 100 will die</td>
</tr>
<tr>
<td>Chickenpox</td>
<td>Highly contagious virus spread via respiratory droplets</td>
<td>Fever and rash, pneumonia, 3 in 100000 patients will die and 1 in 100000 patients will develop encephalitis</td>
</tr>
</tbody>
</table>


In Australia, the government provides free vaccines to children under the National Immunisation Program. The routine schedule of vaccines for children is listed in table 9.10.
### TABLE 9.10 National immunisation program schedule for Australia, 2014

<table>
<thead>
<tr>
<th>Age</th>
<th>Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>• Hepatitis B</td>
</tr>
<tr>
<td>2 months</td>
<td>• Diphtheria, tetanus, pertussis, hepatitis B, poliomyelitis, Haemophilus influenzae type b, Pneumococcal, Rotavirus</td>
</tr>
<tr>
<td>4 months</td>
<td>• Diphtheria, tetanus, pertussis, hepatitis B, poliomyelitis, Haemophilus influenzae type b, Pneumococcal, Rotavirus</td>
</tr>
<tr>
<td>6 months</td>
<td>• Diphtheria, tetanus, pertussis, hepatitis B, poliomyelitis, Haemophilus influenzae type b, Pneumococcal, Rotavirus</td>
</tr>
<tr>
<td>12 months</td>
<td>• Measles, mumps, rubella, Haemophilus influenzae type b, Meningococcal C</td>
</tr>
<tr>
<td>18 months</td>
<td>• Measles, mumps, rubella, Chickenpox</td>
</tr>
<tr>
<td>4 years</td>
<td>• Diphtheria, tetanus, pertussis, poliomyelitis</td>
</tr>
<tr>
<td></td>
<td>• Measles, mumps, rubella</td>
</tr>
</tbody>
</table>


While immunisation is not compulsory in Australia, it is highly recommended. The Australian government monitors the immunisation rates of children. It is important for the majority of children to be immunised in order to ensure herd immunity. In order to maintain herd immunity, vaccine coverage needs to exceed 90 per cent of this population, and this has been achieved.

The government has also put in place a range of incentives to encourage all parents to get their children vaccinated. These include:

- **Primary school enrolment.** When enrolling a child in primary school, parents are required to present their child’s immunisation status certificate. This certificate lists the diseases the child has been immunised against. Children who are not immunised are still allowed to attend school. However, if there is a reported case of one of the diseases routinely vaccinated against, then the unvaccinated children will be sent home until the risk of infection passes.
- **Family assistance payments.** To be eligible to receive the Family Tax Benefit Part A supplement or day-care or child-care rebates, children need to be up to date with immunisations or have received an exemption.

Sometimes parents choose not to vaccinate their children against diseases. Reasons for doing this include:

- **Complacency due to lack of experience of childhood illness.** Many adults have not experienced vaccine-preventable childhood diseases, and may believe that childhood diseases have been eliminated from Australia. As a result, some parents may not consider vaccination as being important for the health and individual human development of their children. However, high vaccination rates within a country prevent diseases from re-emerging.
- **Concerns regarding reduced immunity in the child as a result of vaccination.** Vaccines do not reduce a child’s immunity. The vaccines contain dead or weakened versions of the disease that do not cause a full immune response.
- **Religious reasons.** Some religious groups have concerns about the ingredients in vaccines. For example, gelatine is added to some vaccines to protect them from changes in temperature that may affect the quality of the vaccine. Gelatine is usually made from animals such as pigs. As a result, some members of the
Islamic or Jewish faiths may object to vaccination on the grounds that the vaccines contain pork products.

- **Concerns regarding the safety of the vaccines.** Every vaccine used in Australia has been tested for safety and effectiveness. The risks of complications from childhood diseases are far greater than the risks associated with immunisation. For instance, the risk of contracting encephalitis (inflammation of the brain) from the measles, mumps, rubella (MMR) vaccine is thought to be one in a million immunisations. In comparison, the risk of encephalitis as a result of contracting measles is estimated as one in 200, with a 10 per cent risk of death and a 40 per cent risk of permanent brain damage.

- **Concerns that vaccinations can cause other disorders such as autism and diabetes and increase the risk of SIDS.** These concerns have been investigated and dismissed by researchers.

- **The belief that vaccinations do not work.** It is true that some people will still contract a disease even if they have been vaccinated against it. However, effective vaccinations rates are relatively high. For instance, complete immunity occurs in 95 per cent of people vaccinated against polio and measles and 84 per cent in people vaccinated against diphtheria.

### TEST your knowledge

1. Outline the benefits of breastfeeding to the baby.
2. What is colostrum and why is it important for the health and individual human development of children?
3. Why is it important to develop healthy eating patterns early in life?
4. Explain the relationship between food intake and physical activity in maintaining body weight.
5. In order to optimise the health and individual human development of children, what types of foods should be consumed? What types of foods should be avoided? Outline the reasons why.
6. Why is it important for children to consume breakfast daily?
7. What are the benefits of physical activity for each dimension of health and the different types of individual human development of children?
8. What is oral hygiene and why is it important for the health and individual human development of children?
9. What is plaque, and how does it increase the risk of dental cavities?
10. Outline the difference between gingivitis and periodontitis.
11. How can dental decay be prevented in children?
12. Outline the ways in which viruses can be spread.
13. Explain what vaccines are and how they protect the body from infections.
14. Why is it important to vaccinate children during infancy?
15. List the diseases that children in Australia can be vaccinated against.
16. Explain why it is important to have at least 90 per cent of the population vaccinated.
17. What are two examples of incentives that the government have put in place to encourage parents/carers to vaccinate their children?
18. Explain two reasons why parents may choose not to vaccinate their children.

### APPLY your knowledge

19. Draw up a table to show the advantages and disadvantages of both breastfeeding and bottle feeding.
20. Develop a wiki for new mothers outlining the importance of breastfeeding for the health and individual human development of their baby.
21. Using the Australian Dietary Guidelines and recommended servings, provide an outline of a daily diet that you would recommend for a three-year-old child and a child aged 9–11. Justify the foods you would include in the diet.
22. Develop a one-page handout outlining the importance of ensuring good oral hygiene in children.
23. Develop a health promotion media advertisement that focuses on good oral hygiene for primary school students.
24. As a community health nurse, you are required to write an article in a local newspaper trying to convince parents to ensure that their children are immunised. In your article, address some of the reasons why parents may choose not to immunise their children.
25. What are the advantages of having a National Immunisation Register and monitoring the immunisation rates?
26. ‘Parents/carers have the right to decide whether they get their children immunised.’ Discuss.
9.3 Determinants of health and individual human development of children: physical environment

KEY CONCEPT Understanding the physical environment determinants that have an impact on the health and individual human development of children

The physical environment refers to the surroundings in which a child lives and plays. The physical environment includes accessibility to resources such as housing, water, health services and recreational facilities. It also refers to the environmental conditions in which a child lives that impact on health and individual human development. For example, an asthma sufferer who lives in an area that has a high degree of air pollution may have a greater frequency of asthma attacks compared to an asthma sufferer who lives in an area with lower pollution levels. There are many factors within the physical environment that impact on the health and individual human development of children including tobacco smoke in the home, housing environment, fluoridation of water and access to recreational facilities.

Tobacco smoke in the home

Tobacco contains approximately 4000 different chemical substances, with at least 250 of these being found in second-hand smoke. The smoke that is exhaled from a smoker or is emitted from the tip of a burning cigarette is called environmental tobacco smoke. Passive smoking, which is the inhaling of environmental tobacco smoke, is particularly dangerous for children because their lungs are still developing. Environmental tobacco smoke exposes non-smokers to most of the same toxic gases, chemicals and fine particles that smokers inhale directly when they smoke tobacco. In the unfiltered smoke that comes from the tip of a burning cigarette, the particles can be finer and more concentrated, which means they can be inhaled deeper into the lungs and stay longer in the body of the passive smoker compared to the person who is smoking.

For children who live in a home where one or more people smoke, their health and individual human development may be affected in the following ways:

- increased risk of asthma and other serious chest infections such as bronchitis, bronchiolitis and pneumonia
- greater likelihood of symptoms such as coughing, phlegm, wheezing and breathlessness
- slower lung growth
- increased risk of meningococcal disease
- reduced immunity
- increased risk of middle-ear infection (otitis media), which may lead to hearing loss
- increased risk of SIDS in the first year of life
- a tendency to be shorter than average at all ages
- a tendency to be absent from school more often
- lower level of lung function during childhood (decreased capacity to breathe deeply).

Passive smoking has also been linked to the development of childhood cancers such as leukaemia, brain cancer and lymphoma.

It is estimated that children of parents who smoke inhale approximately the same amount of nicotine as they would if they actively smoked 60–150 cigarettes a year. Children who are exposed to environmental tobacco smoke are 40 per cent more likely to suffer from asthma symptoms as compared to children who are not exposed to environmental tobacco smoke. Approximately 8 per cent of childhood asthma in Australia is attributable to passive smoking.
Case study

Third-hand smoke — residue on walls, furniture and car interiors — more harmful than previously thought

By Laura Chalmers

Stale cigarette smoke clinging to walls, furniture and car interiors poses a greater risk to health than previously believed.

The Cancer Council Queensland will today release research showing third-hand smoke poses a serious health threat to children and could cause cancer.

It says parents need to ensure their home is totally smoke-free and any curtains, clothing, toys or floors that could have been exposed to smoke need to be cleaned.

‘Research shows many of the more than 4000 chemicals in second-hand smoke linger long after cigarettes are put out, sticking to surfaces and damaging human DNA in a way that can potentially cause cancer,’ Cancer Council Queensland spokeswoman Katie Clift said.

‘Chemicals from second-hand smoke stick to curtains, dust, clothing, toys and floors — and can remain in a home as third-hand smoke on surfaces for months after active smoking occurs.’

‘Making your home totally smoke-free is the only way to protect your family from the harmful effects of second- and third-hand tobacco smoke,’ she said.

About 3000 Queenslanders will die from a tobacco-related disease each year, with about 300 of the deaths caused by second-hand smoke exposure — young children are at risk from third-hand smoke partly because of their habit of putting their hands in their mouths.

One ex-smoker, now a mother, Tracy Hatten, 34, smoked for several years when she was younger and said she had undergone a conversion and was now a ‘complete anti-smoker’ who was opposed to smoking in public places.

She said she did everything she could to prevent her children, Callum, 6, and Evie, 3, from exposure to second-hand or third-hand smoke.

‘I really dislike it, I’ve even finally encouraged my mum to give up smoking,’ she said.

Health Minister Lawrence Springborg this month announced a ban on smoking at school gates or within 5m of hospitals.

The Cancer Council Queensland is pushing for the Government to go further and introduce smoke-free spaces across the state at locations such as bus stops, taxi ranks and shopping centres.

Chief Health Officer Jeannette Young said about 15 per cent of adult Queenslanders smoked regularly.

Source: Courier-Mail, 31 May 2014.

Case study review

1 What is meant by third-hand smoke?
2 What are the dangers of third-hand smoke to the health and individual human development of children?
3 According to the article, why are young children at greater risk from the dangers of third-hand smoke?

Housing environment

Housing environment plays a significant role in the health and individual human development of children. Ideally, a house provides shelter and a clean place in which to live, and protects children from the outside environment, including any physical dangers. However, some families are required to live in substandard or overcrowded dwellings due to low income. This can put family members at greater risk of poor health.

Overcrowding puts increased stress on water supplies (bathroom, kitchen and laundry) and sewerage disposal systems, and forces people to live in close proximity
9.3 Determinants of health and individual human development of children: physical environment

in the home environment. All these factors can result in the spread of infectious diseases such as meningococcal, meningitis, sepsis, tuberculosis, rheumatic fever, respiratory conditions and skin infections.

Prolonged periods of ill-health can impact on the health and individual human development of children (figure 9.25). A child who is ill is less likely to be engaged in physical activity, so motor skills may not develop according to the child’s potential. The child may not be able to socialise with other children, thereby affecting the capacity to develop social skills. This also reduces the opportunities for the child to develop emotionally through interaction with others. Continued absence from school may hamper the intellectual development of the child. Intellectual development may also be affected by the overcrowded living conditions as the child may not have the space to concentrate on schoolwork.

Homelessness has significant impacts on the health and individual human development of children, as children who are homeless are at greater risk of ill-health. Homelessness has been linked to increased rates of gastroenteritis and a range of respiratory conditions such as bronchitis and asthma.

Homeless children are at a greater risk of physical and sexual assault, as well as having insufficient and unhealthy food, and inadequate shelter. All of these factors can impact on the health and individual human development of the child. For instance, children who are physically or sexually abused may experience irreparable damage to their body. An example of this might be damage to the growth plate in bones, which affects bone growth. Such abuse may have a negative emotional effect, hampering the child’s capacity to trust others and form relationships. The child may also lose interest in school, thereby affecting intellectual development.

Safety in the home

Approximately 260 children die and 58,000 are hospitalised every year due to unintentional injury in Australia. This means that more Australian children die of injury than die of cancer, asthma and infectious diseases combined. Ensuring safety within the home is vital for promoting the health and individual human development of children. According to Kidsafe, most injuries in children under 6 years of age occur at home.
Some of the major concerns within the home environment are:

- drowning in the backyard swimming pool, garden water features, baths or nappy buckets
- access to cleaning products, medicines, chemicals and plants in the home that can cause poisoning
- falls from change tables, strollers, bunk beds and playground equipment such as slides, monkey bars and cubby houses
- tripping over toys and tools left lying around
- falls from verandas or stairs, or out of windows
- burns and scalds
- choking
- dog bites.

How safe are our homes?
Serious injuries to children under 6 years of age occur in the place you’d think they would be safest — their own home. Try checking your home against the following list of home safety features:

1. **Pools (and spas)** that are fully fenced, with well-maintained, self-closing gates.
   **Why?**
   Young children drown quickly and silently. Around 33 children under five drown each year in Australia in unfenced pools or pools with poorly maintained fences or gates.

2. **Hot water** from bathroom taps set at a delivery temperature of 50 ºC.
   **Why?**
   Hot water burns like fire. Many Australian homes have hot water coming from their taps at temperatures that can burn a child’s skin in one second.

3. **Barriers** such as gates on stairs, window latches and fireguards in place to keep children from hazards.
   **Why?**
   Falls down stairs, off furniture and out of windows are common and because young children are ‘top heavy’, head injuries can often occur.

4. **Child resistant catches** fitted to cupboards where dangers like medicines, cleaners, matches and lighters are stored.
   **Why?**
   Young children are curious and don’t understand danger. Telling them ‘not to touch’ is not enough to keep them safe. Dangerous products and cleaning products need to be stored away safely.

5. **Install smoke alarms**, test them regularly and change the battery once a year.
   **Why?**
   House fires continue to claim Australian lives every year. The correct smoke alarms correctly positioned provide a warning that may be critical to survival.

6. **Play areas** fenced off from the street and the driveway.
   **Why?**
   Cars and kids don’t mix. Young children have no fear of cars and are not easily seen by drivers. Every month a toddler is killed after being reversed over in a driveway.

Kidsafe estimates that if these six features were in place in all Australian homes, they would help prevent more than half of all home injury deaths among children under six and spare thousands of children from disability from preventable injuries.

**Source:** www.kidsafe.com.au.

**Fluoridation of water**
Fluoride is a natural mineral found in food, water, plants and toothpaste. The fluoridation of water involves adding fluoride to a public water supply to reduce tooth decay in the population. It is a safe and effective way of reducing the risk of tooth decay in people of all ages. In fluoridated areas of Victoria, six-year-old children experience 36 per cent less decay in their baby teeth than those in areas without access to fluoridated water, according to the Victorian government. Likewise, 12-year-old children living in areas with ready access to fluoridated water have 22 per cent less decay in their permanent teeth compared to those living in non-fluoridated areas. More than 80 per cent of Australians have access to fluoridated water.

Fluoridated water has numerous benefits for the health and individual human development of children as it:

- protects against tooth decay
- repairs weak spots on the surface of the tooth, thereby preventing cavities

**FIGURE 9.26** Fluoride in drinking water is a safe and effective way of reducing the risk of tooth decay.
Determinants of health and individual human development of children: physical environment

- reduces the amount of money spent on dental treatment, which can then be used for other health-promoting resources such as nutritious food
- reduces the time away from school for dental treatment
- reduces the pain associated with dental decay.

The consumption of fluoridated water, along with good nutrition and appropriate oral hygiene, helps protect children's teeth by reducing the risk of dental decay and subsequent tooth loss. Children's first teeth play an important role in the digestion of food and in reserving spaces for the second, permanent teeth. If a child has missing teeth, especially those at the front of the mouth, they may experience difficulties with speech development. Healthy teeth create a healthy smile, which help children feel good about how they look to others.

Access to recreational facilities

Access to recreational facilities has a significant impact on the health and individual human development of children. Recreational facilities that are easily accessible for families with children greatly increase the likelihood of regular physical activity being undertaken. Participating in regular physical activity has enormous benefits for the child. Children who are active will generally:

- have stronger muscles and bones
- have greater cardiovascular endurance
- be less likely to be overweight
- have a decreased risk of developing type 2 diabetes
- have a happier disposition and develop positive relationships with others
- have better sleep patterns
- be more capable of handling physical and emotional challenges
- be able to cope more effectively with stress and anxiety
- have higher levels of self-esteem
- have improved concentration.

The promotion of active play provides children with the opportunity to engage in physical activity that is vital for establishing healthy behaviours. Active play is basically physical activity with regular bursts of moderate to vigorous pace, such as playing in a playground where children run from one piece of equipment to another. Structured play is organised and involves rules, time limits and special equipment. Examples of structured play include play group, gym classes and swimming lessons. Unstructured play is often spontaneous and less restricted, such as allowing a child to play freely in a playground.

Toddlers and preschool children should be physically active for at least three hours each day, spread throughout the day.

Children aged 5–12 should undertake at least 60 minutes of moderate to vigorous physical activity. The activity does not have to occur in one session but can be accumulated in short bursts throughout the day.

Based on the 2011–12 National Nutrition and Physical Activity Survey, only 23 per cent of children aged 5–14 years met the national physical activity recommendations every day.

The state government department, Sport and Recreation Victoria, is responsible for allocating funds for the development of recreational facilities. The government recognises the importance of providing facilities at a local community level in promoting healthy lifestyles for all
Australians, both in urban and rural communities. As a result of this funding, local communities are able to offer a range of facilities from sporting grounds and stadiums to parks and playgrounds.

**TEST your knowledge**
1. Why is passive smoking particularly dangerous to children?
2. Explain the impact that exposure to tobacco smoke in the home can have on the health and individual human development of children.
3. Explain the relationship between overcrowded housing and ill-health.
4. How does homelessness impact on the health and individual human development of children?
5. What are the benefits of fluoridating water?
6. Why is it important for governments to provide funding for the development of recreational facilities?

**APPLY your knowledge**
7. The government should ban smoking in the home. Discuss.
8. Research information regarding the impact of homelessness and complete the following: As an advocate of human rights, write a letter to the government outlining the issues associated with poor housing/homelessness and the health and individual human development of children. Provide suggestions about how the government could address these issues.
9. Select two examples from the ‘How safe are our homes?’ checklist and discuss how their implementation would improve the health and individual human development of children.
10. Investigate the recreational facilities available in your local community. Create an information brochure outlining the facilities available, types of activities offered and the benefits of physical activity to the health and individual human development of children.
9.4 Determinants & health and individual human development of children: social environment

**KEY CONCEPT** The impact of the social environment on the health and individual human development of children

A range of social determinants impact on the health and individual human development of children. Families play a crucial role in the lives of children, providing them with physical, emotional and economic support. Children who are raised in stimulating and nurturing environments have been shown to have better outcomes throughout their lives. Parental education and parenting practices have both been found to play an important role in influencing children's health and individual human development. Two other social factors that lie outside the family that also influence children's health and individual human development are the media and access to health care.

**Parental education**

Parental education refers to both the formal level of education that is achieved by parents (e.g. through tertiary qualifications) and the level of knowledge that may be attained through more informal means (e.g. by reading newspapers or watching television).

Education enables parents to gain the knowledge and skills needed to promote the health and individual human development of their children. Higher levels of education provide parents with a greater understanding of health, particularly of health risks and protective factors. Therefore parents with higher levels of education will tend to have a greater understanding of the factors that impact on the health and individual human development of children (e.g. nutrition, physical activity and vaccination). This is particularly true for mothers, who are traditionally the caregivers of the family.

Formal qualifications provide opportunities for better employment and higher income, which enable individuals to have a healthier lifestyle and greater access to health-promoting resources such as nutritious foods and health care. This has a significant effect on children because parents are responsible for the provision of resources that are necessary for health and individual human development.

Parental employment status has a significant impact on the health and individual human development of children. According to the Australian Bureau of Statistics, 11 per cent of families with dependent children had no one in the family who was working (jobless families) in June 2012. Over one-third of one parent families with dependants were jobless compared to one in 25 couple families with dependants. There were 362,000 children aged 0–14 years living in jobless one-parent families in June 2012.

Children who do not have a parent in paid employment are more likely to be living in a stressful home environment due to financial pressure. Low family income can negatively affect the health, education and self-esteem of children. Children living in families without adequate income are at a greater risk of poor health and educational outcomes. Lack of family income can affect a child's food intake, access to medical care, the safety of their environment, level of stress in the family, quality and stability of their care, and provision of appropriate housing, heating and clothing. Children from low-income families are more likely to suffer from poor

**FIGURE 9.28** Parental education is a key determinant of employment status and income.
physical, mental and social health, and this can affect their individual human development.

Higher levels of education provide adults with greater choices in their occupation. This increases the likelihood that they will be employed in positions they find stimulating and rewarding. Their family environment is more likely to be harmonious and supportive as a result, and this has a positive impact on the health and individual human development of children.

**Parenting practices**

Parenting practices refer to the way in which the parents or guardians interact on a daily basis with their child and how they model behaviour. It incorporates the type of discipline that is used and the way in which the parent/guardian responds to the child in different situations. Parents and guardians have an enormous impact on the social development of children, particularly in the following areas:

- teaching respect for others
- developing effective means of communication
- learning values
- learning appropriate behaviours
- learning how to cooperate effectively with others
- being empathetic towards others.

Parents/guardians of children tend to adopt a particular parenting style, and this can have an impact on the health and individual human development of the child. The four main types of parenting styles are:

- **Authoritarian parenting style.** Authoritarian parents/guardians tend to use direct parenting styles with an overemphasis on discipline and little or no opportunity for decision making by the child. Authoritarian parents/guardians can be intimidating, with an expectation of obedience and respect. Expectations are not explained but simply demanded of the child, and the parent/guardian will become angry and forceful if the expectations are not met. Authoritarian parents/guardians may feel threatened by the emerging independence and individuality in the child. Research has shown that children who have been raised by authoritarian parents/guardians tend to be more withdrawn, anxious and discontented, with lower self-esteem and less trust in others.

- **Authoritative parenting style.** Authoritative parents/guardians tend to provide fair discipline while also catering for the
self-esteem needs of the child. They have high but not unrealistic expectations, and effectively communicate these to the child. Good behaviour is rewarded with positive encouragement and reinforcements. Authoritative parents set limits and implement fair disciplinary measures if these are breached. They acknowledge and respond to a child’s individuality and support the child’s developing independence. Children who have had an authoritative upbringing tend to be more self-reliant, self-controlled and happy. They usually have a wide social network of friends, perform better in school and have higher self-esteem.

- **Permissive parenting style.** Permissive parents/guardians tend to overemphasise the self-esteem needs of the child and fail to discipline the child when required. They have very little or no expectations of the child and will usually ignore obnoxious behaviour. Permissive parents give in to their child’s demands, thereby reinforcing the demanding and inconsiderate aspect of the child. They do not set rules or limitations, and their love and support of the child is unconditional. Children who have been raised in a permissive environment tend to be more immature, demanding and dependent. They may have social issues arising from a tendency to blame others for their problems.

- **Uninvolved parenting style.** Uninvolved parents/guardians tend to be neglectful, unresponsive and uncommunicative. They make sure that their children’s basic survival needs are met but they remain emotionally detached from their children and the whole parenting experience. As a result of this style of parenting, children may have issues with cognition, attachment and the development of emotional and social skills.

Some children may live in situations where the parents/guardians use abuse as a part of their parenting practices. Children who are subjected to regular acts of...
abuse by their parents/guardians are at greater risk of emotional and behavioural problems when compared to other children.

There are four categories of abuse:
• physical — when the parent/guardian hurts their child by hitting, slapping, shoving, pushing, biting, kicking or burning
• verbal — when the parent/guardian yells mean and hurtful things at their child, scaring or threatening them
• sexual — when the child is touched in a sexual way or forced to have sex
• neglect — when the parent/guardian hurts the child by not providing care, food, clean items, safety, clothing, love and support.

The effects on children exposed to abuse can be short and long term. Short-term effects include the child:
• blaming themselves for the situation
• having sleeping difficulties
• regressing to earlier stages of development such as bedwetting and thumb sucking
• being anxious or fearful
• displaying aggressive or anti-social behaviour
• isolating themselves from people
• not attending social or school events
• becoming a victim or perpetrator of bullying
• being cruel to animals
• suffering from stress-related illnesses such as headaches and stomach cramps
• displaying speech problems such as stuttering
• misusing drugs and alcohol.

The long-term effects of exposure to abuse may result in the child growing up to be an abusive person from learning to solve problems through the use of violence. From witnessing the violent behaviours of their adult role models, children may grow up to behave in destructive ways in their own adult relationships.

Drug and alcohol dependence in parents/guardians may leave them unable to appropriately care for their children, who may be hurt or neglected as a result of the addiction. For parents/guardians in this situation, the need for drugs or alcohol may take priority over looking after their children’s needs. Children growing up with parents/guardians with a drug and/or alcohol dependency may:
• lack the essential nutrients required for growth and development
• have difficulties at school
• encounter learning problems
• develop emotional problems due to stress or anxiety
• lack trust in adults
• be at increased risk of mental illness or suicide in later life
• be at increased risk of substance abuse.

Media

The introduction of media technologies (TV, video, games, Internet, music, mobile phones) and social media have brought about a change in the experience of childhood in our society, and these new media can have a significant impact on the health and individual human development of children. Media can have both a positive and negative impact depending on the age of the child, the type of media, whether or not the use of media is regulated by parents, and whether parents choose to get involved when their child is using media technologies.
9.4 Determinants & health and individual human development of children: social environment

How media can benefit children

For children under two, there are no benefits from any media — it is recommended that parents avoid exposure to the media until children are at least two years of age. For children aged 2–8, television programs should be chosen carefully, but movies and computer games can promote individual human development and improve social health. For younger children these benefits include:

- development of literacy skills by learning letters of the alphabet through children's programs such as Play School and Sesame Street, or through educational computer games
- development of numeracy skills by learning how to count through programs such as Sesame Street and Play School
- learning social skills such as cooperation by watching television programs and using computer games and websites, such as ABC for Kids, that show cooperative and helping behaviour.

For older children, there are:

- intellectual benefits such as developing problem-solving and critical thinking skills through playing computer games, or developing morals by comparing family values with those found in fiction and documentary content
- educational benefits through the encouragement of reading after watching a program or movie based on a book
- creative benefits through the development of skills such as imagination, art and modelling, music and media, by using software to create a picture, or being inspired to make something by a television show
- benefits to social health and development by joining online clubs designed for children such as Club Penguin or Skoodle, which teach children strategies for effectively and safely using social networking sites or playing computer games with friends and family.
- cultural benefits from being exposed to diversity, especially ethnic diversity that can foster a greater understanding of different cultures (adapted from raisingchildren.net.au).

However, the media is not always a positive influence on children's health and individual human development. Parents are often challenged when deciding which media is good for their children and which media could have a negative influence. Parents are therefore encouraged to sit with their children, especially young children, to decide whether the type of media being consumed is likely to have a positive impact.

Children can often be exposed to violence through the media, which can undermine their sense of safety and security as well as normalising violence as an acceptable method of solving conflict.

Children will often see people in the media as role models. When these role models display positive behaviour, the impact on health and individual human development can be positive. However, poor role models can influence children to behave inappropriately or encourage them to take unnecessary risks.

Children should also be monitored when using the internet to ensure they do not accidently access websites that are inappropriate.

The use of media can have a negative impact if the amount of time being spent by children is beyond what is recommended. Children aged 2–5 should not spend more than one hour watching television or DVDs, or using the computer. Children over five should not spend more than two hours per day in front of a screen. Children's media use should be balanced with creative play, sport, other physical activity and music to promote optimal health and individual human development.
It has been estimated that Australian children (aged 5 to 12 years) watch an average 23 hours of television per week; up to four hours are made up of advertisements which equates to 208 hours per year. More than three-quarters of food advertisements shown during children's TV viewing time promote foods low in nutritional quality such as chocolate, confectionary, fast food and sweetened breakfast cereal. Food advertisers on television use techniques such as prizes, catchy jingles, animation and celebrities to attract children's attention and create a desire to want the product. Children are susceptible to television advertising and will pressure their parents to purchase the advertised products.

**Impact of food advertising**

Media can also expose children to excessive food advertising. Advertisements for certain products — breakfast cereals, snacks, softdrinks and fast foods — are often targeted at children. These types of foods are high in saturated fats, simple carbohydrates and sodium, and can contribute to the development of overweight and obesity.

Childhood overweight and obesity are linked to numerous health risks including:

- **Social and mental health**: overweight and obesity can lead to social isolation and discrimination, poor self-esteem, depression, learning difficulties and limited social skills.

- **Physical risks in childhood**: back pain, flat feet, slipped growth plates in the hips, knock knees (where the knees touch), fatty liver, type 2 diabetes, menstrual problems, asthma and obstructive sleep apnoea (pauses in breathing due to an obstruction of the open airway).

- **Physical risks in adulthood**: type 2 diabetes, cardiovascular disease, stroke, hypertension, some cancers such as colorectal cancer, musculoskeletal disorders and gall bladder disease. Overweight and obesity can result in a reduced life expectancy.

- **Dental health**: The consumption of high sugar foods and acidic soft drinks is the biggest risk factor for dental erosion and dental caries in children and adolescents.

- **Bone health**: Children who consume soft drink rather than milk may have low bone density due to inadequate calcium intake.

The childhood obesity rate in Australia is one of the highest in the world; in 2012, the proportion of overweight and obese children (aged 5–17) was 25.3 per cent.

**Access to health care**

Access to health care during childhood is vital for the health and individual human development of children. Through the provision of easily accessible health care services, parents are able to monitor growth, check the health status of their child and treat illnesses/conditions in their earliest stage to maximise recovery and promote health and individual human development.

Access to health services is important in the birth of a child, in order to have medical professionals readily available in case of complications and to ensure that the baby is carefully monitored and cared for. During the birth, a caesarean section (in which the baby is delivered through an incision in the mother’s abdomen) may be required if there are difficulties in delivering the baby or if the baby is in foetal distress and not receiving enough oxygen. Newborn babies requiring specialist care are placed in a neonatal intensive care unit, which specialises in the care of ill or premature babies (figure 9.34). Approximately 8 per cent of births in Australia are premature (born before 37 weeks gestation) and require medical attention.
Maternal and child health service

Once a child is born, the mother is referred to the maternal and child health service where they are provided with support, information and opportunities to discuss concerns related to the health and individual human development of children. Maternal and child health centres are located within the community and offer the following:

- provision of information, support and advice on a range of topics including parenting, child health, development and learning, child behaviour, maternal health, child safety, immunisation, nutrition, breastfeeding and family planning
- provide health and development checks
- home visits in the first few days following birth or when circumstances require
- assistance with contacting other specialist services such as early parenting centres
- support for those experiencing difficulties.

By accessing the maternal and child health service, parents can identify issues and possible problems so that steps can be taken to address them early in life. Regular assessments evaluate the child’s health and individual human development at particular stages. These assessments include:

- regular checks of weight, height and head circumference to determine the amount of growth. These measurements are plotted onto percentile charts to determine the child’s rate of growth in comparison to other children (figure 9.35).
- checks of motor skill development
- screening of hearing and eyesight
- observation of play
- physical examination (e.g. heart rate, breathing).

**PERCENTILE CHARTS**

Percentile charts have been developed for the three measurements of weight, height and head circumference. If a baby or child lies on the 10th percentile for weight for example, it means 90 per cent of children the same age are heavier than the child and 10 per cent of babies weight less. In both examples, the children — although different in size — are within the normal range for weight. An average child would be close to the 50th percentile. Regular measurements show visually if the child is increasing in height, weight and head circumference and is therefore developing as they should.

**Primary School Nursing Program**

In order to promote the health and individual human development of primary school children, the Victorian Government’s Department of Human Services offers a free universal health-care service to all Victorian Primary and English Language Centre Schools through the Primary School Nursing Program.
The aim of the program is to provide all Victorian children with the opportunity to have a health assessment, to link children, families and school communities to services available in their local community, and to provide information and advice that promotes health and individual human development.

All children are offered a health assessment in their first year of school through a School Entrant Health Questionnaire, which contains a range of questions regarding health history, wellbeing and family circumstances. The questionnaire also provides opportunities for parents/carees to express any concerns that they may have about their child. Further assessment may be undertaken at the request of the parents/carers, such as a vision or hearing test. The completed questionnaire provides important information about a child's health and individual human development so that the nurse can make an effective health assessment. If there are concerns, a child may need to be referred to another health professional or agency. Throughout primary schooling, parents can request for a health assessment to be completed for their child.

Primary school nurses also provide health information and advice about healthy behaviours and link children and their families to community-based health and wellbeing services.

**TEST your knowledge**

1. Explain the relationship between parental education and the health and individual human development of children.
2. How can the long-term unemployment of one or both parents impact on the health and individual human development of a child?
3. (a) What are the four main parenting styles?
   (b) Explain how each parenting style can impact on the health and individual human development of a child.
4. Outline the four categories of abuse.
5. List the possible short-term effects on the health of a child as a result of exposure to violence.
6. What are the possible effects of a parent's or guardian's drug dependence on a child's health and individual human development?
7. Explain three negative impacts the media can have on the health and individual human development of children.
8. Explain three positive impacts the media can have on the health and individual human development of children.
9. What is social support?
10. Explain the impact of food advertising on the health and individual human development of children.
11. Explain why access to health care during birth is important for the health and individual human development of infants.
12. Explain the role of the maternal and child health service.
13. What types of assessment are made of the developing child by the maternal and child health nurse? Why are these assessments important?
14. Explain the Primary School Nursing Program.

**APPLY your knowledge**

15. Explain how low income can affect a child in terms of:
   (a) level of nutrition
   (b) access to medical care
   (c) the safety of the environment
   (d) the level of stress in the home
   (e) the quality and stability of care.
16. Explain how each parenting style (authoritarian, authoritative, permissive and uninvolved) would approach the following case studies:
   (a) Lachlan is eleven years old. His parents have recently found out that he has not been handing in his homework.
   (b) Maria is eight years old. She constantly argues with her younger brother and sister.
   (c) Benjamin is five years old. He refuses to pay attention to his mother and ignores her instructions.
   (d) Melanie is six years old and refuses to eat any fruit or vegetables. Her diet consists of chicken nuggets, chips and pasta.
17. Select a one hour television timeslot and take note of the food advertisements shown during this time. Record the types of foods that are being marketed and their target audience. How many advertisements market unhealthy foods to children? What is the possible impact of this advertising on the health and individual human development of children?
18. Explain how the Primary School Nursing Program can promote the health and individual human development of children.
19. Invite a maternal and child health nurse into the class or visit a maternal and child health centre and develop a poster or multimedia presentation that explains the importance of the service in promoting the health and individual human development of children.
9.5 Determinants that act as risk and/or protective factors for asthma

**KEY CONCEPT** Understanding the determinants that act as risk and/or protective factors in relation to asthma

There are a range of biological, behavioural, physical environment and social determinants that impact significantly on the health of children in Australia. A range of health issues contribute significantly to the burden of disease during childhood (figure 9.36) and are the product of a combination of these determinants.

By understanding these health issues and the determinants that act as risk and/or protective factors for each, a range of personal, community and government strategies and programs can be implemented to optimise the health and individual human development of children in Australia.

**Asthma**

Asthma is a common inflammatory condition of the airways resulting in wheezing, breathlessness and tightness of the chest. The lining of the airways become swollen and inflamed, producing sticky mucus that causes a narrowing of the airways, making it difficult for the child to breathe. Asthma cannot be cured; however, with the appropriate preventive and relief medication, asthma can be controlled effectively, enabling children to lead active, normal lives.

**Why is asthma a health issue for children?**

Asthma is one of the most common causes of hospital admissions and visits to medical centres for children. It is the most frequently reported long-term
chronic condition with approximately 10 per cent of Australian children aged 0–14 having asthma (Australian Bureau of Statistics, 2007–08 National Health Survey). Figure 9.38 shows the prevalence of asthma among children aged 0–14 in 2007–08.

**Figure 9.38** Prevalence of asthma among children aged 0–14, 2007–08

### Determinants acting as risk and/or protective factors in relation to asthma

While the underlying causes of asthma are still not well understood, the following determinants may increase the risk of developing asthma or increase the risk of having an asthma attack.

#### Biological

Biological determinants that impact on asthma in children include:
- **Genetics:** having a parent with asthma, eczema or hay fever increases a child’s risk of developing asthma.
- **Body weight:** being overweight or obese increases the risk of a child developing asthma.
- **Sex:** more boys have asthma than girls. This may be due to the fact that young boys tend to have smaller lungs than young girls.
- **Respiratory infections:** infants who have respiratory infections are up to 40 per cent more likely to develop asthma as children.

#### Behavioural

Behavioural factors that impact on asthma in children include:
- **Eating habits:** approximately 2.5 per cent of people with asthma are affected by food and drinks but food is not a common trigger for asthma. A myth is that milk is a trigger for asthma; however, studies have not shown a link between the consumption of milk and asthma.
- **Physical activity:** exercise may trigger an asthma attack. Exercise-induced asthma can usually be controlled with an appropriate warm-up and medications.
- **Breast feeding:** infants who are breastfed are less likely to suffer childhood asthma.
9.5 Determinants that act as risk and/or protective factors for asthma

Physical environment
The physical environment can impact on asthma in children in the following ways:
• Tobacco smoke in the home: children who have a mother who smokes are four times more likely to suffer from asthma.
• Air pollution: both indoor and outdoor air pollution can make asthma symptoms worse; however, it is not clear if pollution causes asthma.
• Exposure to allergens: house dust mites, pollens, mould spores and animal hair or fur can all be triggers for asthma.
• Weather fluctuations: temperature changes and thunderstorms can bring about asthma attacks in some children.

Social
Some of the social determinants that have a relationship with childhood asthma include:
• Parental education: those with lower levels of education have higher rates of smoking. Being exposed to tobacco smoke in the home increases the risk of respiratory infections and possibly asthma during childhood. Smoking during pregnancy can increase the risk of asthma during childhood. A lack of understanding about asthma and its treatment may result in asthma being left untreated, increasing the risk of mortality.
• Socioeconomic status: higher rates of asthma are seen in a low socioeconomic status population. A possible reason for this is increased exposure to the environmental factors that impact on asthma in poor households. For example, living in a household that contains mould may increase the risk of an asthma attack.

TEST your knowledge
1 (a) Briefly explain asthma.
(b) What are the symptoms of asthma?
(c) What percentage of children had asthma in 2007–08?
2 Explain why asthma is a health issue for children.

APPLY your knowledge
3 Select two determinants of health and explain how they impact on asthma.
4 Prepare a poster that could be used to educate children about the risks of asthma and the determinants that can protect against/contribute to it.
5 Explain three ways in which asthma could impact on the health and/or individual human development of children.
6 Use the Asthma links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
9.6 Determinants that act as risk and/or protective factors for falls and injuries

KEY CONCEPT Understanding the determinants that act as risk and/or protective factors in relation to falls and injuries

Children are MORE LIKELY to be injured than adults. Why?

- Children have softer and, for their size, bigger heads than adults.
- Children don’t always know how to keep themselves safe — they haven’t learned yet.
- Children are shorter than adults, so they are less likely to be seen (for example, by drivers on the road) and see what’s going on.
- Children have small arms, legs, hands, feet and fingers that can get caught in small gaps and holes.

Young children have thinner skin than adults, and their skin can be easily hurt.

FIGURE 9.39 There are many reasons why children are more likely to be injured than adults.

Falling is the most common cause of injury for children of all ages. The seriousness of an injury is determined by the height from which the child has fallen, the surface onto which the child falls and the objects or surfaces the child may hit as they fall.

Other injuries such as burns and scalds can occur as a result of fire, hot surfaces and hot liquids. Hot liquids cause 2 out of 3 burns in young children. Severe burns can actually result in the death of a child as their skin is thinner than the skin of an adult.

Swallowing chemicals or poisons are also key reasons for children being hospitalised. Children, particularly under the age of five, will naturally put things in their mouth. Household chemicals such as cleaning products and medicines are the most common cause of poisoning in children.

Other causes of injury and death in children include bicycle accidents, road accidents, drowning and choking.

Why are falls and injuries a health issue for children?

Approximately 260 children die and 58,000 are hospitalised as a result of unintentional injury in Australia. The vast majority of these injuries and deaths are preventable.

Falls and injuries are a health issue for children as unintentional falls are the most common cause of injury hospitalisations for children aged 0–4, accounting for 42 per cent of the total for injury hospitalisations. This is followed by injuries due to smoke inhalation, contact with fire, heat and hot substances (8 per cent) and poisoning by drugs (6 per cent).

In the 5–14 age group, falls were the most common cause of injury requiring hospitalisation (46 per cent), followed by transport accidents (16 per cent).

FIGURE 9.40 Bicycle riding is one of the causes of injury in children.
Determinants acting as risk and/or protective factors in relation to falls and injuries

Biological
A range of biological determinants can increase the risk of falls and injuries in children:
- Body proportion: children, particularly toddlers, have a large head size in relation to their body. This is due to the cephalocaudal pattern of development. As a result, they have a higher centre of gravity which makes them more likely to fall over.
- Height: being smaller in stature than adults, children are less likely to be seen by vehicles on the road and are less able to see potential dangers.
- Thinner skin: children tend to have thinner skin than adults which puts them at greater risk of damaging their skin from an injury or fall.
- Smaller body size: children have smaller fingers, hands, arms, toes, feet and legs which can get caught in small gaps and holes, thereby increasing the risk of injury.
- Motor skill development: young children are more likely to drop things, trip and fall as their motor skills are still developing.

Behavioural
Behavioural determinants that play a role in injuries and falls in children include:
- Physical activity: children engage in play and physical activity which can potentially result in falls and injuries. While playgrounds have been designed to reduce the risk of falls and injuries, there is still a significant risk. Riding a bicycle, scooter, skateboard or roller skates/blades can increase the risk of falls and injuries.

Physical environment
Factors within the physical environment can act to increase or decrease the risk of falls and injuries. Examples include:
- Access to recreational facilities: many playgrounds have been designed to reduce the risk of injury. For example, many have a rubberised surface which decreases the risk of injury if a child falls. For older style playgrounds, these types of surfaces do not exist which increases the risk of a child being injured.
- Housing environment: many falls and injuries occur in the home. Tripping on objects in the home, such as toys left lying around, can increase the risks of falls. Leaving children unsupervised around hot surfaces and objects can result in a child being burnt or scalded if they touch the surface or object. Leaving medications and poisons in areas where children can gain access to them can potentially result in severe internal injuries and possibly death.

Social
A range of social determinants play a role in the rate of falls and injuries experienced by Australian children. Examples include:
- Lack of knowledge leading to risk-taking behaviour: children do not always have the knowledge regarding how to keep safe. As a result, they may engage in behaviours that increase their risk of falls and injuries.
• Natural inquisitiveness: children are naturally inquisitive and may become injured when exploring their surroundings.
• Peer pressure: some children may feel pressured by their peers to engage in risk-taking behaviour, leading to falls and injuries. For example, completing a trick on a skateboard or bike may result in a child falling and injuring themselves.
• Lack of supervision: parents, guardians or supervisors may not maintain constant supervision of a child in their care. As a result, a child may fall and become injured in a situation that may have been prevented if the child had been carefully supervised.

TEST your knowledge
1 Why are children at greater risk of falls and injuries than adults?
2 Why are falls and injuries an issue for children in Australia?
3 Discuss the determinants of health that may increase or decrease the risk of falls and injuries in children.

APPLY your knowledge
4 Using the determinants of health as the basis of your response, explain reasons that may account for children having high rates of falls and injuries.
5 Design a poster that could be used to educate parents about the importance of ensuring the safety of children in their home.
6 Access the Kidsafe links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
Determinants that act as risk and/or protective factors for food allergies

**KEY CONCEPT** Understanding the determinants that act as risk and/or protective factors in relation to food allergies in children

Food allergies are an adverse immune response to a food that has been eaten. In an attempt to protect the body, the immune system produces antibodies to that particular food. These antibodies trigger allergy cells in the body (mast cells) to release chemicals into the bloodstream. Once the body has made antibodies against a particular food or foods, the body recognises the foods when they are consumed, resulting in an allergic reaction. A range of symptoms can occur including breathing difficulties, stomach upsets, skin rashes and, in severe cases, death. In children with severe allergies, a reaction can occur as a result of touching or breathing in the particles of food.

A serious and potentially life threatening allergic reaction is known as anaphylaxis. The symptoms of an anaphylactic reaction include swelling of the airways, serious breathing difficulties, a decrease in blood pressure, loss of consciousness and possibly death. Children who have an anaphylactic reaction are required to have an injection of epinephrine (EpiPen) which will prevent the reaction from becoming life threatening.

Children can be allergic to a wide range of foods but the eight most common foods that cause allergic reactions are: milk, eggs, peanuts, soy, wheat, tree nuts (such as walnuts and cashews), fish and shellfish (such as prawns).

Why are food allergies a health issue for children?

Food allergies occur in approximately 1 in 20 children. Over the past decade, hospital admissions as a result of anaphylaxis have doubled in Australia. In the 0–4 age group, admissions due to food allergies have increased five-fold in the same period. Anaphylaxis is a severe allergic reaction that can result in death.

Determinants acting as risk and/or protective factors in relation to food allergies

Food allergies and the management of them in children have been linked to a number of risk and protective factors including the following.

**Biological**
- Age: some food allergies in children are not severe and will disappear over time.
- Genetic predisposition: children who have one family member with one or more allergic diseases, including asthma and eczema, have a 20 to 40 per cent greater
risk of developing a food allergy. This increases to 50 to 80 per cent if there are two or more family members with allergic conditions.

• Sex: a higher proportion of male children tend to have food allergies compared to female children.

**Behavioural**

• Breastfeeding: exclusive breastfeeding in the first four to six months of a child’s life can protect against the development of food allergies in early childhood. If a child is allergic to a particular food, then it is important for the breastfeeding mother to avoid eating that food.

• Early commencement of solid foods: starting a child on solid foods earlier than recommended can increase the risk of developing food allergies in early childhood.

• Accidental consumption of foods causing an allergic response: children with food allergies may consume food that they are allergic to. Children must be taught not to take food from other children and consume only food that has been specifically prepared for them.

**Physical environment**

• Availability of foods causing allergic responses: where children have access to foods they are allergic to, there is an increased risk of an allergic response.

**Social determinants**

• Education: education plays a key role in understanding the causes of food allergies and how to prevent an allergic reaction. For a child with anaphylaxis, education regarding how to effectively administer the EpiPen is important for ensuring that the child is treated appropriately.

• Family: the types of foods that are eaten within a family can reduce the risk of a child with a food allergy having a reaction. It is the responsibility of family members to ensure that a child is not at risk and appropriate supervision of a child will assist in ensuring that they do not consume foods that could potentially cause an allergic reaction.

• Access to health care: children who experience a severe allergic reaction require an injection of epinephrine in order to prevent the reaction from becoming life threatening. Children who have an allergic reaction are required to be monitored in a medical facility for at least four hours to ensure that they have effectively recovered from the anaphylactic reaction.

**TEST your knowledge**

1. Explain how an allergy develops.
2. What are the top eight foods that can cause an allergic reaction?
3. Explain why food allergies are a health issue for children in Australia.

**APPLY your knowledge**

4. Explain how access to health care can promote the health of children with food allergies.

5. Make a short video that could be used to educate parents regarding the determinants that impact on food allergies in children.

6. Use the Food Allergy links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
9.8 Determinants that act as risk and/or protective factors for juvenile arthritis

**KEY CONCEPT** Understanding the determinants that act as risk and/or protective factors in relation to juvenile arthritis

Juvenile arthritis is any form of autoimmune or inflammatory condition that can occur in children under 16 years of age. The normal role of the immune system is to fight infections; however, in a child with juvenile arthritis, the immune system starts attacking the healthy tissues, particularly the lining of the joint (synovial membranes). Synovial membranes produce synovial fluid that lubricates and cushions the connecting bones of the joint as well as providing nutrition to the cartilage covering the ends of the bones. When the synovial membranes become inflamed, more fluid is produced, resulting in the affected joints becoming swollen, painful and stiff. The term arthritis means ‘joint inflammation’, but juvenile arthritis can also affect the eyes, skin and gastrointestinal tract. The symptoms typically include pain, joint swelling and stiffness, skin rashes, anaemia, fever and inflammation in one or more joints. Juvenile arthritis is also referred to as juvenile rheumatoid arthritis, juvenile idiopathic arthritis, juvenile chronic arthritis and Still’s disease.

**Why is juvenile arthritis a health issue for children?**

Juvenile arthritis affects less than 1 per cent of children under the age of 16 in Australia. Juvenile arthritis is not a particularly common condition of childhood, but it does have significant impacts on health and individual human development. It can cause damage to the joint cartilage that covers the ends of the bones as well as the surrounding structures. This can result in joint weakness, instability and deformities that can interfere in the child’s ability to perform the most basic tasks such as walking, eating and dressing. The pain, stiffness and fatigue associated with juvenile arthritis may impact on their mental health and sense of well being. A child with juvenile arthritis may be unable to participate in certain physical and social activities, resulting in a feeling of isolation.
In the 10 years to 2009–10, the age-standardised hospitalisation rates for juvenile arthritis increased significantly, from 8.8 per 100 000 population in 2000–01 to 28.9 per 100 000 in 2009–10 (see figure 9.45). The hospitalisation rate for girls (39 per 100 000 population) was more than double the rate for boys (19 per 100 000 population). The reasons for this difference are not clear.

**Determinants acting as risk and/or protective factors in relation to juvenile arthritis**

Research into the determinants acting as risk and/or protective factors in relation to juvenile arthritis have focused on genetics and environmental factors such as exposure to viruses, bacterial infections, psychological stress and physical trauma. The research has found genetic factors that increase the susceptibility to juvenile arthritis; however, research into the impact of environmental factors has been less successful.

**Biological**

Biological factors related to juvenile arthritis include:
- Genetics: current research indicates that there may be a genetic predisposition to juvenile arthritis.
- Age: some children may grow out of the condition as they age.
- Sex: a greater number of girls are affected by juvenile arthritis than boys.

**Behavioural**

Although a link has not been established between particular behaviours and the onset of juvenile arthritis, there are behaviours that can assist in managing the condition, including:
- Physical activity: regular physical activity will help maintain the mobility of the joints. Over-exercising can also increase the pain associated with juvenile arthritis. Exercising in water enables the child to complete non-weight bearing exercise, which reduces the impact on the joints.
- Eating habits: if children over-consume energy-dense nutrients then they are at risk of becoming overweight/obese. Extra body weight increases the stress on joints, particularly the knees, hips and back, which can increase the pain associated with juvenile arthritis. (Note: there is no evidence that foods, toxins, allergies or vitamin deficiencies are a cause of juvenile arthritis.)
9.8 Determinants that act as risk and/or protective factors for juvenile arthritis

**Physical environment**
- Access to recreation facilities: if recreation facilities such as walking paths and swimming pools are not accessible, children with juvenile arthritis may not get the required amount of physical movement required to maintain joint mobility.
- Housing environment: ensuring safety in the home is important for reducing the risk of injury for children with juvenile arthritis due to their inability to move quickly and lack of balance as a result of inflamed joints.

**Social determinants**
- Access to health care: in order to promote the health of children with juvenile arthritis, it is important that they are able to access the relevant health care. As there are different types of juvenile arthritis, the type of treatment will vary according to individual circumstances. Children may require therapy to strengthen muscles and keep the joints flexible in order to promote normal limb development. Medications to control inflammation and prevent long-term joint damage are also important for treating children with juvenile arthritis.
- Parental education: being able to effectively manage and treat juvenile arthritis is dependent on the parents/guardians having the required knowledge to ensure that the relevant courses of treatment/therapy are being followed.

**TEST your knowledge**
1. Explain juvenile arthritis.
2. What are the symptoms of juvenile arthritis?
3. What causes juvenile arthritis?
4. Outline the impact that juvenile arthritis has on the health and individual human development of children.

**APPLY your knowledge**
5. Make a short video that could be used to educate parents about caring for children with juvenile arthritis.
6. Use the juvenile arthritis links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
9.9 Determinants that act as risk and/or protective factors in relation to type 1 diabetes

**KEY CONCEPT** Determinants that act as risk and/or protective factors in relation to type 1 diabetes

Type 1 diabetes is an auto-immune condition where the immune system attacks the cells in the pancreas that are responsible for producing insulin. Insulin is required for the body's cells to convert glucose into energy. Without insulin, the glucose remains in the bloodstream rather than being used by the cells to create energy. In order to provide the energy that is required, the body burns other sources of fuel such as stored fats. The burning of fat in the body results in the release of by-products called ketones. When ketones are released in large amounts it can lead to a potentially life-threatening condition called ketoacidosis.

The symptoms of type 1 diabetes include:

- extreme thirst
- frequent urination
- weight loss
- tiredness/fatigue
- blurred vision
- irritated skin, particularly around the genitals
- nausea and vomiting.

It is important to monitor the blood glucose levels of children with type 1 diabetes via a blood glucose monitor. This requires testing a very small amount of blood from a pin prick on the finger. Affected children require up to four insulin injections every day. Insulin can be administered via a syringe or an insulin pump which is carried on the body and regularly administers insulin into the bloodstream. Children with type 1 diabetes have to ensure they eat a well-balanced diet so blood glucose levels remain stable. There is no cure for type 1 diabetes. It is a serious condition that needs ongoing management to control and reduce the risk of complications.

**Why is type 1 diabetes a health issue for children?**

Australia is ranked seventh in the world for prevalence of type 1 diabetes in children aged 0 to 14 years of age and sixth for incidence. In 2008, more than 5700 children had type 1 diabetes in Australia. In 2011 there were 983 new cases of type 1 diabetes among children aged 0–14, representing 23 per 100 000 young people.

**FIGURE 9.46** Monitoring blood glucose levels is important in managing type 1 diabetes in children.
Children have a higher incidence rate of type 1 diabetes when compared to other age groups, with the peak age of diagnosis occurring at 10–14 (figure 9.47). Boys appear to have a slightly higher incidence than girls.

**FIGURE 9.47** Incidence rate of type 1 diabetes, by age at first insulin use and sex, 2000–09


### Determinants acting as risk and/or protective factors in relation to type 1 diabetes

**Biological**
- Genetic predisposition: children with type 1 diabetes in the family are more likely to develop type 1 diabetes.
- Age: the incidence of type 1 diabetes decreases with increasing age.

**Behavioural determinants**
Although behavioural determinants do not increase the risk of type 1 diabetes, they do impact on the management of the condition in the following ways:
- Monitoring of blood glucose levels: in order to manage the condition, blood glucose levels must be monitored to ensure they remain within the required levels to maintain health.
- Eating habits: to maintain stable blood glucose levels, children with type 1 diabetes must consume a well-balanced diet and eat regular meals. Meals should be low in fat, particularly saturated fats, and based on high fibre carbohydrate foods such as wholegrain breads and cereals, lentils, beans, vegetables and fruits.
- Regularly taking insulin: insulin is the only way in which blood glucose levels can be controlled in children with type 1 diabetes.
- Physical activity: regular exercise is an important part of the management of type 1 diabetes. It assists the insulin in working more efficiently and assists with blood glucose control. Regular physical activity also maintains body weight.

**Physical environment**
- Access to recreational facilities: regular physical activity is important for controlling the blood glucose levels of children with type 1 diabetes. Having access to facilities within the community that enable children to engage in
regular physical activity assists in ensuring that children with type 1 diabetes undertake the required amount of physical activity.

**Social**

- **Access to health care:** the effective management of type 1 diabetes requires regular visits to health care facilities such as the local medical centre. If blood glucose levels drop too low, a child is at risk of hypoglycaemia. Medical treatment must be sought immediately, as the child may become unconscious and begin convulsing. High blood glucose levels can result in hyperglycaemia. The symptoms of hyperglycaemia include extreme thirstiness, frequent urination, blurred vision, tiredness, infections and weight loss. In this situation, the child must visit their doctor in order to assess their treatment and management plan.
- **Parental education:** for children to effectively manage their type 1 diabetes, they must have guidance from their parents/guardians. Younger children may not understand the importance of controlling blood glucose levels so it is important that the parents/guardians fully understand how to check blood glucose levels, the management of type 1 diabetes and the signs and symptoms of hypoglycaemia and hyperglycaemia.
- **Parenting practices:** it is important for children to learn how to manage their type 1 diabetes, including regularly checking their blood glucose, eating a well-balanced diet and the importance of exercise. This is particularly important as children become more independent and do not always have their parents/guardians with them. Parents/guardians play a key role in teaching their children about managing their type 1 diabetes.

**TEST your knowledge**

1. Describe type 1 diabetes.
2. What are the symptoms of type 1 diabetes?
3. Explain why type 1 diabetes is a health issue for children.
4. What is the difference between hyperglycaemia and hypoglycaemia?
5. Explain how physical activity can assist in the management of type 1 diabetes.

**APPLY your knowledge**

6. Explain the determinants that are important in assisting children in managing their type 1 diabetes.
7. Develop an information brochure for parents that explains the steps required for the effective management of type 1 diabetes.
8. Use the type 1 diabetes links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
9. Use the type 1 diabetes study links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
Government strategies and programs designed to promote the health and individual human development of children

Key Concept Understanding government strategies and programs designed to promote health and individual human development of children

A range of government, community and personal strategies and programs have been designed to promote the health and individual human development of children in Australia.

As many of the conditions/diseases that impact on children are not preventable, the strategies and programs focus on treating and managing the condition/disease. In the case of preventable health concerns such as falls and injuries, the strategies and programs focus on ways in which the health issue can be prevented. Ultimately, the focus is on enabling children to live long and healthy lives. Understanding the programs and strategies that focus on children can assist parents/carers in maximising the health and individual human development of their children.

Government strategies and programs

The three levels of government in Australia, federal, state and local, all play a role in promoting the health and individual human development of children. In this section, examples of the strategies implemented by each level of government will be explored.

Federal government


Australia’s Physical Activity and Sedentary Behaviour Guidelines

There are five sets of guidelines as part of Australia’s Physical Activity and Sedentary Behaviour Guidelines. The following two focus on children:

- National Physical Activity Recommendations for Children 0–5 years — ‘Move and play every day’
- Australia’s Physical Activity and Sedentary Behaviour Guidelines for Children 5–12 years.

The Guidelines recommend the amount of physical activity required daily to promote health and individual human development of children while also highlighting the importance of limiting the amount of time during which children from 5 to 12 years of age are sedentary.

The benefits of daily physical activity for children include the following:

- assists in achieving and maintaining a healthy weight
- builds strong bones and muscles
- improves balance, motor control and co-ordination
- promotes the development of social skills
- supports brain development
- promotes self-confidence and independence.

As discussed earlier, regular physical activity is very important for children who have type 1 diabetes or juvenile arthritis.
Table 9.11 provides a summary of the physical activity recommendations for children aged 0–5 and aged 5–12.

**TABLE 9.11 Australia’s physical activity and sedentary behaviour guidelines for children aged 0–5 and aged 5–12**

<table>
<thead>
<tr>
<th>Recommendation for children aged 0–5 ‘Move and play every day’</th>
<th>Recommendations for children aged 5–12</th>
</tr>
</thead>
</table>
| **Birth — 1 year** | **Physical activity**  
  For healthy development in infants, physical activity — particularly supervised floor-based play in safe environments — should be encouraged from birth. |
| **Toddlers (1–3 years) and preschoolers (3–5 years)** | **Sedentary behaviour**  
  Should minimise the time they spend being sedentary every day by restricting the use of electronic media for entertainment to no more than two hours per day.  
  On at least three days per week, children should engage in activities that strengthen muscle and bone. |
| **Children aged 2–5 years** |  
  Sitting and watching television and the use of other electronic media (DVDs, computer and other electronic games) should be limited to less than one hour per day. |
| **Children aged less than 2 years** |  
  Should not spend any time watching television or using other electronic media (DVDs, computer and other electronic games).  
  Infants, toddlers and preschoolers should not be sedentary, restrained, or kept inactive, for more than one hour at a time, with the exception of sleeping. |

9.10 Government strategies and programs designed to promote the health and individual human development of children

The National Diabetes Services Scheme (NDSS)

The National Diabetes Services Scheme (NDSS) is an initiative of the federal government administered by Diabetes Australia Ltd. Through federal government funding, Diabetes Australia is able to provide over one million Australians diagnosed with diabetes, including children with type 1 diabetes, with practical assistance, information and subsidised products through the NDSS.

This includes testing strips for checking blood glucose levels, free insulin syringes and insulin pump consumables (or supplies).

The federal government also funds the Type 1 Diabetes Insulin Pump Program which subsidises up to 80 per cent of the price of a clinically recommended insulin pump for children under the age of 18 years with type 1 diabetes. An insulin pump is a small computerised device that provides a continuous amount of insulin to the individual throughout the day or can be used to provide a greater amount of insulin at particular times of the day, such as during meal times. The pump is carried on the individual and a tiny tube is connected to the skin through which the insulin is delivered to the body.
Dietary Guidelines For Australians

The Australian Dietary Guidelines were released in 2013 to assist Australians in consuming a healthy diet and reduce the burden of disease associated with cardiovascular disease, obesity, some cancers and type 2 diabetes. The guidelines include information relating to the different food groups and the number of serves that should be consumed from each food group to promote optimal health. Specific advice for children is contained within the guidelines.

The Australian Dietary Guidelines that relate to children are:

GUIDELINE 1:
To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs.
Children and adolescents should eat sufficient nutritious foods to grow and develop normally. They should be physically active every day and their growth should be checked regularly.

GUIDELINE 2:
Enjoy a wide variety of nutritious foods from these five food groups every day.
- Plenty of vegetables of different types and colours, and legumes/beans
- Fruit
- Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
- Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
- Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under two years of age).
And drink plenty of water.

GUIDELINE 3:
Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.
a. Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.
  - Replace high fat foods which contain predominately saturated fats such as butter, cream, cooking margarine, and coconut and palm oil with foods which contain predominately polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.
  - Low fat diets are not suitable for children under two years of age.
b. Limit intake of foods and drinks containing added salt.
  - Read labels to choose lower sodium options among similar foods.
  - Do not add salt to foods in cooking or at the table.
c. Limit intake of foods and drinks containing added sugars such as confectionery, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, and energy and sports drinks.

GUIDELINE 4:
Encourage, support and promote breastfeeding.

GUIDELINE 5:
Care for your food; prepare and store it safely.
Advice is also offered regarding the intake of ‘discretionary’ foods. These are foods that are not a necessary or essential part of a child’s dietary intake. These foods are high in kilojoules, saturated fat, sugars, salt or alcohol. Examples include cakes, biscuits, potato chips, processed meats and sausages, meat pies and other pastries and sugar-sweetened cordials, soft drinks and sports drinks.
It is also important to remember that children under the age of three years are at an increased risk of choking on hard foods. Adults should sit with young children whilst they eat and they should not be given food such as popcorn, nuts, hard confectionary or potato chips. Hard fruit and vegetables should be grated or cooked to make them easier for the child to consume and all bones should be carefully removed from meat and fish to prevent choking.

Source: National Health and Medical Research Council, ‘Healthy Eating for Children Poster’.

FIGURE 9.52 It is important for children to eat sufficient nutritious food to grow and develop normally.
Asthma Child and Adolescent Program

The Asthma Child and Adolescent Program (ACAP) is a nationally funded program by the Commonwealth Department of Health. This program provides school and preschool staff, parents and carers with access to free information regarding the management of asthma in an education setting. Through this program, free one hour asthma education sessions are made available to school and children's services staff throughout Victoria. Free asthma management information sessions are also made available to school students, parents and carers.

National Immunisation Program

The federal government provides funding for the Immunise Australia Program which implements the National Immunisation Program. This program currently includes vaccines against 16 diseases. The federal government funding enables state and territory governments to obtain vaccines listed on the National Immunisation Program. Funds are also provided for Medicare Australia to implement the Australian Childhood Immunisation Register which keeps a record of the immunisation history of Australian children and adolescents.

State and territory government

State and territory governments create laws/legislation that assist in promoting the health and individual human development of children. Health promotion campaigns and programs are also developed and implemented by state and territory governments which play an important role in promoting the health and individual human development of children. In Victoria, examples include Child Protection Services, Family Services, and the Maternal and Child Health Service.

Legislation

State and territory governments implement laws/legislation that aim to promote the health and individual human development of children. Examples of these include:

- Child protection: mandatory reporting legislation requires professionals such as doctors, nurses, police and school teachers to report suspected child abuse.
- Driving: laws relating to speed limits, speed cameras, seatbelts, probationary drivers, drink driving laws and car safety standards are designed to protect all people, including children. By law, the driver of a vehicle is responsible for ensuring that all passengers are restrained correctly. The road rules in Victoria require a child aged:
  - under 6 months of age must travel in a rearward facing child restraint
  - 6 months to under 4 years must travel in either a rearward facing or forward facing child restraint
  - 4 years to under 7 years must travel in a forward facing approved child restraint with an inbuilt harness or a booster seat
  - 7 years to under 16 years must travel in either a booster seat or an adult seatbelt (VicRoads).
- Smoking: laws prevent adults from smoking in motor vehicles with children under the age of 18 years. It is illegal to sell or supply cigarettes to children under the age of 18 years.

Victorian Child Protection Service

The Department of Human Services Victoria is a state government department that provides a range of services designed to promote the health and individual human development of children.
development of children, families and young people. One of these services is the Victorian Child Protection Service, which assists in ensuring the safety of children. When adults caring for children do not provide the appropriate level of care or are abusive towards the children, the child protection system takes action. The main functions of the Victorian Child Protection Service are to:

- investigate matters where it is alleged that a child is at risk of harm
- refer children and families to services that assist in providing the ongoing safety and wellbeing of children
- take matters before the Children’s Court if the child’s safety cannot be ensured within the family
- supervise children on legal orders granted by the Children’s Court
- provide and fund accommodation services, specialist support services, and adoption and permanent care to children and adolescents in need.

**Family Services**

Family Services is another important area within the Department of Human Services Victoria that provides a range of services to assist families in caring for their children, thereby promoting health and individual human development.

Family Services provides family and early parenting support to assist families in developing an action plan in caring for the children. Early parenting services support parents from pregnancy until the child is four years old. Specialist support, counselling and advice services are available which may include education and skills development programs. Services offered by Family Services include:

- early parenting centres: provide experienced parenting support
- day stay services: provide an intensive day program to support parents in the early parenting phase
- residential services: provide a centre-based intensive parenting program where the parents stay at the centre for five days to build parenting skills
- home-based services: skilled staff visit the parents in the home and work one-on-one with them in parenting skills and education
- group services: incorporate group-based programs where the parent/s attends sessions with other parents and children. These are designed to improve relationships and interaction between the parents and the child.

**Maternal and Child Health Service**

The state and territory governments are also responsible for the provision of maternal and child health services. In Victoria, these services are the responsibility of the Department of Education and Training and are often operated by local councils. The Maternal and Child Health Service supports families in the provision of parenting and the promotion of health and individual human development of children. It is through this service that families are provided with referrals to other professionals and are linked with other families in the local community. Parents have regular appointments from birth until the child reaches school age. All appointments are provided free of charge.

The Maternal and Child Health Service offers 10 key ages and stages consultations for the parents and their child, including an initial home visit and consultations at two, four and eight weeks; four, eight, 12 and 18 months; and two and 3.5 years of age. At each consultation, parents are able to discuss any concerns, discuss their parenting experiences and learn how to improve their child’s health and individual human development.
When a baby is born, its parents receive a book called *My Health and Development Record* where a record can be kept of the child’s health, growth, development and immunisation. The book allows parents and maternal and child health staff to keep details of the development of the child at each of the consultations.

Maternal and child health centres are located within local communities, enabling parents to have easy access to the service.

**Local government**

Local governments implement a range of strategies and programs to promote the health and individual human development of children including:

- providing access to recreation facilities such as walking and cycling paths, parks, gardens and public swimming pools
- implementing community health plans that aim to address the needs of the local community and promote healthy lifestyles by encouraging healthy eating, exercise and social interaction
- the implementation of immunisation programs within the local community as part of the National Immunisation Program
- ensuring that communities have access to facilities and services that provide UV protection
- the provision of long day care which is a centre-based form of child-care service. Long day care services provide all day or part-time care for children of working families and the general community. Local councils may run these services. Long day care services may also provide care for school children before and after school and during school holidays.
- maternal and child health services: locally based maternal and child health nurses provide parents with support, information and access to professional advice on a range of health-related concerns from child behaviour and nutrition to breastfeeding and family planning. The service is jointly funded by the Victorian government and local councils and is usually operated by local councils.
- the provision of playgroups for infants, toddlers and preschoolers and their parents or caregivers. Adults stay with their children at playgroup, which gives them the chance to meet other people going through similar experiences while also learning about the community, health and support services available within the local community.

**TEST** your knowledge

1. Briefly explain two programs or strategies developed by each level of government to promote the health and individual human development of children in Australia.

**APPLY** your knowledge

2. (a) Outline the two sets of physical activity and sedentary behaviour guidelines that are specific to children.
   (b) What are the benefits of daily physical activity to children?
   (c) Why would recommendations also be made regarding the sedentary behaviour of children?
3. Discuss how each of the dietary guidelines could promote the health and individual human development of children.

4. (a) Outline the National Diabetes Services Scheme (NDSS).
    (b) Explain how the NDSS promotes the health and individual human development of children.

5. Select two types of legislation relevant to promoting the health and individual human development of children. Conduct research to answer the following:
   (a) Who is responsible for enforcing the legislation?
   (b) Explain how community members are made aware of the legislation.
   (c) How does the legislation aim to promote the health and individual human development of children?

6. Research your own local government and produce a fact file/brochure outlining the ways that they work to promote the health and individual human development of children.
9.11 Community and personal strategies and programs designed to promote the health and individual human development of children

KEY CONCEPT Understanding community and personal strategies and programs designed to promote the health and individual human development of children

Community strategies and programs

Many community strategies and programs designed to promote the health and individual human development of children are implemented by non-government organisations. Examples of these programs include the Diabetes Camps Victoria, Kidsafe and Asthma Friendly Schools.

Diabetes Camps Victoria

Diabetes Camps Victoria (DCV) is a partnership of Diabetes Australia — Victoria, Monash Health and the Royal Children’s Hospital. Each year, DCV runs seven camps for children aged four to 17 years with type 1 diabetes. The goal of the camps is for young people to learn how to manage their diabetes in an environment that is fun, safe and supportive while also promoting a culture of independence through adventure. The camps promote peer support and positive role modelling from other children and volunteers with diabetes through providing opportunities to meet other young people and adults with type 1 diabetes.

Health professionals and volunteers attend the camps to supervise, educate and provide information to the children in a relaxed setting. Children can increase their skills and awareness in managing their condition.

FIGURE 9.55 Diabetes Camps Victoria provide opportunities for children with type 1 diabetes to connect with others with the condition.
Community and personal strategies and programs designed to promote the health and individual human development of children

**Kidsafe**

Kidsafe is a non-government, not-for-profit organisation that aims to prevent child deaths from unintentional injury and reduce the severity of injuries in children aged less than 15 years. Kidsafe’s mission is ‘To make a safer world for kids by leading the promotion of action to highlight and to minimise the unacceptable level of risk and consequence of injury to children in our adult-focused world’.

Kidsafe takes responsibility for disseminating information regarding ways in which to promote the safety of children. Parents can download a range of information from the Kidsafe website such as ‘Safe sleeping for infants’, ‘A parent’s guide to Kidsafe homes’ and ‘A parent’s guide to Kidsafe roads’.

Kidsafe, along with Neuroscience Research Australia, developed the National Guidelines for the Safe Restraint of Children Travelling in Motor Vehicles which provide best practice recommendations for keeping children safe when travelling in motor vehicles.

**Asthma Friendly Schools Program**

The Asthma Friendly Schools Program was developed by the Asthma Foundation Victoria in 2001. The strategy aims to develop safe, healthy and inclusive school environments for students with asthma. Asthma Friendly Schools adopts the strategies designed to support the whole school community in understanding and managing asthma.

To be recognised as an Asthma Friendly School, a school must meet the following criteria:

1. The school has developed an asthma policy based on the recommendations and advice provided by the Department of Education and Training.
2. At least 75 per cent of school staff have completed a minimum one hour asthma training session provided by The Asthma Foundation of Victoria.
3. The school has a minimum of two asthma emergency kits that contain reliever medication, two spacers, a record sheet and instructions for use.
4. Asthma action plans for each student with asthma are kept in a central location and asthma first aid incidents are recorded, reviewed and reported to the student’s parents/carers.
5. Asthma first aid posters are displayed around the school and asthma information is included in the curriculum and is made available to parents.
6. Parents/carers are contacted when a student experiences asthma symptoms, uses their asthma medication or has an asthma incident at school.
7. Students are encouraged to have prompt and easy access to their asthma medication in order to self-manage their symptoms at school and on excursions.
8. Safe medication practices are implemented such as asthma medicine being clearly labelled and stored in a cool location that is easily accessible.
9. Measures are taken to minimise the impact of potential asthma triggers such as mowing outside of school hours, and ensuring that carpets, curtains and airconditioning vents are cleaned regularly to minimise dust.

**Personal strategies**

Many of the personal strategies that can promote the health and individual human development of children require both parents/carers and children to be aware of
the determinants that can have an impact. Examples of personal strategies for children in Australia include:

- **Physical activity**: regular exercise assists in maintaining healthy body weight, which can reduce the risk of obesity. This reduces the impact on joints, which can assist in the management of juvenile arthritis.

- **Dietary behaviours**: by consuming a healthy food intake, children receive the nutrients they need for maintaining a healthy immune system and promoting growth. For children with type 1 diabetes, a well-balanced diet assists with the management of their condition.

- **Accessing health care**: taking children for regular health checks ensures that their health can be monitored and any health concerns can be addressed early. Regular visits to the doctor are important for assisting children with managing conditions such as type 1 diabetes and juvenile arthritis.

- **Not smoking**: tobacco smoke is a trigger for asthma symptoms. By not smoking and ensuring exposure to environmental tobacco smoke is reduced, the risk of having an asthma attack is reduced.

- **Maintaining a safe housing environment**: eliminating hazards in the home by clearing walkways, having secure locks on cupboards, storing chemicals and cleaning products out of the reach of children, and having fencing around pools are examples of ways in which the risk of injury and death can be reduced for children.

- **Improving education**: by accessing information relating to conditions such as juvenile arthritis, type 1 diabetes and asthma, parents and carers of children may be better informed regarding ways to promote the health and individual human development of children.

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**TEST your knowledge**

1. (a) Briefly explain the Diabetes Camps Victoria program.
   (b) Identify the determinants of health targeted by this program.

2. (a) Briefly explain the role of Kidsafe.
   (b) Identify the determinants of health targeted by Kidsafe.

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**APPLY your knowledge**

3. Use the Kidsafe Battery Controlled links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.

4. Discuss how the Asthma Friendly Schools program could promote the health of children in Australia.

5. Discuss the personal strategies that could be employed to address one of the following conditions that may impact on children:
   (a) type 1 diabetes
   (b) juvenile arthritis
   (c) asthma
   (d) falls and injuries
   (e) food allergies.

6. Create a multimedia presentation that aims to educate parents, carers and children about personal strategies that can be used to promote the health and individual human development of children.
KEY SKILLS The determinants of health and individual human development of Australia’s children

KEY SKILL Explain the determinants of health and individual human development and their impact on children, using relevant examples

In order to demonstrate this skill, a thorough understanding of the determinants of health and individual human development and how they relate to children is essential. The ability to use relevant examples to demonstrate this understanding is expected. When outlining the determinants of health and individual human development, it is important to remember the following:

- There are many factors that affect the health and individual human development of children and they are categorised as biological, behavioural, physical environment and social.
- It is important to select one factor from each category of determinant, be able to describe what it is and how it impacts children’s health and all types of individual human development.
- Where possible, use relevant statistics to outline the impact that the selected determinant has on the health and individual human development of children.

Consider the following article, which discusses a physical environment determinant of health and individual human development: tobacco smoke in the home.

PASSIVE SMOKE: KIDS’ HEALTH AT RISK

Karyn and Richard Shine wish to make a personal plea to Aussie parents who smoke. ‘Please don’t smoke near your kids. It’s not fair. You have taken up the habit, but your children haven’t.’

‘If you light up near them, they breathe the smoke as well. You’re putting their health at risk because you choose to do something unhealthy — even deadly.’

Before you think Karyn and Richard must be staunch anti-smokers lecturing about their nicotine-free lives, read on…

Karyn, 39, and Richard, 33, from Glenmore Park at the foot of the Blue Mountains in New South Wales, are both smokers. Richard began smoking when he joined the RAAF at 18. Karyn started at 13 and has lost count of the number of times she has tried to quit unsuccessfully — even through her three pregnancies.

‘I tried to stop while I was pregnant, but I just couldn’t quit — though I did cut right back to only a couple a day,’ she explains.

‘Our two boys have infantile asthma, and I’ll always wonder whether that was caused by me smoking while pregnant. I know loads of non-smoking parents have asthmatic kids — but at least they know they couldn’t have caused it. I will never know for sure.’

Their children — Alec, three, Ronan, two, and Hayley, one — are the couple’s pride and joy, and that’s why the Shines have made a solemn promise. They won’t let their smoke go anywhere near the kids.

‘Our entire house and car are smoke-free zones,’ Karyn explains. ‘As soon as Alec was born, we made this rule. Why should he have to put up with something he didn’t choose? Even when outside, we don’t smoke near the kids.’

‘It’s such an invasive habit. Although you’re doing it, the smoke drifts. People who don’t want to smoke shouldn’t have to breathe it because someone else does.’

The Shine family has agreed to speak out to promote the Car and Home: Smoke Free Zone campaign, a joint initiative of NSW Health, the Cancer Council NSW, the National Heart Foundation (NSW), Asthma NSW and SIDS NSW.

‘People need to know how dangerous it is to smoke around their kids,’ Karyn says. ‘Passive smoking is dangerous.’
Consider the following information on a genetic determinant of health and individual human development: low birth weight.

- Infants who are born with low birth weight are at greater risk of poor health, disability and death than other infants.
- In 2012, 6.2 per cent of live born infants in Australia were of low birth weight (weighing less than 2500 grams). This proportion was twice as high among babies of Indigenous mothers.
- 1 per cent weighed less than 1500 grams (very low birth weight, including extremely low birth weight).
- 5.2 per cent weighed between 1500 and 2499 grams.

Source: AIHW, Australia’s mothers and babies 2012, cat. no. PER 69, Canberra, p. 74.

**FIGURE 9.58** Proportion of infants by birth weight category, 2012

Source: AIHW, Australia’s mothers and babies 2012, cat. no. PER 69, Canberra, p. 74.

**PRACTISE the key skills**

1. Referring to figure 9.58, outline the percentage of infants born with normal birth weight, low birth weight and very low birth weight.
2. What are the weight classifications for normal birth weight, low birth weight and very low birth weight?
3. Explain the possible impact of low birth weight and very low birth weight on the health and individual human development of infants/children.
4. Many of the risk factors for low birth weight babies can be reduced by appropriate interventions. Outline the advice that could be provided to a first-time mother to increase the likelihood of an infant being born normal birth weight.
KEY SKILL Describe a specific health issue facing Australia’s children and draw informed conclusions about personal, community and government strategies and programs to optimise child health and development

The first part of this key skill is to develop an understanding of one health issue facing Australia’s children. In order to be able to adequately describe the issue, a number of aspects about it should be known, including:

- the name of the issue
- what the issue actually is
- why it is considered a health issue for children
- the biological, behavioural, physical environment and social determinants that act as risk and/or protective factors for the selected issue.

A summary table can be useful in collating this information.

In the following example, falls and injuries as a health issue impacting on children is described:

Unintentional child injuries are a major public health issue in Australia. Most can be prevented. Preventable injuries are higher amongst children compared with other age groups (ABS 2007).

In 2011–12, 21,019 children 0–4 years of age were admitted to hospital for injury across Australia. This was second only to admissions to hospital for respiratory conditions. Hospitalisation rates were higher for boys than girls. Hospitalisation rates for falls and poisonings were higher for children living in rural and remote communities, compared to children living in metropolitan areas (1.5 times greater for falls and 1.9 times greater for poisoning) (AIHW 2014).

Children are at risk of injuries due to a combination of determinants.

Biological — body proportion: due to the cephalocaudal principle of development, a child’s head is large in relation to their body. This contributes to a higher centre of gravity and can increase the risk of falls.

Behavioural — some activities have a greater risk of injury than others. For example, bike riding is a much riskier activity than going for a walk. The types of activities a child engages in will impact on their risk of injury.

Physical environment — the type of physical environment a child lives and plays in has a significant impact on their risk of falls and injuries. Checking a house for hazards will greatly reduce the risk of falls and injuries.

Social — the activities that a child’s friends engages in greatly influences the types of activities the child will be involved in. If a child’s peer group tends to engage in risk-taking behaviour that increases the risk of falls and injuries, then the child is more likely to also engage in this type of behaviour.

The second part of this key skill is the ability to draw informed conclusions about personal, community and government strategies and programs that are implemented to optimise child health and individual human development.

In order to be able to draw conclusions about the program or strategy, a number of aspects relating to it must be known, including:

- the name of the strategy or program
- whether the program is implemented at a government, community or individual level
- the aims of the program
- the aspects of health and/or individual human development being addressed
- the determinants of health and development that are the focus of the strategy or program
• the advantages and/or disadvantages of the strategy or program
• the actual or perceived effectiveness of the program.

In the following example, Kidsafe home safety information sessions are discussed and conclusions about the effectiveness of Kidsafe are drawn.

Kidsafe Victoria collaborates with other organisations to provide injury prevention programs, media campaigns and educational resources. One of the programs that Kidsafe offers is the home safety information session. These sessions are presented to a wide range of groups including early childhood centres, community organisations and parent groups. The sessions aim to provide attendees with information regarding injury prevention in the home and to encourage people to implement prevention strategies in community organisations and homes.

Sessions contain information on common child injury topics such as:
• burns and scalds
• drownings and near drowning
• falls
• cuts and jamming fingers
• poisonings
• choking and suffocation
• dog bites and pet safety
• road safety.

Through educating parents, the safety of children can be promoted and preventative strategies are more likely to be implemented to reduce child injuries and fatalities. Children who are healthy and not suffering from injury are able to participate fully in activities, including schooling and sporting activities. Engaging in sporting activities will increase a child’s physical fitness (physical health) while also enhancing motor skill development (physical development). It is through engaging with other children that social health will improve as skills such as communication can be further developed (social development). Being able to fully participate with friends will also have a positive impact on a child’s self-esteem, thereby promoting mental health. A child with positive self-esteem is more likely to engage fully in school, which will promote the development of intellectual skills.

Since Kidsafe’s establishment in 1979, the number of children in Australia killed by unintentional injury has been halved. This has been achieved through a range of strategies including injury prevention programs, media campaigns and educational resources which have led to increased awareness of child safety issues and injury prevention throughout the community.

### PRACTISE the key skills

5 Describe a key health issue other than injuries facing children in Australia. In your answer, make sure you include:
(a) the name of the health issue
(b) what the health issue actually is
(c) why it is considered a health issue for children (include relevant statistical information)
(d) the biological, behavioural, physical environment and social determinants that act as risk and/or protective factors for the selected health issue.

6 Explain a program or strategy implemented by a government and explain how it may impact on the health and/or individual human development of children.

7 Identify personal strategies that may reduce the risk of one health issue facing children in Australia.

8 For a community strategy, discuss the likely effectiveness in promoting child health and/or individual human development.
9 Francesca is 15 years of age and lives with her mother, father and two younger brothers. Her father works full time while her mother stays at home to look after the children and complete household chores. Francesca’s father is extremely strict with the children and does not allow them to have their friends over to the house. The children have a very strict routine of homework and daily chores, and are not allowed to attend social gatherings at friends’ houses. The children are quite frightened of their father and have learnt not to question his instructions or decisions. If the children disobey him, they might be smacked or sent to their room for an indefinite amount of time.

(a) What type of parenting style is being exhibited by the father?

1 mark

(b) What impact could this parenting style have on the individual human development of the children?

8 marks
CHAPTER 9 review

Chapter summary

- The childhood stage of the lifespan is when the foundations for later health and individual human development are established.
- The determinants of health and individual human development include: biological factors, health behaviours, physical environment and social.
- Some determinants have a positive effect (protective factors) and some have a negative effect (risk factors) on health and individual human development.
- The determinants of health and individual human development can be multicausal.
- Biological factors refer to those genetic and physiological factors that impact on health and individual human development.
- Biological factors relate to the functioning of the body and include genetics, hormones, body weight and blood pressure.
- Biological factors do not act in isolation, and are affected by environmental factors and health behaviours.
- The genes that an individual inherits from their biological parents have a significant impact on health and individual human development.
- Genes are the blueprint of the body because they control growth, development and how the body functions.
- Some genetic conditions such as cystic fibrosis are carried on the ‘X’ chromosome.
- Hormones regulate growth and physical development during childhood.
- Some childhood conditions occur as a result of genetic susceptibility (e.g. asthma and type 1 diabetes).
- Babies are considered to be low birth weight if they weigh less than 2500 grams at birth. Low birth-weight babies can be further classified into ‘very low birth weight’ if they weigh between 1000–1500 grams and ‘extremely low birth weight’ if they are below 1000 grams.
- Babies that are born very low birth weight or extremely low birth weight are at greater risk of premature death and a range of conditions and developmental problems.
- BMI-for-age and gender percentile charts are used for assessing the relative body weight of children.
- Overweight and obesity can be caused by a genetically low metabolic rate.
- The lifestyles of children and the decisions they make in terms of health are largely dependent on the lifestyles of the parents and the knowledge, attitudes and beliefs that they pass on to their children.
- Eating habits and physical activity patterns of children are largely determined by the parents.
- It is recommended that children participate in 60 minutes of moderate to vigorous exercise per day.
- Tobacco smoke in the home is particularly dangerous for children because their lungs are still developing.
- Breastmilk contains all of the nutrients required by the infant for at least the first six months of life, and the colostrum that the baby receives in the first few days following birth contains antibodies required to resist infection.
- Artificial formula contains the required nutrients for the developing baby, but it does not contain antibodies.
- Vaccines contain either a weakened or dead micro-organism of a particular disease so that the body will develop antibodies against that disease.
- Vaccinating from an early age helps protect children from a range of illnesses, some of which may be life threatening.
- Dental decay is the most common disease that affects teeth.
- The first stage of gum disease is gingivitis and the later stage is periodontitis.
CHAPTER 9 review

- Oral hygiene during early childhood is vital for ensuring health of the teeth and gums and teaches children the daily routines required to maintain optimal dental health.
- The physical environment refers to the surroundings in which one lives and the accessibility to resources such as food and water. It also refers to conditions in which an individual lives that impact on health and individual human development.
- Families that are required to live in substandard or overcrowded dwellings are at greater risk of poor health.
- More Australian children die of injury than die of cancer, asthma and infectious diseases combined.
- Fluoridation of water involves the addition of fluoride to a public water supply to reduce tooth decay in the population.
- Fluoride reduces the amount of acid that is produced and can also repair the damage to teeth before it progresses and becomes permanent.
- Recreational facilities that are easily accessible for families with children greatly increase the likelihood of regular physical activity. Undertaking regular physical activity has enormous benefits for the health and individual human development of children.
- The social environment includes factors such as parental education, parenting practices, media and access to health care.
- Education provides opportunities for better employment and higher income, which enable individuals to have a healthier lifestyle through greater access to health-promoting resources such as nutritious foods and health care.
- Parenting practices refer to the way in which the parents or guardians interact with their child and the way in which they model behaviour.
- There are four main parenting styles: authoritarian, authoritative, permissive and uninvolved.
- Violence and alcohol and drug misuse within the family can have detrimental effects on the developing child.
- As a result of the media, children are exposed to messages and information that may impact positively or negatively on their health and individual human development.
- Maternal and child health services support families in caring for their child.
- Through the provision of easily accessible health-care services, parents are able to monitor growth, check the health status of their child and treat illnesses/conditions in their earliest stage to maximise recovery and health.
- The Primary School Nursing Program is a free universal health-care service offered to all Victorian Primary and English Language Centre schools.
- A range of health issues affect children, including asthma, falls and injuries, food allergies, juvenile arthritis and type 1 diabetes. The biological, behavioural, physical environment and social determinants all play a role in these issues.
- Asthma is a common inflammatory condition of the airways resulting in wheezing, breathlessness and tightness of the chest.
- Asthma is one of the most common causes of hospital admissions and visits to medical centres for children. It is the most frequently reported long-term chronic condition, with approximately 10 per cent of Australian children aged 0–14 having asthma.
- Determinants that impact on asthma include:
  - biological: genetics, obesity, sex, respiratory infections
  - behavioural: dietary intake, physical activity, breastfeeding
  - physical environment: tobacco smoke in the home, air pollution, exposure to allergens
  - social: education, socioeconomic status.
- Falling is the most common cause of injury for children of all ages.
- Severe burns can result in the death of a child as their skin is thinner than the skin of an adult.
• Falls and injuries are a health issue for children as unintentional falls are the most common cause of injury hospitalisations for children aged 0–4, accounting for 42 per cent of the total for injury hospitalisations, followed by smoke, fire, heat and hot substances (8 per cent) and poisoning by drugs (6 per cent).
• In the 5–14 age group, falls were the most common cause of injury requiring hospitalisation (46 per cent), followed by transport accidents (16 per cent).
• Determinants that impact on falls and injuries in children include:
  – biological: body proportions, height, having thinner skin than adults, smaller body size
  – behavioural: physical activity, risk-taking behaviour
  – physical environment: access to recreational facilities, housing environment
  – social: lack of knowledge leading to risk-taking behaviour, natural inquisitiveness, peer pressure, lack of supervision.
• Food allergies are an adverse immune response to a food that has been consumed by an individual.
• A serious and potentially life threatening allergic reaction is known as anaphylaxis.
• Children can be allergic to a wide range of foods but the eight most common foods that cause allergic reactions are: milk, eggs, peanuts, soy, wheat, tree nuts (such as walnuts and cashews), fish and shellfish (such as prawns).
• Food allergies occur in approximately 1 in 20 children. Over the past decade, hospital admissions as a result of anaphylaxis have doubled in Australia.
• Food allergies and their management have been linked to a number of determinants, including:
  – biological: age, genetic predisposition, sex
  – behavioural: breastfeeding, early introduction of solid foods, accidental consumption of foods causing allergic responses
  – physical environment: availability of food causing allergic responses
  – social: education, family and access to health care.
• Juvenile arthritis is any form of auto-immune or inflammatory conditions that can occur in children under 16 years of age.
• Juvenile arthritis affects less than 1 per cent of children under the age of 16 in Australia.
• Research has found genetic factors that increase the susceptibility to juvenile arthritis; however, research into the impact of environmental factors has been less successful.
• Determinants that impact on juvenile arthritis include:
  – biological: genetics, age, sex
  – behavioural: regular physical activity, eating habits
  – physical environment: access to recreation facilities, housing environment
  – social: access to health care, parental education.
• Type 1 diabetes is an auto-immune condition where the immune system attacks the cells in the pancreas that are responsible for producing insulin.
• It is important to monitor the blood glucose levels of children with type 1 diabetes via a blood glucose monitor.
• There is no cure for type 1 diabetes so it is important that it is effectively managed by treatment, nutrition and exercise.
• Australia is ranked seventh in the world for prevalence of type 1 diabetes in children aged 0 to 14 years of age and sixth for incidence.
• The determinants that impact on type 1 diabetes include:
  – biological: genetic predisposition, age
  – behavioural: monitoring of blood glucose levels, eating habits, regularly taking insulin, physical activity
– physical environment: access to recreational facilities
– social: access to health care, parental education, parenting practices.

• Government, community and personal strategies and programs are designed to promote health and individual human development of children.
• Government strategies include:
  – state/territory: Child Protection Services, Family Services, Maternal and the Child Health Service.
  – local: access to recreation facilities, community health plans, immunisation programs, long day care, facilities and services that provide UV protection, maternal and child health services, playgroups.
• Community strategies include Diabetes Camps Victoria, Kidsafe and Asthma Friendly Schools.
• Personal strategies relate to addressing determinants that are modifiable. These include: physical activity, dietary behaviours, accessing health care, not smoking, maintaining a safe house environment and improving education.

TEST your knowledge
1 Outline the following determinants of health and individual human development in relation to children and provide an example of each type.
   • Biological
   • Behavioural
   • Physical environment
   • Social
2 Draw up a table that summarises the major contributors to burden of disease for children and the corresponding determinants that act as risk or protective factors, as well as at least one example of a government, community and personal strategy that is implemented to promote health.

APPLY your knowledge
3 Develop a brochure/web page to provide advice to parents on ways to improve their children’s health and individual human development. In your brochure/web page, refer to factors associated with each of the determinants of health and individual human development.
4 Design a program or strategy that could be implemented to address a child health issue of your choice. Make sure you include:
   (a) the name of the program
   (b) who will implement it (government, community, individuals)
   (c) the aspects of children’s health and/or development that it is designed to address
   (d) which determinants of health it addresses
   (e) how it addresses the determinants of health.