CHAPTER 4
The National Health Priority Areas (NHPAs)

WHY IS THIS IMPORTANT?
The nine conditions and diseases selected as National Health Priority Areas contribute significantly to the overall burden of disease of Australians. All conditions have preventable components, so having an understanding of them can assist the population to live healthier lives and, ultimately, improve health status. There are also a number of health promotion strategies that have been introduced to reduce the burden of disease attributable to these conditions and diseases.

KEY KNOWLEDGE

1.5 The National Health Priority Areas (NHPAs) including:
- key features and reasons for selection of each NHPA
- determinants that act as risk factors
- direct, indirect and intangible costs to individuals and communities of NHPAs
- one health promotion program relevant to each NHPA (pages 142–207)

KEY SKILL
- Explain and justify one health promotion program that addresses each NHPA (pages 146, 153, 160, 167, 173, 179–80, 188, 195, 200, 207).

Exercising and maintaining a healthy weight are important in helping to reduce the burden of disease attributable to the conditions and diseases that make up the NHPAs.
KEY TERM DEFINITIONS

agoraphobia an anxiety related disorder where the individual fears leaving environments that they know well (particularly their home)

autoimmune disease a disease caused by the body’s immune system attacking normal body cells

benign abnormal cells that do not invade and destroy nearby healthy tissue (non-cancerous)

direct costs costs associated with the prevention, diagnosis and treatment of disease and disability

gross domestic product (GDP) an indicator of the wealth of a country; the market value of all goods and services produced in a country in a given year

health promotion the process of enabling people to increase control over, and to improve, their health

indirect costs costs not directly related to diagnosis and treatment of the disease, but occur as a result of the person having the disease, such as a loss of productivity

intangible costs things that cannot be measured physically or with a monetary measure, such as pain and suffering

job control how much say an individual has on how they do their job, whether they feel their opinions are valued within their workplace, and how much influence they have over the direction their career takes

key stakeholders people, groups and organisations who are involved in or affected by a course of action

malignant abnormal cells that invade and destroy nearby healthy tissue

mammogram a type of x-ray used to examine breasts. Often used for the detection of breast cancer.

metastasis when cancer has spread from one site to another

modifiable risk factors factors that increase the risk of developing a condition that can be controlled or treated in some way. For example diet and exercise patterns can be changed to avoid developing obesity, and are therefore seen as modifiable risk factors.

National Health Priority Areas a collaborative initiative endorsed by the Commonwealth Government and all state and territory governments. The NHPA initiative seeks to focus the health sector’s attention on diseases and conditions that have a major impact on the health of Australians. The NHPAs represent the disease groups with the largest burden of disease and potential costs (direct, indirect and intangible) to the Australian community.

neoplasm from Greek, neo = ‘new’ and plasia = ‘tissue’; a new and abnormal growth of tissue in some part of the body

residential care long-term care given to a person in a residential setting as opposed to their own home

spatial awareness the ability to judge where one’s body is relative to other objects in the immediate environment

stigma a mark of shame or disgrace associated with a trait deemed to be socially unacceptable

tumour a group or cluster of abnormal cells
4.1 National Health Priority Areas (NHPAs)

**KEY CONCEPT** An introduction to the National Health Priority Areas, the direct, indirect and intangible costs of disease and health promotion strategies

As the health status of Australians has changed over the past 100 years, so have the types of conditions that contribute to the overall burden of disease. Many conditions are having a pronounced impact on the health of Australians. By focusing on these conditions and allocating resources to them, it is possible for improvements in health to be made.

The National Health Priority Areas (NHPAs) are diseases or conditions that have been selected by the Commonwealth Government as key focus areas for improvement. The NHPA initiative aims at involving many key stakeholders, such as all levels of government, non-government organisations and the private sector, to work together to reduce the burden of disease associated with these conditions. With all groups working together, greater health gains can be achieved. The initiative is overseen by the National Health Priority Action Council.

Nine health areas have been identified for priority attention as NHPAs (see figure 4.1).

The NHPAs are selected as a result of one or more of the following:
- They contribute significantly to the burden of disease.
- There is potential for significant improvements in health to be made (that is, they are largely preventable and/or manageable conditions).
- There is potential to reduce health inequalities between population groups.
- There is potential for a range of strategies to be implemented that can improve health in these areas.
- They contribute significant cost to both individuals and communities.

**Cost of disease**

The costs associated with disease and injury in Australia are significant. In fact, in 2012–13, approximately $147 billion was spent on health care alone.

The NHPAs account for a large proportion of the health budget expenditure. If a reduction in the prevalence and severity of these conditions can be achieved, then valuable funds can be used for other purposes.

In addition to the financial costs associated with diagnosing and treating these conditions, there is a wide range of hidden costs. Many of these are financial, but it is difficult to put a dollar value on many other costs. Costs associated with disease and injury can be classified as being direct, indirect or intangible. The burden of these costs can lie with the community, the individual or both, as shown in figure 4.2.

**Direct costs**

Direct costs are those associated with preventing the disease or condition and providing health services to people suffering from it. These costs include all those associated with developing and implementing health promotion strategies as well as the diagnosis, management and treatment of the condition. It is relatively easy to put a dollar value on direct costs.
To the individual

Direct costs to the individual are those paid for by the ill person or their family. Examples of direct costs to the individual include costs associated with:
• ambulance transport
• diagnostic tests such as sight or hearing tests, blood tests and dental x-rays not covered by Medicare
• doctor and specialist fees not covered by Medicare
• surgery or hospital fees not covered by Medicare or private health insurance
• pharmaceuticals.

To the community

Direct costs to the community are the costs associated with implementing health promotion strategies and diagnosing and treating the condition, but which are paid for by the community. These costs are generally paid for through Medicare, the Pharmaceutical Benefits Scheme and/or private health insurance providers. Such costs include doctor and specialist fees, the costs associated with the operation of public and private hospitals such as wages for administration employees, and the costs associated with implementing health promotion programs such as the LiveLighter campaign. It is difficult to know exactly how much money has been spent on treating specific conditions as funding comes from a range of sources and data is not always recorded, but the amount contributed to treatment by the Federal Government can be estimated by analysing Medicare, hospital and Pharmaceutical Benefits Scheme data. The approximate amounts contributed to treat selected NHPA conditions by the Federal Government in 2008–09 are shown in Table 4.1.

**TABLE 4.1** Treatment costs contributed by the Federal Government for selected conditions, 2008–09

<table>
<thead>
<tr>
<th>Disease/condition</th>
<th>Amount spent ($ billion)</th>
<th>% of total expenditure on health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>7.7</td>
<td>10.4</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>6.4</td>
<td>8.6</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>5.7</td>
<td>7.6</td>
</tr>
<tr>
<td>Neoplasms (including cancers)</td>
<td>4.5</td>
<td>7.6</td>
</tr>
<tr>
<td>Injuries</td>
<td>5.2</td>
<td>6.9</td>
</tr>
<tr>
<td>Asthma</td>
<td>.7</td>
<td>0.9</td>
</tr>
<tr>
<td>Dementia</td>
<td>.5</td>
<td>.7</td>
</tr>
<tr>
<td>Obesity*</td>
<td>2.4</td>
<td>3.2</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1.5</td>
<td>2.3</td>
</tr>
</tbody>
</table>


---

Expenditure on health is often expressed as a percentage of **gross domestic product (GDP)**. GDP is an indication of a country’s wealth, and is an estimation of the value of all the goods and services produced in a 12-month period. In 2012–13 the GDP of Australia was approximately $1.5 trillion. The $147 billion spent on health represents about 9.7 per cent of GDP. This means about one dollar of every $10 generated is spent on health.
4.1 National Health Priority Areas (NHPAs)

Indirect costs

**Indirect costs** are not directly related to the diagnosis or treatment of the disease, but occur as a result of the person having the disease. When a person is sick, their life may be affected in many ways. They may not be able to work and therefore suffer loss of income. They may have to pay to have things done that they used to be able to do, such as cleaning the house or mowing the lawn. Some of these effects have a financial cost that has to be paid for by the individual or the community. It is possible to measure most indirect costs.

**To the individual**

Indirect costs to the individual could include:
- loss of income if they can’t work, especially if they are away from work for an extended period of time, or if they are self-employed
- employing someone to mow the lawns after bypass surgery
- paying for a housekeeper to perform home duties
- transport costs if the person is no longer able to drive.

**To the community**

Indirect costs to the community could include:
- **lost productivity**; for example, businesses may lose employees, which decreases the volume of products or services they are able to produce, and they may be paying sick leave while employees are ill
- **social security payments**, such as disability benefits if a person is no longer able to work
- **lost taxation revenue**. If an individual is unable to work in the long term, they no longer contribute to the economy of the country through tax payments. As a result, the financial resources available to fund community programs and build infrastructure may be decreased.

Intangible costs

Costs can also be **intangible**, which means it is very difficult to put a monetary value on them. These costs often relate to the emotional side of illness and disability and are difficult to measure.

**To the individual**

Intangible costs to the individual could include:
- **pain and suffering**. Many diseases and treatments cause significant physical pain and suffering to the individual. For example, chemotherapy can be difficult as it can cause nausea, hair loss and reduced energy levels.
- **stress**. The individual may be concerned about the impact and outcome of their condition. For example, a person with osteoporosis may experience stress at the thought of fracturing a bone when completing daily activities.
- **loss of self-esteem**. Chronic conditions can contribute to feelings of worthlessness, especially if the person is unable to complete activities they could in the past, such as work or caring for children.
- **loss of participation in social activities**, such as coaching the local football team or volunteering for the local charity.

**To the community**

Intangible costs to the community could include:
- **loss of participation in social activities**. Many individuals use their time, knowledge and resources to promote wellbeing within the community. This can take many.
forms, including visiting elderly neighbours in the event of extreme temperatures to ensure they are safe or an accountant providing free financial advice to a local charity.

- **emotional impacts.** Family, friends, work colleagues and associates within the community may experience grief in the case of the death of an individual. They may also experience stress and concern during the treatment of the individual.

### Case study

**Now we super-size our ambulances**

*By Grant McArthur*

The obesity epidemic has forced Ambulance Victoria to buy new heavy-duty vehicles, as schools and airlines are ordering wider seats.

Even funeral parlours are super-sizing crematoriums.

Victoria has spent $1.4 million on four new ambulances for patients who weigh more than 159 kilograms.

Paramedics treated and transported 1450 extremely obese patients during a trial of the state’s only existing ‘complex patient transport vehicle’ last year — rising from one-a-day to five-a-day in just 12 months.

Ambulance Victoria has ordered four more of the $350,000 custom-built Mercedes vehicles to enter the service from April.

They will transport patients up to 350 kilograms.

Ambulance Victoria group manager Frank Cummane said the heavy-duty ambulances were a must.

‘For the patient’s sake, for our staff’s sake and for the hospital’s sake, we couldn’t safely transport these patients three or four years ago,’ he said.

‘Obviously you have to keep the dignity of these patients. Many of them cannot lie down as their weight makes it hard to breathe.’

Each customised vehicle is fitted with a 500 kilogram hydraulic lifter, a stretcher that can carry up to 450 kilograms, airbags to lift patients off the floor, a wheelchair capable of carrying a 295 kilogram person and a double-sized seat to transport patients who must remain upright.

But paramedics are not the only ones feeling the pressure of the obesity epidemic.

Five years ago The Alfred Hospital treated only 15 patients a year with serious weight problems — now it caters for 50 with reinforced beds and larger theatre beds, toilets and CT scanners, as well as a bariatric team to visit housebound patients.

Baker IDI Heart and Diabetes Institute obesity expert Prof John Dixon said the number of super-obese people with a body mass index of 50 or more had risen fivefold in 20 years.

‘They are a substantial part of our community, they are not going away, they are very much discriminated against and stigmatised,’ Prof Dixon said.

‘The ambulance services and hospitals should be congratulated for providing what is a right for citizens to have.’

But weight control expert Dr John Tickell said 80 per cent of obese people could control their weight but choose not to, and governments and society were caving in to their problems.

‘We live in a sick society where governments are reactive rather than proactive,’ he said.

Schools are now ordering chairs one size larger to cope with larger students, according to Glenn Webster of Woods Education Furniture.

Airlines are also feeling the pinch — Jetstar is fitting its planes with seats 2.5 centimetres wider.

*Source: Herald Sun, 27 February 2009.*

(continued)
Case study review

1. (a) What type of cost do new ambulances represent?
   (b) Is this cost incurred by the individual or the community? Explain.

2. (a) According to Dr John Tickell, what percentage of obese people could control their weight?
   (b) What examples of determinants may contribute to obese people not controlling their weight?

3. What BMI score indicates super obesity?

4. (a) Suggest ways that super obese people may be discriminated against.
   (b) How could this discrimination impact on their health?

5. In small groups, brainstorm a list of costs that may be associated with obesity. Classify these as direct, indirect or intangible, and indicate whether they are incurred by the individual or the community. Share your results with others.

Health promotion programs

As part of the response to the NHPAs, government and non-government organisations implement strategies in order to improve health and reduce the associated costs to the individuals and the community. Health promotion programs are an important part of reducing the burden associated with these conditions.

According to the World Health Organization, **health promotion** is ‘the process of enabling people to increase control over, and to improve, their health’. Health promotion strategies therefore aim to encourage behaviour change before diseases become a problem (disease prevention).

In the past, the focus was on curing diseases once they were present. Since the 1970s, there has been a greater focus on the prevention of diseases, particularly the role that behavioural determinants or factors play. Health promotion programs are increasingly being seen as the best way to encourage people to live healthier lives. Education is often a major aspect of health promotion programs.

**TEST your knowledge**

1. List the nine NHPAs (make sure you use the correct term for each one; for example, ‘cardiovascular health’, not ‘cardiovascular disease’).

2. List three reasons why health conditions are selected as NHPAs.

3. What is meant by direct costs? Give examples.

4. What is meant by indirect costs? Give examples.

5. What is meant by intangible costs? Give examples.

**APPLY your knowledge**

6. Devise a ‘silly sentence’ or mnemonic as a way of remembering the NHPAs. Share yours with others from the class.

7. Peter is a 52-year-old father of three. He is not very active and has put on considerable weight in recent years. He is also a smoker and takes medication for high blood pressure. He recently suffered a heart attack and was rushed to hospital. He underwent surgery for a triple bypass and spent two weeks in hospital. He is currently undergoing rehabilitation and must make lifestyle changes if he is to improve his current level of health. While he recovers he can’t work and is stressed about his financial position. Peter is receiving some government assistance while he is unable to work.
   (a) Identify some of the direct, indirect and intangible costs to both Peter and the community from his illness.
   (b) Make a list of changes Peter could make to improve his biological and behavioural risk factors.

8. Use the NHPAs links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
4.2 Obesity

**KEY CONCEPT** Obesity as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion strategies designed to address it

Obesity became a National Health Priority Area in 2008. Obesity relates to carrying excess body weight in the form of fat that can have negative impacts on health. For adults, obesity is defined as having a body mass index (BMI) of 30 or higher, or a waist measurement of 88 centimetres or more for women and 102 centimetres or more for men. In Australia, the rate of obesity has been increasing over time. The causes of obesity are often linked to eating more energy dense foods without undertaking enough exercise to burn the excess energy. However, in some cases, obesity is caused by biological determinants such as metabolic problems.

Food consumption patterns have changed over time and now Australians are eating more than they used to. This is coupled with the fact that levels of exercise have decreased.

Why is it an NHPA?

One reason why obesity was identified as a National Health Priority Area was its relationship to the development of other conditions. Obesity is a key biological determinant in a range of diseases and conditions, including:

- cardiovascular disease
- diabetes mellitus
- arthritis
- kidney disease.

By reducing the levels of obesity in the population, a reduction in these diseases is also possible.

Other reasons for including obesity as an NHPA include:

- overweight and obesity have risen over time — after adjusting for differences in the age structure — from 57 per cent in 1995 to 63 per cent in 2011–12
- according to the International Obesity Taskforce, by 2025 one in every three adults in the world will be obese if current trends continue.

---

**FIGURE 4.5** If energy intake outweighs energy expenditure, weight gain will result.

**FIGURE 4.6** Prevalence of overweight and obese people in selected countries
4.2 Obesity

• obesity was thought to be responsible for 7.5 per cent of the total burden of disease in 2003 (AIHW 2010)
• obesity is often preventable. Through education and awareness it is possible for people to modify their lifestyle choices and maintain a healthy body weight.

**FIGURE 4.7** Predicted future prevalence (per cent) of obesity in Australians (2005 statistics provided for comparison purposes)

*Source: Future prevalence of overweight and obesity in Australian children and adolescents, 2005–25.*

**FIGURE 4.8** Direct costs due to medical consultations regarding obesity are increasing.

**Costs associated with obesity**

**Direct**

Obesity is a risk factor for other conditions such as cardiovascular disease and type 2 diabetes. As a result, many of the direct costs associated with obesity are attributed to other conditions. For example, a person may suffer a heart attack and require an ambulance. Even though cardiovascular disease is directly responsible for the cost, obesity is the underlying cause.

Other costs to the individual can include weight management plans and medication. These costs are incurred in an attempt to decrease body weight as opposed to treating related conditions.

As obesity is often related to other conditions, data concerning the direct cost of obesity to the health system and therefore the community are difficult to collect. One study estimated that the direct cost of obesity was $873 million in 2005 (Access Economics, 2008). This constitutes about 1.6 per cent of the total funds spent on diagnosing and treating all conditions.

Obesity has become the focus of many health promotion programs in recent years, and this has also contributed to the direct costs associated with this NHPA.

**Indirect**

Indirect costs to the individual can be substantial. If a related condition develops, the person may not be able to work, which reduces income. They may have to employ someone to carry out home duties if their condition prevents them from performing such tasks.

The indirect costs of obesity to the community are considered to be significantly greater than the direct costs. According to Access Economics in its report *The growing cost of obesity in 2008: three years on*, some of the indirect costs of obesity include lost productivity ($3.6 billion), welfare and other government payments ($727 million), and the cost associated with providing allowances for carers ($1.9 billion). Australians also spend hundreds of millions of dollars each year on weight management programs to avoid obesity.
Intangible
The intangible costs to the individual associated with obesity are considerable and include:
- the effects on mental health. Individuals who are obese may feel self-conscious about their appearance, which can result in reduced levels of self-esteem.
- sleep disturbances experienced due to related conditions, such as sleep apnoea. Excess weight can push the walls of the throat together, which can temporarily halt breathing. After a period of time, ranging from a few seconds to a minute, the person wakes up. This can occur hundreds of times a night and affects sleeping patterns.
- not being able to exercise at the intensity previously possible. Obesity causes reduced fitness levels due to an increase in tissues requiring oxygen and energy. This reduces the amount of oxygen and energy available to muscles for exercise.
- lack of energy to complete daily tasks. As energy levels decrease, household tasks such as shopping and household chores become increasingly difficult.
- the adjustments required to make dietary changes. Altering food intake can be difficult as new shopping and cooking routines and skills must be learnt. It may also take time for the individual to adjust to the taste of unfamiliar food.

Intangible costs to the community associated with obesity include:
- anxiety and stress for family and friends if the individual is diagnosed with a condition related to their obesity such as type 2 diabetes or cardiovascular disease
- feelings of frustration for family and friends if they have to take time away from other activities to care for an individual who has developed an obesity-related condition.

Determinants of health contributing to obesity

Biological determinants
Obesity as a component of body weight is itself a biological determinant or risk factor for other conditions such as cardiovascular disease and diabetes. Biological determinants that act as risk factors include:
- age. As metabolism slows down with age, it becomes more difficult to maintain weight
- genetic predisposition. Some people may have a genetic predisposition for overweight or obesity
basal metabolic rate (BMR). A lower BMR results in less energy being used and can therefore contribute to obesity.

hormonal disturbances. Hormones such as leptin contribute to appetite and fat distribution. Disturbances in the level of, or the body's sensitivity to, these hormones can increase the risk of obesity.

**Behavioural determinants**

Some behavioural risk factors that increase the chances of becoming obese include:

- **lack of physical activity.** Less energy is expended or burnt, which increases the risk of weight gain.
- **excessive alcohol consumption.** Alcohol contains kilojoules and therefore energy, which means it can increase the chances of an individual gaining weight.
- **consuming an energy-dense diet.** Foods containing large amounts of fat and simple carbohydrates such as sugar contribute significant kilojoules to the body. Over time, if this energy is not expended, weight gain can occur.

**Physical environment determinants**

The physical environment can contribute to either healthy body weight or obesity in a number of ways, such as:

- **access to recreation facilities.** If individuals do not have access to recreation facilities such as cycling and walking paths, they may not have the same opportunities for physical activity as others. This can increase body weight and contribute to obesity.
- **work environment.** A work environment that does not facilitate incidental physical activity, such as walking up and down stairs or walking around the office or factory, can increase the risk of obesity. For example, a work environment that has car parking next to the entrance, no stairs and a small office space can reduce the level of incidental physical activity and contribute to weight gain.
- **transport systems.** Transport systems that foster passive methods of transport, such as car travel, can increase the risk of obesity. In one study, residents of New South Wales who drove to work were 13 per cent more likely than non-car commuters to be overweight or obese and significantly less likely to achieve recommended levels of physical activity (AIHW, 2010). Also, those lacking access to transport may find it difficult to access fresh fruit and vegetables, which can increase reliance on processed foods. This can increase the risk of obesity.

**Social determinants**

The social determinants of health have a complex relationship with obesity. It is difficult to say whether obesity or the social determinant has the causal effect. For example, a person might be stressed because they are obese or they could be obese because they are stressed.

Some of the social determinants that have a relationship with obesity include:

- **socioeconomic status.** People of lower socioeconomic status are more likely to be obese. This could be a result of lower levels of physical activity and a more energy-dense diet.
- **food security.** People who can’t afford or can’t access a healthy food supply may rely on processed food, which tends to be higher in fat and sugar and low in fibre, therefore adding kilojoules to the diet.
- **stress.** Eating may be a response to stress, which can contribute to weight gain.
- **early life experiences.** Individuals who experience obesity in childhood have about an eighty per cent chance of being obese as adults. This may be due to the difficulty that some people face losing weight and changing the lifestyle behaviours that were learned during childhood, such as dietary behaviours and physical activity patterns.
Health promotion programs

There has been an increasing focus on obesity as part of many health promotion programs within Australia designed to reduce the burden of disease associated with related conditions such as cardiovascular disease, type 2 diabetes and arthritis. Some programs include:

- the Stephanie Alexander Kitchen Garden Foundation, which promotes healthy eating among school-aged children
- the Go for 2 and 5 program, which aims to increase fruit and vegetable consumption
- The LiveLighter campaign, which encourages people to adopt healthier food intake and physical activity behaviours (detailed below).

Case study

The LiveLighter campaign

The LiveLighter campaign aims to assist individuals in eating well, being physically active and maintaining a healthy body weight. Implemented by the Heart Foundation and Cancer Council, with funding from the Victorian Government, the program began in Victoria in 2014.

By reducing levels of obesity, the program also aims to reduce the impact of related conditions such as cardiovascular disease, type 2 diabetes and some cancers including breast and colorectal cancer.

LiveLighter assists individuals in reducing their risk of obesity using methods including advertising campaigns and web-based resources.
Reduce your risk of heart disease, type 2 diabetes and cancer by eating less and moving more every day.

**GRABBABLE GUT OUTSIDE**

Toxic fat around vital organs of a moderately overweight Australian

**MEANS TOXIC FAT INSIDE**

**FIGURE 4.12** An advertisement from a LiveLighter advertising campaign
Advertising campaigns

The LiveLighter advertising campaigns are targeted at adults. A range of print and audiovisual media has been developed to educate people about the danger of obesity and abdominal fat. These advertisements have been broadcast on television, printed in newspapers and posted online. The advertisements can be graphic and confronting (see figure 4.27), but they are designed this way intentionally because reversing the current trend of overweight obesity in Australia and improving health outcomes are priorities of the program.

Web-based resources

The LiveLighter website contains a range of resources to assist individuals in making healthy behaviour changes including:

- a 12-week meal and activity planner
- recipes
- ‘Top Tips’
- The ‘Am I at Risk?’ tool.

The 12-week Meal and Activity Planner allows individuals to create an account that enables them to access a 12-week meals and activity planner. The planner takes an individual’s characteristics into account including sex, age, height, weight, waist circumference and physical activity levels in order to provide guidelines that can assist them in losing weight or maintaining a healthy body weight. Recipes and ideas for physical activity are included in the plan that assist in reducing energy intake and increasing energy expenditure.

The LiveLighter websites contains a range of recipes that aim to educate people about how to cook meals that can assist in reducing energy intake and the risk of obesity. Recipes are provided for each meal of the day including breakfast, light meals, main meals, desserts and snacks and drinks.

The website’s ‘Top Tips’ provide practical advice relating to simple changes that can be made to food intake and physical activity. Examples of tips include how to:

- **watch portion sizes.** Advice is provided relating to foods that constitute a ‘serve’ of each food group and how many serves males and females should consume from each group on a daily basis. Consumers are also encouraged to use smaller plates and avoid going back for seconds to reduce the amount of energy consumed
- **limit the intake of unhealthy fats.** The different types of fats and which foods contain them is explained so consumers are more aware of healthier food choices
- **avoid sugary drinks.** A range of sugary drinks are identified (such as energy drinks, cordials and sports drinks) and alternative products suggested (such as low fat milk and green tea)
- **eat healthier when out.** Ways to reduce energy intake when eating in restaurants are provided including asking the waiter if meals can be grilled instead of fried and if dressings can be placed in a separate container. Filling up on salads and other low-energy sides is recommended along with ways of swapping healthy alternatives for less healthy options
- **be active every day.** Suggestions for being active in everyday situations are provided. These include walking around while on the phone and taking the stairs instead of the lift.

The ‘Am I at risk?’ tool on the website shows consumers how to take a waist measurement and includes a Body Mass Index calculator. Consumers can learn about their personal level of risk for obesity-related conditions and access resources that will assist them in reducing their risk.

---

**TEST your knowledge**

1. Explain what is meant by obesity.

2. (a) Which two measurements give an indication of the health risks associated with obesity? (b) Which one is considered more accurate for individuals? Explain.

3. What health risks are associated with obesity?

4. How does Australia’s obesity rate compare with other developed countries (see figure 4.6)?

5. (a) What trend is apparent from figure 4.7? (b) Suggest reasons for this trend.

6. (a) Draw a summary table like table 4.2. Ensure the table is large enough to accommodate all nine NHPAs. (b) Fill in the columns for obesity. (c) At the end of each section of this chapter, add the NHPA explored to the summary table.

(continued)
**APPLY your knowledge**

7 Based on figure 4.9, what percentage of costs of obesity are due to direct costs?

8 Which determinants of health may have led to the differences in overweight/obesity rates between males and females?

9 ‘Australians are eating more and exercising less than they ever have before.’ What factors may have led to these two changes?

10 Would the financial costs associated with obesity be an accurate indication of the total costs associated with high rates of this condition in Australia? Discuss.

11 Use the [Stephanie Alexander Kitchen Garden](https://www.stephaniealexander.com) links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.

12 Explain how the LiveLighter campaign could reduce obesity among children.

13 (a) List the chronic conditions that could be reduced by the LiveLighter campaign.

(b) Discuss two ways that the LiveLighter campaign could promote social and mental health among Australians.

(c) Identify the determinants being addressed by the LiveLighter initiative and identify how each determinant is being addressed.

14 Justify why the LiveLighter campaign has been implemented.

15 Use the [LiveLighter](https://www.livelighter.com.au) links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.

---

**TABLE 4.2 NHPA summary table**

<table>
<thead>
<tr>
<th>NHPA</th>
<th>Description</th>
<th>Reasons for selection</th>
<th>Determinants that act as risk factors</th>
<th>Direct, indirect and intangible costs</th>
<th>Relevant health promotion programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiovascular health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arthritis and musculoskeletal conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injury prevention and control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dementia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 Cardiovascular health

**KEY CONCEPT** Cardiovascular health as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion programs designed to address it

Cardiovascular health refers to the health of the heart and blood vessels. The aim of this NHPA is to promote cardiovascular health in the entire population, not just those with cardiovascular disease. Improved cardiovascular health directly relates to decreased rates of cardiovascular disease.

Cardiovascular disease, sometimes known as heart disease or circulatory disease, includes all diseases of the heart and/or blood vessels. Examples include hypertension, coronary heart disease, stroke and peripheral vascular disease (which affects the extremities, particularly the legs and feet). Cardiovascular disease is a debilitating condition that can lead to reduced functioning and, in the most serious cases, death.

The main underlying cause of cardiovascular disease is a process called atherosclerosis. Atherosclerosis is a build-up of plaque on the walls of blood vessels, which narrows the passages that the blood has to pass through. The plaque is made up of cholesterol, other fatty substances, human tissue and calcium. Cholesterol is a waxy substance and acts like glue to hold the other materials against the artery wall. Over time, the plaque becomes thicker, which results in an overall narrowing of the artery. This restricts blood flow and therefore oxygen supply to various parts of the body (depending on where the build-up is occurring). This puts strain on the heart and the organs or muscles that the blood is being pumped to. If the blood vessels become blocked, the oxygen that is being carried in the red blood cells cannot reach the body cells and those cells die. Even if blood flow can be restarted, some damage may already be done due to lack of oxygen. The type of cardiovascular disease a person experiences largely depends on which part of the body is affected by the blood vessels that are blocked (see figure 4.13).

The death rate from cardiovascular disease has decreased in recent years; however, it still remains one of the biggest killers in Australia and is a major contributor to the burden of disease.

**FIGURE 4.13** The common sites for cardiovascular disease

**FIGURE 4.14** Atherosclerosis blocks blood vessels and therefore restricts blood flow.
4.3 Cardiovascular health

**Why is it an NHPA?**

Cardiovascular health was selected as an NHPA as a result of the contribution of cardiovascular diseases to the burden of disease, the associated costs, and the fact that they can be largely prevented. Specifically:

- In 2011–12 about 3.7 million Australians reported having a chronic (ongoing) cardiovascular condition (AIHW, 2014).
- The most common cardiovascular condition reported was hypertension (high blood pressure), which affected about 9.5 per cent of the population.
- In 2012, cardiovascular disease accounted for 43,946 or 30 per cent of all deaths, making it the leading cause of death. Coronary heart disease accounted for 14 per cent of all deaths, and stroke accounted for a further 7 per cent.
- Many determinants that contribute to cardiovascular disease are modifiable, meaning they can be altered with lifestyle changes and can contribute to the prevention of cardiovascular disease.
- Cardiovascular disease cost the health system almost $7.7 billion in 2008–09.

Mortality from coronary heart disease increases with advancing age (see figure 4.16). This reflects the nature of cardiovascular disease. It often takes years to develop and older people have generally had more exposure to the risk factors that contribute to its development. However, cardiovascular disease is a leading cause of death and disability throughout adulthood.

**Figure 4.15** Death rates for cardiovascular disease, age-standardised to the 2001 population (persons)

Source: AIHW, GRIM (general record of incidence of mortality) books, Canberra.

**Figure 4.16** Mortality rates for cardiovascular disease by age and sex, 2011

Costs associated with cardiovascular disease

Direct
Cardiovascular disease contributes to one of the highest amounts in direct costs of all NHPAs. In 2008–09, the direct costs amounted to over $7.7 billion, which was equal to about 10.4 per cent of the total health expenditure (AIHW, 2014).

Direct costs incurred by individuals include:
• ambulance transport in the case of a heart attack
• patient co-payments for medication to lower blood pressure
• patient co-payments for doctor and specialist services.

Direct costs to the community include:
• health promotion programs targeting cardiovascular disease such as the LiveLighter campaign
• Medicare contributions for bypass surgery in the event of a blocked artery
• Pharmaceutical Benefits Scheme contributions for essential medicines such as blood pressure medication
• private health insurance fund contributions towards treatment in private and rehabilitation hospitals.

Indirect
The indirect costs of cardiovascular disease are also significant, running into the billions of dollars. Indirect costs for cardiovascular disease to the individual include:
• changes to living conditions. A person suffering a stroke may experience limited mobility. If a wheelchair is required, modification to the home may be needed, such as installing ramps and rails
• social and financial changes. For example, having to hire someone to perform domestic duties if the person can no longer perform them.

Indirect costs to the community include:
• lost productivity ($4.2 billion in 2008). Individuals may not be able to work after a heart attack, reducing the productivity associated with their occupation
• cost of carers ($2.7 billion in 2008). Many of those who experience cardiovascular disease will undergo a period of recuperation or rehabilitation. During this time, carers may be required, especially if the individual is elderly
• social security and other government payments ($1.6 billion in 2008). If the person is not able to work, the government makes social security payments available so the individual can support themselves and their family.

Intangible
Cardiovascular disease is a leading cause of premature death in Australia. As a result, the intangible costs to both individuals and the community are significant, along with the impact of morbidity associated with the condition. Intangible costs to the individual include:
• the pain and suffering associated with the recurring symptoms of cardiovascular disease, such as chest pain and heart attacks
• the associated mental health issues, because cardiovascular disease often ends in death. The individual often experiences anxiety and stress during the course of the disease
• the significant lifestyle changes people with cardiovascular disease often need to make. These changes might mean that the individual misses social experiences, has to undergo rehabilitation and is not able to participate in activities they used to, as well as dietary changes.
Intangible costs to the community include:

• lifestyle changes for family members who may have to assist in caring for the individual after a heart attack, stroke or surgery
• anxiety and stress for family, friends and associates within the community during the course of the disease, and grief and loss if the disease results in death.

**Determinants of health contributing to cardiovascular disease**

**Biological determinants**

Some biological determinants can increase the chances of cardiovascular disease and some occur as a result of it. The biological risk factors for cardiovascular disease include:

- **body weight.** Being overweight or obese usually places greater strain on the heart and increases the risk of hypertension and of high levels of cholesterol in the blood.
- **blood pressure.** High blood pressure is an indicator that the heart is already working harder to pump the blood and can increase the risk of kidney disease and stroke.
- **blood cholesterol.** High blood cholesterol increases the risk of plaque building up on artery walls (atherosclerosis), making it harder for the blood to get through.
- **genetic predisposition.** Having family members (particularly in the immediate family) with cardiovascular disease increases an individual’s risk of cardiovascular disease.
- **sex, in particular being male.** Men carry more fat around the abdomen, which places them at increased risk of cardiovascular disease.
- **diabetes.** This disease is a risk factor for cardiovascular disease.
- **advancing age.** Basal metabolism slows as people age, making weight management more difficult. The heart also loses its efficiency as people age, contributing to cardiovascular disease.

**Behavioural determinants**

There are many behavioural determinants that increase an individual’s risk of developing cardiovascular disease. Therefore many opportunities exist to prevent cardiovascular disease. The behavioural determinants that increase the risk of developing cardiovascular disease include:

- **tobacco smoking.** This increases blood pressure and contributes to plaque build-up on artery walls.
- **excessive alcohol consumption.** Alcohol contains a lot of kilojoules. If these kilojoules are not used, it increases the chance of becoming overweight or obese, increasing the risk of cardiovascular disease.
- **insufficient physical activity.** Not being active enough causes unused energy to be stored as fat, contributing to overweight or obesity. Like all muscles, the heart must be trained and worked if it is to maintain its strength and efficiency.
- **poor dietary behaviour.** A diet high in fat increases the risk of obesity. Consuming too much saturated and trans fat also increases low-density lipoprotein (the ‘bad’ cholesterol), which acts to narrow the blood vessels and increase the risk of heart attack and stroke. Not eating enough fruit and vegetables may also put people at an elevated risk of cardiovascular disease, as the nutrients in these foods may act to reduce the risk of cardiovascular disease. People eating fruit and vegetables are also less likely to snack on energy-dense alternatives.
Physical environment

The physical environment can contribute to cardiovascular disease in a number of ways, including:

- **environmental tobacco smoke.** Exposure to environmental tobacco smoke can increase the risk of cardiovascular disease by contributing to atherosclerosis.
- **access to recreation facilities.** If an individual lacks access to recreational facilities such as gymnasiums and sporting clubs, they may not exercise as much as they otherwise would. This may increase the risk of obesity and cardiovascular disease.
- **transport systems.** Transport systems that do not promote active transport increase the risk of obesity and cardiovascular disease.
- **air pollution.** An environment that exposes an individual to smoke, chemicals or other hazardous substances can increase the risk of cardiovascular disease.
- **work environment.** A work environment that does not facilitate incidental physical activity such as walking up and down stairs or walking around the office or factory may increase the risk of obesity and cardiovascular disease.
- **noise pollution.** Some studies have suggested that prolonged exposure to excessive noise (from busy roads or airports, for example) can increase levels of stress and hypertension among those exposed to it.

Social determinants

It is difficult to identify the exact causal relationship between cardiovascular disease and the social determinants of health. However, some direct links include:

- **socioeconomic status.** People in lower socioeconomic status groups are more likely to be obese and are therefore more likely to suffer from cardiovascular disease. People from low socioeconomic groups also have higher rates of smoking.
- **social exclusion.** Socially excluded people may also be more likely to smoke and consume excessive amounts of alcohol, which both increase the risk of cardiovascular disease.
- **unemployment.** Unemployed people may experience high stress levels and reduced socioeconomic status.
- **occupation.** Job control has a relationship with cardiovascular disease (see figure 4.17). People experiencing high levels of stress are at an increased risk of this disease. Some occupations involve more physical activity and may assist with weight management, therefore reducing the risks of developing cardiovascular disease.
- **food security.** If individuals cannot afford or access a healthy food supply, they may rely on processed foods, which can contain high levels of fat, sugar and salt and are low in dietary fibre, all of which contribute to cardiovascular disease.
- **stress.** Long periods of stress produce physical changes that can increase the risk of heart attack and high blood pressure.
- **early life experiences.** Good diet and exercise practices can mean optimal weight during the early years of life. People with a healthy weight in childhood are more likely to have a healthy weight in later life. Habits learnt in early life may also be carried through to the later years.

![Figure 4.17: Self-reported level of job control and incidence of coronary heart disease in men and women](https://example.com/figure4_17.png)

Health promotion programs

As a leading cause of mortality, morbidity and burden of disease for many years, cardiovascular disease has been the target of numerous health promotion programs. Some of these include:

- **the LiveLighter program.** A program implemented by the Heart Foundation and Cancer Council that promotes physical activity and healthy eating.
- **Go for 2 and 5.** A joint program of the federal, state and territory governments, supported by organisations that promote the consumption of two serves of fruit and five serves of vegetables each day.
- **the Quit program.** As a joint venture between the Victorian Government (including VicHealth), the Cancer Council and the National Heart Foundation, Quit aims to reduce the impact of cardiovascular disease by reducing smoking rates in Australians.
- **the Heart Foundation Tick** (see opposite).

**Case study**

**The Heart Foundation Tick**

The Heart Foundation is a non-government organisation that aims to reduce the number of people living with or dying from heart, stroke and blood vessel disease. The Heart Foundation Tick Program was established in 1989 and encourages people to choose healthier food options by showing consumers which foods are better options compared to other, similar products. The program also aims to influence the nutritional content and labelling of foods by encouraging producers to meet the strict standards enforced by the Heart Foundation Tick Program.

Food products are classified into one of over 50 different categories. Once categorised, the food must meet certain criteria for that particular category. For instance, products in certain categories must meet criteria with regards to sodium, fibre and calcium, whereas others may have to meet saturated and trans fats criteria. For example, meat pies with the Tick endorsement are lower in saturated and trans fats and sodium than other pies. After applying for the Tick and passing strict food and label criteria, producers pay a fee to bear the Tick logo on their product. Food items found in supermarkets can apply for the Tick (including fresh food items such as salads).

As part of the contract to be able to display the Tick, the Heart Foundation reviews:

- correct use of the Tick logo
- nutrition information panels
- compliance with the Food Standards Code. This ensures that any nutrient or health claims made on labelling can be substantiated and that food products bearing the Tick have labelling that is not misleading and presents only factual information.

Many Australians use the Tick to guide their food choices. Research carried out by the Heart Foundation revealed:

- 83 per cent of Australians are aware of the Tick on food packaging, which is significantly higher than any other food labelling claim or endorsement
- 75 per cent understand that the Tick is about overall health and wellbeing
- 81 per cent agree that the Tick is a healthier option compared with similar foods
- 67 per cent agree that the Tick makes choosing healthier foods easier.

Source: Heart Foundation research, 2012.
Case study

John is a 57-year-old who works as an accountant. His working life is busy but he has built up his business to be quite profitable and enjoys the rewards he receives (both financially and mentally). He is also the secretary of the local football club and spends some of his spare time at training sessions and at games on the weekends. With the hours that John spends at work and the football club, he has not found the time to be physically active for a number of years. At work, he generally eats convenience foods that are highly processed.

As a result, John’s BMI is quite high, and six months ago he suffered a stroke that partially paralysed his right side. He was admitted to hospital and underwent surgery to remove plaque that was blocking the arteries supplying oxygen to his brain. Since the surgery, John has undergone rehabilitation to re-establish movement to his right side. He is an inpatient at a rehabilitation hospital and although he has made some new friends, he desperately wants to go home to be with his family. The prospect of John returning to work in the next six months is not likely and he finds this frustrating as well.

Case study review

1 How has John’s stroke affected his health?
2 In each of the following categories, list the costs that may have been associated with John’s condition:
   (a) direct costs to John and the community
   (b) indirect costs to John and the community
   (c) intangible costs to John and the community.
3 How might John’s illness have impacted on his:
   (a) family
   (b) business?
4 What biological, behavioural, physical environment and social determinants may have contributed to John’s stroke?
5 Devise a health promotion program that could specifically target stroke prevention for people of John’s age. Be sure to include:
   (a) the aspect of cardiovascular health that is the target
   (b) a description of the program (that is, how it works)
   (c) how the program will be implemented
   (d) who will run the program
   (e) how the program will be promoted.
4.3 Cardiovascular health

TEST your knowledge

1. Explain why the NHPA is called ‘cardiovascular health’ rather than ‘cardiovascular disease’.
2. Briefly describe what cardiovascular disease is.
3. List three types of cardiovascular disease and state where in the body they occur.
4. What is atherosclerosis?
5. List two biological risk factors for cardiovascular disease.
7. List and describe how two physical environment determinants may increase the risk of cardiovascular disease.
8. List and describe how two social determinants may increase the risk of cardiovascular disease.
9. Add cardiovascular health to your NHPA summary table (see question 6 of section 4.2).

APPLY your knowledge

10. (a) Identify the trend evident in figure 4.15.
    (b) Suggest possible reasons for this trend.
11. (a) Identify two trends evident in figure 4.16.
    (b) Suggest possible reasons for these trends.
12. (a) Describe the pattern evident in figure 4.17.
    (b) Why do you think this might be the case?
13. Use the Heart Foundation links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
14. Discuss how the Heart Foundation Tick could affect health status in Australia.
15. Justify the implementation of the Heart Foundation Tick.
16. Discuss the determinants that are targeted by the Health Foundation Tick.
4.4 Arthritis and musculoskeletal conditions

**KEY CONCEPT** Arthritis and musculoskeletal conditions as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion programs designed to address it.

There are over 100 musculoskeletal conditions, but the most common ones are:
- osteoarthritis
- rheumatoid arthritis
- osteoporosis
- juvenile arthritis
- back problems.

These conditions, while not contributing significantly to mortality rates, do contribute significantly to the overall burden of disease in relation to their contribution to the years of life lost due to disability (YLDs).

**Osteoarthritis**

Osteoarthritis is one of the most common forms of arthritis. It is characterised by the cartilage being worn down. Cartilage usually cushions the joints where bones meet. When cartilage wears down, bone rubs on bone, which causes pain and limited mobility. The most common sites for osteoarthritis are the knees, neck, lower back, hips and fingers. Osteoarthritis is usually a degenerative disease, meaning it becomes worse over time and often leads to reduced functioning such as the inability to write, walk or stand.

As the disease progresses, the pain becomes worse, often reaching points of incapacitation, affecting the health of the individual. More common among females than males, osteoarthritis rises in prevalence with age and increasing body weight.

**Rheumatoid arthritis**

Rheumatoid arthritis is an autoimmune disease characterised by inflammation of the joints. The immune system attacks the tissues lining the joints, resulting in inflammation, pain and swelling. Rheumatoid arthritis usually presents in a symmetrical fashion so that if one hand is affected, the other hand will probably be affected also. Disability associated with rheumatoid arthritis starts early in the disease process and can seriously compromise the quality of life. The chronic inflammation associated with rheumatoid arthritis can eventually wear bone and muscle away, resulting in deformities in the joints. Rheumatoid arthritis often
4.4 Arthritis and musculoskeletal conditions

affects smaller joints such as the hands and feet, although it can also affect larger joints such as the knees and hips.

Osteoporosis

Osteoporosis (meaning ‘porous bones’) is a disease where bone density deteriorates, leaving the bone weak and more prone to fracture. The most common sites of fracture are the bones of the spine, hip and wrist. Old bone tissue is continually being replaced by new tissue. In order to maintain bone mass, the rate of replacement must equal the rate of tissue loss. A number of factors can contribute to either increased loss of bone tissue or a decreased rate of renewal, both of which result in decreased bone mass and contribute to the development of osteoporosis.

Juvenile arthritis

Juvenile arthritis refers to any form of arthritis that occurs in individuals under the age of 16. As juvenile arthritis encompasses a range of conditions, there are no set symptoms, but it is often characterised by swelling, stiffness and pain, which can affect any joint. Juvenile arthritis can begin at any time including during infancy. It can be either a gradual onset of symptoms or a severe attack, although there are usually periods of remission followed by the onset of signs and symptoms. Arthritis during childhood can affect the growth of skeletal tissue and reduce mobility, which makes activities such as playing sport and going to school difficult.

Back problems

Back problems refer to conditions of the muscles, bones, joints and nerves of the back. Back problems include muscle strain and displaced vertebrae, and can be caused by illness or injury. These conditions are often experienced over an extended period of time and can significantly affect mobility, including movements required for walking, sitting and working.

Why are they NHPAs?

Although arthritis and musculoskeletal diseases do not feature prominently in the mortality figures, they do lead to high rates of morbidity. Arthritis and musculoskeletal conditions account for approximately five per cent of the burden...
of disease in Australia. They are associated with significant costs to individuals and the community.
• More than three million Australians (15 per cent of the population) had some form of arthritis and over 700,000 Australians (three per cent) had osteoporosis in 2011–12.
• In 2011–12, the overall prevalence of arthritis was 18 per cent for females and 12 per cent for males.
• The prevalence of osteoporosis was five per cent for females and one per cent for males in 2011–12.
• Osteoarthritis affected over 1 million Australians in 2011–12.
• Rheumatoid arthritis affected around 450,000 people in 2011–12.
• Over 700,000 Australians had osteoporosis in 2011–12.
• Almost 2 million Australians had some form of back problem in 2007–08.

Costs associated with arthritis and musculoskeletal conditions

Direct
Musculoskeletal conditions are the fourth leading cause of health expenditure, accounting for approximately $5.7 billion in 2008–09 or 5 per cent of health system expenditure that can be reliably allocated to various diseases. As arthritis and musculoskeletal conditions don’t often result in death, much of this expenditure is for treatment and management of these conditions. For the individual, direct costs include:
• patient co-payments for doctors’ and specialists’ services. Musculoskeletal conditions must continually be monitored and management plans developed and evaluated by doctors and specialists
• patient co-payments for medicines. Medication is a treatment option for many musculoskeletal conditions
• exercise programs. Exercise is a key part of managing arthritis and musculoskeletal conditions. Fees may be required to access a gym or pool and for the services of a physiotherapist
• ambulance transport. Osteoporosis often leads to fractures, which may require emergency care

Direct costs for the community include:
• Medicare contributions for health services. Medicare covers some of the costs associated with doctors and specialists and all of the fees associated with treatment in public hospitals. Joint replacement surgery may be required for some people experiencing osteoarthritis
• medication. The community bears some of this cost through the Pharmaceutical Benefits Scheme
• prevention programs. The Federal Government has invested in numerous programs that aim to prevent the onset of musculoskeletal conditions, such as the Better Arthritis and Osteoporosis Care initiative.

Indirect
As these conditions affect so many people, generally for long periods of time, the indirect costs are enormous. Lost productivity, carers and welfare payments due to musculoskeletal conditions amounted to over $5 billion in 2008.
Specific examples of indirect costs to the individual include:
• loss of income. People experiencing reduced mobility may not be able to work, which reduces their income.
4.4 Arthritis and musculoskeletal conditions

- **carers and other support.** Some people with a musculoskeletal condition may require full-time care or need assistance in carrying out their daily activities. They may have to employ people to assist them with these tasks.
- **transport costs.** Those experiencing limited mobility may no longer be able to drive and may rely on taxis.
- **Indirect costs to the community include:**
  - **social security or welfare payments.** Those not working can often access disability payments from the government.
  - **lost productivity.** Employees with arthritis may not be able to work, which can reduce the productivity of their employer. The employer may have to pay sick leave, which can impact on the employer’s financial position.

**Case study**

**Arthritis costs set to hit $7 billion by 2050: report**

A new report has found arthritis now affects nearly one in five Australians, costing around $24 billion a year.

The Access Economics study found there are nearly four million people with the condition, up by 700,000 over the past six years.

The cost of treating arthritis has increased by $4 billion in the past three years and could reach $7 billion by the middle of this century.

Arthritis Australia commissioned the report and president Mona Marahani says that because it is not life threatening, it has not been taken seriously.

‘Of the conditions that were listed as national health priorities by the Government in 2002, arthritis is the one with the largest number of sufferers,’ she said.

‘Right through from the community to medical professionals to government and their agencies, people have never thought of it as being a serious problem and clearly that’s not right.’

Access Economics director Lynne Pezzullo says if current trends continue, seven million people could be affected by the middle of the century.

‘Arthritis affects nearly one in five Australians now, so just under four million people have arthritis,’ she said.

‘If you’re over 80, the chances of having it are about one in two and the total cost of arthritis is around $24 billion per year.’

‘That’s in terms of the health care expenditures, lost time at work for people with arthritis experience and shortened lives and years spent with disability.’

*Source: ABC Premium News, 14 August 2007. © 2007 Australian Broadcasting Corporation. All rights reserved.*

**Case study review**

1. **How many people could have arthritis by the middle of the century if trends continue?**
2. **What other trends in health status do you think might contribute to the rising number of people suffering from arthritis?**
3. **What other costs can you think of that would contribute to the estimated $24 billion total cost?**
4. **Why might arthritis not be ‘taken seriously’?**

**Intangible**

Arthritis and musculoskeletal conditions can cause intense pain and suffering, which are possibly two of the most significant intangible costs associated with these conditions. Other intangible costs to the individual include:

- **anxiety over the prospect of falls and fractures.** Osteoporosis increases the frequency of falls and probability of fractures.
- **missing out on social experiences due to reduced mobility.** This impacts on social and mental health.
• not being able to exercise due to physical limitations. Exercise can be difficult for those with arthritis or osteoporosis. This can further impact on physical, social and mental wellbeing.
• loss of self-esteem due to the inability to perform tasks. Those experiencing a musculoskeletal condition may not be able to perform tasks that they previously could such as cleaning the house, playing sport and attending work. Self-esteem can suffer if the individual has to depend on others.

The community includes friends and relatives of those with musculoskeletal conditions, and they may also experience intangible costs. For example:
• they may provide care for the sufferer, which can be time consuming and can contribute to missed social experiences.
• friends and relatives may worry that elderly sufferers may have falls and experience fractures, especially if they live alone.

**Determinants of health acting as risk factors for arthritis and musculoskeletal conditions**

**Biological determinants**

There are a number of biological determinants that act as risk factors for developing musculoskeletal conditions. These include:
• **body weight.** Being overweight or obese puts more pressure on joints, which can increase the chances of developing arthritis. Current research also indicates that obesity can increase the risk of osteoporosis.
• **sex.** Females are more likely to develop a musculoskeletal condition including juvenile arthritis. Oestrogen assists in the maintenance of bone mass so post-menopausal women are more at risk. Although the causes of increased risk of osteoarthritis and rheumatoid arthritis in women have not been conclusively identified, it is believed to be related to hormones, particularly the role of oestrogen.
• **age.** More wear and tear on the bones increases the risk of osteoarthritis. Bone mass decreases with age, which increases the risk of osteoporosis.
• **genetic predisposition.** People with a family history of musculoskeletal conditions are at higher risk of developing them, including juvenile arthritis.
4.4 Arthritis and musculoskeletal conditions

- **Low body weight.** People with low body weight generally have smaller bones, which can make the effects of osteoporosis more pronounced. They also lack constant weight bearing down through the bones, which increases the risk of osteoporosis.

**Behavioural determinants**
- **Tobacco smoking.** Chemicals in tobacco smoke, especially nicotine, can directly harm bone cells. Smokers also tend to have a lower body weight and are usually less active than non-smokers. Smoking may reduce the absorption of calcium and vitamin D, which are both required for building bone mass. Tobacco may also interfere with the action of oestrogen, which assists in the maintenance of bone mass. All of these factors increase the risk of developing osteoporosis.
- **Excessive alcohol intake.** The supply of key nutrients such as calcium and vitamin D may be reduced if excessive amounts of alcohol are consumed. Alcohol in large amounts can also be toxic to bone cells, which can reduce bone density, contributing to osteoporosis.
- **Physical activity.** Excessive weight-bearing activity places continual stress on joints and can hasten the effects of arthritis. On the other hand, moderate levels of weight-bearing exercise can assist in the maintenance of bone mass and prevent osteoporosis.
- **Poor dietary behaviours.** A diet lacking in the nutrients required for hard tissue formation (including calcium, vitamin D and phosphorus), particularly during adolescence, may accelerate or even cause the onset of musculoskeletal conditions (especially osteoporosis). Excessive consumption of sodium can contribute to a loss of calcium from hard tissues, increasing the risk of osteoporosis.
- **Lack of sun exposure.** Vitamin D deficiency is a growing area of concern in Australia and can contribute to reduced bone mineral density and osteoporosis. Vitamin D is found in some foods, including fish and milk, but sun exposure is the primary method of obtaining vitamin D. The elderly (especially those living in residential aged care), those with conditions who must limit sun exposure and people whose clothes cover nearly all of their body are most at risk (Australia’s health 2010).

**Physical environment determinants**
As obesity and lack of physical activity are both risk factors for arthritis and osteoporosis, aspects of the physical environment that contribute to these factors may also increase the risk. These include:
- **Access to recreation facilities.** Lack of access to facilities such as parks and gardens can decrease physical activity and contribute to obesity and arthritis. Lack of access to facilities that encourage weight-bearing exercise, such as gymnasiums, may contribute to lower bone density and increased risk of osteoporosis.
- **Transport systems.** Transport systems that do not promote active transport may contribute to weight gain and arthritis.

Another aspect of the physical environment that can increase the risk of musculoskeletal conditions is the work environment. Back pain is common as a result of injuries sustained at work. For example, if a workplace has a lot of stairs, the risk of falls and associated back and disc problems can increase.

**Social determinants**
- **Food security.** Lack of access to a nutritious food supply may mean a person does not receive adequate amounts of the nutrients required for hard tissue formation, which can lead to osteoporosis.
- **Socioeconomic status.** People of lower socioeconomic status may not have knowledge relating to healthy food intake and the value of regular health care.
This can increase the risk of musculoskeletal conditions and impact on treatment of these conditions.

- Occupations involving heavy lifting can increase the risk of back problems.

**Health promotion programs**

Due to the high rates of musculoskeletal conditions in Australia and the significant impact they have on burden of disease, a range of programs have been developed to address these conditions, including:

- **Better Arthritis and Osteoporosis Care (BAOC).** BAOC is a federal government funded program that aims to improve prevention of arthritis and osteoporosis, with a particular focus on juvenile arthritis.
- **Arthritis Australia strategies.** Arthritis Australia is a non-government organisation that aims to reduce the prevalence and impact of musculoskeletal conditions through strategies such as peer support, education for individuals, families and health professionals, and awareness raising.
- **Waves Warm Water Exercise Program.** An exercise program coordinated by Arthritis Victoria.
- **Bone Health for Life (see below).**

**Case study**

**Bone Health for Life**

The Bone Health for Life program is an initiative coordinated by Jean Hailes for Women’s Health, a non-government and not-for-profit organisation that works to promote health of women in Australia. Bone Health for Life works to provide practical advice for women and their health professionals relating to achieving and maintaining healthy bones.

A variety of fact sheets are provided on the Bone Health for Life website that explain osteoporosis, how it is diagnosed and how it can be treated. In written and audio formats, these resources are provided by experts at Jean Hailes for Women’s Health and cover topics such as osteoporosis prevention, food intake, exercise programs and medical check-ups. Bone health fact sheets have been translated into over 15 different languages to cater for Australian women from a range of cultural backgrounds.

Links to support services are provided for those experiencing osteoporosis. These services can assist individuals in managing their condition in the best possible way with self-management courses and support groups.

Behaviours such as food intake and physical activity patterns are important throughout life in the prevention of osteoporosis in later life. Bone Health for Life outlines the behaviours that are relevant for each lifespan stage.

The Bone Health for Life online quiz tests individuals’ knowledge surrounding osteoporosis and its prevention. Once each question is answered, meaningful feedback is provided that aims to educate and reinforce the public’s understanding of osteoporosis.

General practitioners are provided with online professional learning activities that increase awareness of osteoporosis. Medical professionals can use the knowledge gained through these activities to promote health with regards to the prevention, diagnosis and management of osteoporosis among their patients.

**FIGURE 4.25** Bone Health for Life educates about and encourages individuals to access diagnostic procedures such as bone scans.
4.4 Arthritis and musculoskeletal conditions

TEST your knowledge
1 Briefly describe five common conditions associated with this NHPA.
2 (a) According to figure 4.22, which sex and age group are more likely to develop arthritis and musculoskeletal diseases?
   (b) Which determinants of health may account for this difference?
3 Add arthritis and musculoskeletal conditions to your NHPA summary table (see question 6 of section 4.2).

APPLY your knowledge
4 Arthritis and musculoskeletal conditions cause relatively low levels of mortality, yet are still an NHPA. Why have they been selected as an NHPA?
5 Why does increased body weight and advancing age increase the risk of developing osteoarthritis?
6 Melisa is 52 and has just been diagnosed with osteoporosis. She has always led an active life (playing tennis and golf every week) and as a result, has had no trouble maintaining her weight. Her main social contacts are through the golf and tennis clubs, as well as at the charity shop where she volunteers twice a week. She broke her hip recently, which led to her diagnosis. Melisa is now extremely nervous about breaking another bone.
   (a) Discuss how Melisa’s osteoporosis could impact on her health.
   (b) Outline the possible direct, indirect and intangible costs to the individual and community associated with Melisa’s condition.
   (c) Discuss three examples of determinants that may have contributed to Melisa’s condition.
7 Use the Osteoporosis links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
8 Use the Arthritis Australia links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
9 (a) Explain two ways that the Bone Health for Life program could promote health in Australia.
   (b) Justify the implementation of the Bone Health for Life program.
4.5 Injury prevention and control

KEY CONCEPT Injury prevention and control as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion programs designed to address it

The term injury relates to the adverse effects on the human body that may result from a range of different events. Injuries may be accidental — such as falls, poisoning, drowning, sporting and workplace injuries, and car crashes — or they could be intentional, such as suicide, attempted suicide and violence. According to the Australian Institute of Health and Welfare, ‘most injuries requiring hospitalisation in Australia happen as a result of car crashes, falls, interpersonal violence, sporting and recreational activities, and in work settings’. As well as hospitalisations, injuries are a significant cause of disability and premature death in Australia. This NHPA aims to prevent injuries and reduce the impact injuries have on both individuals and communities. Analysing the rates and trends associated with injuries allows progress of this NHPA to be evaluated.

![Graph showing the proportion of people recently injured by age and gender](image)

**FIGURE 4.26** Proportion of people who were recently injured, 2004–05

There are different patterns of injury that occur throughout the lifespan for both males and females. Some of the major factors affecting the risk of injury include age, sex, alcohol and substance use, housing, ethnicity and socioeconomic status. Such factors affect the type of injury a person is more likely to sustain. For example, age has a large influence on drowning deaths. Infants and young children are more at risk of drowning as their knowledge of water and swimming skills are limited. Due to their body proportions, their heads are relatively heavy, so an infant or young child may struggle to lift their head out of water.

Self-harm and road crashes are more likely in young adult males compared with other lifespan stages. Older people are more likely to die from falls as their bodies are generally not as strong as younger people’s and are affected more by the trauma associated with falls. Declines in eyesight and motor skills contribute to higher rates of falls among older people.

Since 1995 there has been a 9 per cent decrease in the standardised mortality rate for deaths from injury and poisoning. This decrease has been influenced largely by the decline in deaths from car crashes.
4.5 Injury prevention and control

Why is it an NHPA?

- Injury was projected to be responsible for about seven per cent of the burden of disease in disability adjusted life years (DALY) in Australia in 2010.
- 6.3 per cent of all deaths in Australia in 2012 were injury related.
- Injury is the main cause of death for people under the age of 45.
- Most injury cases are considered to be preventable.
- Injuries incur significant direct, indirect and intangible costs.

Costs associated with injuries

Direct

In 2008-09, $5.2 billion was spent on the direct costs of injuries. This was 7 per cent of the total health expenditure for all conditions (AIHW, Australia’s health 2014). Hospital and rehabilitation costs contribute significantly to the direct costs of injuries.

Examples of direct costs to individuals include:
- patient co-payments for medical treatment. Individuals with injuries often require ongoing treatment. Doctors’ and specialists’ services are examples of medical treatment.
- patient co-payments for pharmaceuticals. Medication may be required to relieve pain and reduce the risk of infection. Patient co-payments are required for these medicines.
- ambulance transport. In many cases, injured individuals require ambulance transport. The cost of this service is paid for by the individual.

Direct costs to the community include:
- Medicare contributions associated with surgery and other treatment in public and private hospitals. Medicare will pay all the fees associated with treatment in public hospitals and some of the costs associated with treatment in private hospitals.
- Pharmaceutical Benefits Scheme costs. Pharmaceuticals may be prescribed to assist in pain management.
- various aids such as wheelchairs and crutches. Private health insurance companies and other insurance agencies such as the Transport Accident Commission (TAC) and Workcover incur these costs in some instances.
- health promotion programs. Organisations such as the TAC and WorkSafe implement many health promotion programs aimed at reducing the risk of injury on roads and in workplaces.
Indirect

Indirect costs can be significant due to the long-term nature of many injuries. Specific examples of indirect costs to the individual include:

- **long-term care.** Individuals requiring long-term care may be required to contribute to these costs.
- **payment for services.** A person who is disabled as a result of an injury may have to employ people to perform tasks they used to be able to complete themselves, such as mowing the lawn.
- **transport costs.** If the individual is unable to drive, they may have to pay for someone to drive them.

Indirect costs to the community can be incurred by insurance agencies such as the TAC and Workcover. Long-term care is often paid for by these organisations if the injury occurred on a public road or in the workplace. The government also contributes to the cost of carers in some cases. Other examples of indirect costs to the community include:

- **lost productivity.** Individuals who have sustained injuries may not be able to work.
- **welfare payments and lost taxation revenue.** As a result of not being able to work, people disabled by injury contribute to a range of costs to the community, such as disability payments and lost taxation revenue.

Intangible

As injuries are unforeseen, there are many costs related to the mental health of the individual. A person who is permanently disabled may experience frustration as they relearn tasks they could once do. They may also have to adjust to living without a limb or without the use of limbs.

Deaths from injuries cause anguish among family members, friends and other members of the community, especially as injuries are unforeseeable and cause a significant degree of shock.

Determinants of health acting as risk factors for injuries

Different types of injuries are more likely to happen at certain times throughout the life span. Drowning is most common among children, traffic accidents are more common among young adult males, and falls are more common among older adults. A range of biological, behavioural, physical environment and social determinants play a part in the types of injuries people are at risk of and these factors will be explored in more detail.

Biological determinants

As discussed, age can be a significant risk factor for a range of injuries. For example, the loss of bone mass in older people can make them more likely to sustain fractures compared to a young person. Children may not understand warnings on cleaning agents and other chemicals, which can increase the risk of accidental poisoning.

Body shape and size can also influence the types of injury people are likely to sustain. For example, the body shape and size of an infant makes them more likely to drown as their heads are large compared with the rest of their body, making it difficult for them to lift their head out of the water.

Higher levels of testosterone in males is a contributing factor to the higher levels of risk-taking such as speeding while driving, alcohol and drug misuse, and acts of aggression, all of which contribute to higher rates of injuries among males.
Behavioural determinants

Some behavioural determinants include:
- **alcohol use**. People affected by alcohol often take unnecessary risks that can result in higher rates of injury, such as drink driving or swimming while intoxicated.
- **drug use**. This contributes to higher rates of mental illness, which can influence self-harm and violence rates. It also contributes to disability and death if driving while under the influence.
- **physical activity**. People participating in contact sports may be at an increased risk for sport-related injuries.
- **risk-taking behaviour**. Men are more likely than women to take risks and therefore have higher rates of injury.

Physical environment determinants

Numerous aspects of the physical environment can increase the risk of injury. They include:
- **work environment**. Aspects of the work environment can contribute to the risk of injuries. Machinery associated with farming and mining are examples of causes of such injuries.
- **transport**. Poor road quality, lighting and signage all impact on the risk of injuries. In areas where these factors are not optimal, the risk of injury increases.
- **housing**. Unsafe housing can increase the risk of falls and injuries.
- **access to recreation facilities**. Access to bodies of water may increase the risk of drowning. This includes beaches, rivers, lakes, dams and swimming pools.

Social determinants

Some social determinants that increase the risk of injury include:
- **socioeconomic status**. Those of lower socioeconomic status are more likely to be injured. This may be a result of lower levels of education, the types of occupations carried out or lack of financial resources to ensure cars are in safe working order.
- **social exclusion and social isolation**. Those who are socially excluded and isolated may not have people to talk to when required. This can increase the risk of mental health issues and injuries from self-harm.

Health promotion programs

Just as there is a range of injuries that people experience, there is a range of programs to address injury prevention and control. Some examples include:
- the National Binge Drinking Strategy. This program is funded by the federal government and aims to reduce the risk of injury associated with alcohol misuse. It includes the ‘Don’t turn a night out into a nightmare’ advertising campaign.
• the National Slips and Falls Prevention Project. This is a federal government program that provides resources to health professionals and consumers about preventing falls among the elderly
• programs implemented by Kidsafe, the Child Accident Prevention Foundation of Australia, such as the ‘Elmo Stays Safe’ app, which promotes road safety.

Case study

The National Road Safety Strategy 2011–2020

The National Road Safety Strategy 2011–2020 is a health promotion program developed by the Australian Transport Council, a government group made up of representatives from the federal and state/territory governments.

The program aims to cut the road toll by at least 30 per cent by 2020, by addressing the range of factors that contribute to road-related injuries, such as infrastructure, road laws, human behaviour and vehicle safety.

The program is based on the internationally recognised ‘Safe System’ approach, which acknowledges that people using the road network will make mistakes and therefore the whole system needs to be addressed to reduce the impact of such errors.

The National Road Safety Strategy reflects the Safe System approach by working to achieve four key objectives: safe roads, safe speeds, safe vehicles, and safe people.

Safe speeds

Speed is a factor in many road-related injuries. This aspect of the program encourages motorists to slow down by implementing:
• a national public education campaign about the community safety benefits of complying with speed limits. This includes the provision of education resources suitable for use by government agencies, local governments and community groups
• reduced speed limits at intersections to decrease the risk of collisions
• more speed limits of 40 km/h or lower in pedestrian and cycling areas
• ‘point-to-point’ speed cameras that record average speeds over a long distance, as opposed to standard speed cameras that only record speed at a given moment in time. Point-to-point speed cameras encourage motorists to slow down across their entire journey, as opposed to only slowing down in areas known to contain speed cameras.

Safe roads

The National Road Safety Strategy works to improve the quality of the infrastructure that can contribute to road injuries by promoting:
• installation of bicycle lanes to reduce the risk of car–bicycle collisions
• installation of pedestrian crossings and speed humps in residential areas to decrease the risk of injury to pedestrians
• removal of vegetation and other hazards that may limit the visibility of road users
• use of rumble strips that alert drivers when they are drifting out of their lanes
• use of barriers to separate traffic flowing in opposite directions to decrease the risk of head-on collisions.

FIGURE 4.30 The National Road Safety Strategy aims to reduce the risk of injury for all road users.

(continued)
4.5 Injury prevention and control

Safe vehicles
Governments are working with car manufacturers and road users to improve the safety of vehicles used in Australia by:
- expanding the Australian New Car Assessment Program (ANCAP) to increase the coverage of crash test results across the full range of new vehicles on the Australian market
- supporting the implementation of a national ‘Stars on Cars’ program to encourage the production and purchase of safer cars. This program would use stars to reflect the safety ratings of different cars on the market to allow consumers to make informed decisions when buying a new car.

Safe people
This aspect of the program works to educate people and to assist them in developing the skills required to reduce the risk of injuries on the road by:
- reviewing licensing conditions for motorcycle riders. Possible changes include restrictions for beginner riders (including a minimum period with a car licence before being able to apply for motorcycle licensing), and additional education and training if proven to deliver road safety benefits
- working in partnership with police to deter motorists from drink- and drug-driving by promoting the use of random breath testing programs and random roadside drug testing programs, and to improve public awareness of these programs
- educating drivers of the dangers of mobile phone use through mass advertising campaigns.

TEST your knowledge
1 Discuss why injury prevention and control was selected as an NHPA.
2 For each of the following groups, describe the sorts of injury they would be most likely to sustain:
   (a) children
   (b) youths
   (c) young adults
   (d) older adults
   (e) men.
3 Add injury prevention and control to your NHPA summary table (see question 6 of section 4.2).

APPLY your knowledge
4 Suggest reasons that might account for people in lower socioeconomic status groups suffering more injuries.
5 Which do you think would be greater: the direct or indirect costs of injuries? Explain.
6 Why are the intangible costs associated with injuries often more severe than the direct and indirect costs?
7 (a) Describe the pattern of injuries shown in figure 4.26.
   (b) Suggest reasons for the pattern of injuries over the lifespan.
8 (a) According to figure 4.27, members of which age group are most likely to be injured in a car accident?
   (b) Suggest reasons that might account for this.
9 (a) Identify the aim of the National Road Safety Strategy.
   (b) Outline three ways the National Road Safety Strategy attempts to achieve this aim.
   (c) Discuss how the National Road Safety Strategy could promote health in Australia.
   (d) Justify the implementation of the National Road Safety Strategy.
10 Use the Falls in older people links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
11 Use the TAC campaigns links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
4.6 Mental health

KEY CONCEPT Mental health as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion programs designed to address it

According to the World Health Organization, mental health is defined as a ‘state of wellbeing in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community’. Many factors affect a person’s mental health. From time to time, there may be an upset to this balance and people may experience symptoms that are distressing to both themselves and those around them. Sometimes, these symptoms may require treatment, including medication, therapy and hospitalisation, so that the balance can be returned and the person can continue with their daily activities.

Promoting and restoring mental health is the focus of this NHPA. Based on the World Health Organization definition, mental health is much more than the absence of mental illness. However, to gain an understanding of the mental health issues facing the community, a focus on mental illness is unavoidable.

Mental illness is a broad term for a group of conditions. These conditions can be short or long term, and there is no way of knowing who will be affected by them. Most mental illnesses are caused by a chemical imbalance in the brain that can alter the way a person perceives his or her world. The two most common types of mental illness are anxiety and mood disorders (sometimes called affective disorders), particularly depression.

Anxiety

Anxiety is characterised by feelings of worry or nervousness when faced with a threat, danger or a stressful situation. These feelings can also lead to physiological symptoms such as increased heart rate and shortness of breath.

Everyone experiences anxiety from time to time and it is a completely normal human function. It actually helps people to perform in certain situations and can assist in keeping them safe. Sometimes, however, the response by the mind and body can be irrational given the circumstances and can interfere with the day-to-day life of the sufferer. There is a range of anxiety disorders, including:

• generalised anxiety disorders
• social phobias
• specific phobias (for example, agoraphobia and claustrophobia)
• panic attacks (see box page 167) and panic disorder
• obsessive compulsive disorder (OCD)
• post-traumatic stress disorder.

Anxiety contributes second most to the overall burden of disease from mental illness and affects up to 25 per cent of the population to an extent that warrants treatment at some time in their life. Up to another 25 per cent have less severe anxieties, such as fear of spiders and snakes. Left untreated, anxiety can lead to depression.
4.6 Mental health

A panic attack is a sudden feeling of intense terror that may occur in certain situations or for no apparent reason. A panic attack does not mean a person is necessarily suffering an anxiety disorder. However, a panic attack is a common feature of each type of anxiety disorder. Symptoms of a panic attack may include:
- shortness of breath
- dizziness
- rapid heartbeat
- choking
- nausea.
The cause of panic attacks is unknown, but they may be related to a chemical response in the brain caused by actual threatening or stressful events or by thinking about stressful events. The brain response leads to physiological changes in the body, such as shallow breathing and rapid heartbeat. Panic attacks can be frightening. Some people say they feel like they are going to die or go crazy. People affected by panic attacks may avoid situations in which they think attacks might occur. In some cases, this may lead to the development of other anxiety disorders such as agoraphobia.

Depression

Everyone feels sad from time to time. If you lose a loved one or break up with your partner, it is not uncommon to feel sad for a period of time. However, depression is more than just feeling sad or experiencing a low mood. It is a serious mood or affective disorder caused by physical imbalances in the brain that last for extended periods of time.

The symptoms of depression include:
- ongoing feelings of sadness
- loss of interest and pleasure in normal activities
- loss of appetite or weight
- inability to get to sleep or waking up early
- feeling tired all the time
- having trouble concentrating
- feeling restless, agitated, worthless or guilty
- feeling that life isn’t worth living.

Why is it an NHPA?

Even though most Australians enjoy good health, a significant number of people will experience mental illness. Many of these will go undiagnosed. Part of the reason for this is that many people believe it is a weakness being unable to cope, and they believe they will ‘get over it’. Mental illness continues to have a stigma attached to it. Some of the specific reasons for including mental health as an NHPA include:
- mental illness is the most common non-fatal burden of disease in Australia. It accounted for 13 per cent of the total disease burden in 2010 and was exceeded only by cardiovascular disease and cancer (Australia’s health 2010)
- it is estimated that up to 45 per cent of Australians will experience mental illness at some stage in their lives (Australia’s health 2010)
- prevention and treatment strategies, such as medication and therapy, can be extremely effective in managing the condition
- the rates of reported cases of mental illness have increased in the Australian population in recent years (see figure 4.32)
- mental health problems have a relationship to other risk factors (such as alcohol and drug misuse), poorer health and higher rates of death
- anxiety-related problems were reported by 3.3 per cent of men and 4.4 per cent of women in 2011–12. Mood (affective) problems were reported by 7.5 per cent of men and 11.9 per cent of women (see figure 4.33) (ABS, Australian Health Survey: First Results, 2011–12).

FIGURE 4.32 Prevalence of mental and behavioural problems

Mood (affective) problems
Alcohol and drug problems
Anxiety-related problems
Mental disorder

<table>
<thead>
<tr>
<th>Mental disorder</th>
<th>Per cent of the population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood (affective) problems</td>
<td>12</td>
</tr>
<tr>
<td>Anxiety-related problems</td>
<td>8</td>
</tr>
<tr>
<td>Alcohol and drug problems</td>
<td>4</td>
</tr>
</tbody>
</table>

![Figure 4.33: Self-reported mental disorders, 2011-12](source: ABS, Australian Health Survey, 2011-12)

**Costs associated with mental illness**

**Direct**

Mental disorders accounted for 8.6 per cent of health system expenditure for all conditions in 2008-09, which is approximately $6.4 billion. Mental health problems are often associated with ongoing treatment such as medication and counselling, for which the individual must often make a co-payment.

Community costs include the contributions made through Medicare and the Pharmaceutical Benefits Scheme for medical services and medication.

**Indirect**

There are many indirect costs associated with the support of people with and those caring for people with mental illness. The estimated indirect costs paid for by the Australian Government in 2007-08 was over $4.6 billion. These costs include income support, housing assistance, community care, and employment and training opportunities.

The indirect costs to the individual experiencing mental illness are substantial. Examples include:

- **inability to work.** During times of increased anxiety or depression, the individual may not be able to work, which reduces income and lowers socioeconomic status. Family members providing care may also have to take time off work or school.
- **paying for services.** Some people experiencing mental illness won’t be able to complete their normal activities and may have to pay for someone to perform those activities.

Indirect costs to the community include:

- **lost productivity if the individual is unable to work**
- **social security payments.** The government may pay social security benefits to assist the individual with living costs if they are unable to work as a result of their condition.
Intangible
The impact of mental illness stretches further than economic costs. The individual suffering from the condition, as well as their family, friends, work colleagues and society in general, feel the impact of mental illness.

Those experiencing mental illness may not be able to participate in their usual activities, which can increase feelings of sadness and hopelessness. If treatment includes extended periods of hospitalisation, then there may be associated feelings of loneliness and despair.

Family members may have to take time out from their normal activities to care for the sufferer. Sometimes children have to look after parents with mental illness, which can have a range of effects on their lives. They may miss school and not be able to socialise with their friends or play organised sport. There may be heightened levels of anxiety while the person undergoes treatment (especially if they are a risk to themselves or others).

Determinants of health acting as risk factors for mental illness
A number of determinants or risk factors contribute to mental illness. It is usually difficult to say whether the risk factor occurs as a result of suffering from mental illness or if the risk factor contributes to the mental illness. For example, someone might drink alcohol in excess to forget their problems or they may have mental problems because of their excessive drinking.

Biological determinants
Some biological determinants are listed below:
• body weight. Links have been established between mental illness and obesity (AIHW 1998). Although no definitive relationship has been established, obesity could develop if the person is eating in response to depressive symptoms, or depression could develop as a result of low self-esteem due to obesity
• genetic predisposition. People with mental illness in the family are more likely to develop mental illness at some stage in their lives
• chemical imbalance. Chemicals in the brain assist in controlling mood. Research suggests that a deficiency in some of these chemicals, particularly the ‘happy chemical’ serotonin, may contribute to depression.

Behavioural determinants
Some behavioural determinants are listed below:
• tobacco use. Smokers are more likely to have mental health problems (AIHW 1998). Although there is no conclusive evidence regarding the causal effect between smoking and mental illness, it has been suggested that people experiencing mental health problems in their youth may be more likely to take up smoking
• alcohol misuse. Although there is a relationship between problem drinking and mental health (with problem drinkers more likely to have mental health issues and vice versa), the causal factor (mental illness or drinking) has not been established. Alcohol is a depressant and some studies suggest that people with depressive symptoms are more likely to develop alcohol misuse and dependence in their younger years
• drug misuse. People abusing drugs have higher rates of mental illness. Many substances alter the chemical make-up in the brain, which can trigger a range of mental illnesses. There is a relationship between mental illness and marijuana use, although the causal nature of the relationship is not understood
• physical activity. Physical activity releases hormone-type chemicals called endorphins that relieve stress and assist in maintaining optimal mental health. People who exercise may therefore be at a decreased risk of developing mental illness.

**Physical environment determinants**

Aspects of the physical environment that increase the risk of mental health problems include:

• natural disasters. Natural disasters such as floods, droughts and bushfires can increase rates of mental health issues in children and adults. Natural disasters impact on the livelihoods of people and contribute to depression, stress and anxiety.

• housing. Living in overcrowded housing conditions can increase the risk of psychological distress. Housing that does not promote adequate sleep or that is not secure can also contribute to anxiety and stress.

• access to recreation facilities. Regular physical activity has been shown to decrease the risk of developing a mental illness. Not having access to recreation facilities may therefore increase the risk.

• noise pollution. People experiencing ongoing noise pollution often experience higher rates of mental health issues.

• transport. Not having access to transport may increase levels of distress if people cannot stay in social contact with friends and family, cannot access employment or cannot access recreational facilities.

**Social determinants**

Some social determinants are:

• socioeconomic status. People in lower socioeconomic status groups have higher rates of mental illness. This could be attributed to a range of associated factors such as higher rates of obesity, higher rates of smoking, alcohol and substance misuse, poorer quality housing, poverty, lack of security and feeling that they lack control over their lives.

• social exclusion. There is a direct relationship between mental illness and social exclusion. People who are socially excluded are more likely to suffer from mental illness and also be of lower socioeconomic background. Homelessness is also more common among socially excluded people, which could add to the risk of mental illness.

• employment. Work-related stress can add to depressive symptoms.

• unemployment. Long-term unemployment has a relationship with mental illness. Those who are unemployed may experience prolonged feelings of stress and anxiety as a result of not being able to provide for themselves and/or their family.

• stress. Prolonged stress increases the risk of depression. Those experiencing severe stress may lack the coping skills to prevent mental illness.

• early life experiences. Loss of a parent, divorce or adverse parenting styles (including lack of affection and abuse) may act as a trigger for mental illness.

**Health promotion programs**

Due to the large burden that mental illness places on Australian society and to the increasing rates of mental illness, especially among young people, many programs have been created to promote mental health and decrease the rate of mental illness. Examples include:

• the National Mental Health Strategy. This is a program endorsed by federal, state and territory governments that aims to promote mental health and reduce the impact of mental illness in Australia.
• the range of programs delivered by beyondblue, the National Depression Institute
• KidsMatter. Created by the Australian Government and a range of non-government organisations, KidsMatter aims to create positive environments to promote mental health in children in preschools, day care centres and primary schools.
• programs implemented by headspace, the National Youth Mental Health Foundation.

Case study

Youthbeyondblue

Around 1 in 4 young people aged 16–24 experience a mental health condition (anxiety, depression or a substance use problem), and around 75 per cent of young people don’t seek professional help. Often the signs and symptoms of anxiety and depression are ignored as ‘just part of growing up’.

beyondblue is a not-for-profit organisation that raises awareness of anxiety and depression, reduces stigma and encourages help seeking. Youthbeyondblue is beyondblue’s youth program aimed at 12–25-year-olds from all walks of life in Australia.

Youthbeyondblue aims to empower young people, their friends and those who care for them to respond to depression and anxiety. Youthbeyondblue provides information on anxiety and depression, where to get help, personal stories and links to services. It also provides information for friends, families and people who work with young people on how they can help someone with anxiety and depression.

Youthbeyondblue works with a number of organisations to promote key messages and help distribute resources. These include schools, workplaces, community groups and not-for-profit organisations. This is an effective way of promoting messages directly to young people. Youthbeyondblue also promotes key messages through social media, public advertising, campaigns, local community events and local fundraisers.

Youthbeyondblue key messages

Youthbeyondblue’s key messages are: Look for the signs and symptoms of depression and anxiety, Listen to your friends’ experiences, Talk about what’s going on and Seek Help together!

LOOK

Youthbeyondblue provides information on signs and symptoms of depression (withdrawing from friends and family, not doing usual enjoyable activities, tiredness, loss of energy, problems sleeping, loss or change of appetite, feeling sad and miserable most of the time) and anxiety (snowballing worries, racing heart, tightening of chest, shortness of breath, feeling lightheaded or faint, hot and cold flushes, feeling constantly tense, nervous or on edge).

Youthbeyondblue encourages young people to understand these symptoms so they can look out for the warning signs if their friends are struggling.

LISTEN

Youthbeyondblue encourages young people to actively listen to their friends. This may include being prepared to save any suggestions for later on and just encourage them to continue talking by using statements such as ‘sounds like you’re having a tough time’ or ‘I can see how that’d bother you’.

TALK

Youthbeyondblue encourages young people to talk to their friends about what’s going on. Talking about anxiety and depression can be difficult, so Youthbeyondblue provides tips on how to deal with difficult conversations, suggestions about body language, and tips for asking open-ended questions.

SEEK HELP

Youthbeyondblue recognises that young people aren’t mental health professionals, but they can help by assisting a friend to find a health professional. Youthbeyondblue provides information on different avenues for getting help that can be recommended to a friend, including local doctors, help lines (beyondblue support service, Kids Helpline), online services and youth mental health service providers (headspace).

Source: © Beyond Blue
TEST your knowledge
1 Describe what is meant by:
   (a) depression
   (b) anxiety.
2 What is the difference between feeling sad and having depression?
3 (a) What determinants of health can act as protective factors for mental illness?
   (b) Make a list of protective factors for mental health that are present in your life.
4 According to figure 4.32, what is the apparent trend of mental illness rates?
5 Add mental health to your NHPA summary table (see question 6 of section 4.2).

APPLY your knowledge
6 The National Mental Health Survey estimates that 45 per cent of people will experience some form of mental illness at some stage in their lives. Provide two reasons why the statistics in figures 4.32 and 4.33 do not support this estimate.
7 (a) Explain the four messages of Youthbeyondblue.
   (b) Discuss three ways that Youthbeyondblue works to promote the mental health of young Australians.
   (c) Explain how Youthbeyondblue may promote the physical, social and mental health of young Australians.
8 Use the beyondblue links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
4.7 Cancer control

KEY CONCEPT Cancer control as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion programs designed to address it.

Cancer is a general term for a number of different conditions where uncontrolled mutation and growth of cells threaten to damage other parts of the body. The human body is continually producing new cells to replace those that have died or are no longer functioning properly. This is a normal part of life and a mechanism required to maintain health and keep the body in good repair. When abnormal cells start to grow and divide, a tumour may develop. Most of the time, these cells will be benign, but occasionally they can be malignant. A malignant tumour (or malignant neoplasm or cancer) can then invade nearby tissue and interrupt the normal functioning of that tissue. The site of the tumour or malignancy determines the type of cancer being suffered. In some cases, the cells can spread to other parts of the body (metastasise), leading to secondary cancers.

Prevention of cancer is a focus of this NHPA, but it is not the only focus. As a result, the title ‘cancer control’ was chosen as it aims to control cancer with regards to prevention, early detection and effective treatment.

Eight types of cancer have been included as the focus of this NHPA:
- prostate cancer
- breast cancer in females
- colorectal cancer
- lung cancer
- melanoma of the skin
- non-melanoma skin cancer
- cancer of the cervix

Prostate cancer

As females don’t have a prostate, this type of cancer affects only males. The prostate is a gland that sits just under the bladder (see figure 4.36). It is responsible for supplying a clear fluid that makes up part of semen.

Prostate cancer is a major killer and the most diagnosed type of cancer in males. Prostate cancer can strike at any age, but is most common in men over 40 (risk increases as age increases). Men with a family history should start getting checked after the age of 40. If there is no family history, they should commence checks after the age of 50. If detected early, the chances of survival are good.
Breast cancer

Breast cancer occurs in both sexes; about 40 men a year are diagnosed in Victoria. However, as females have much more breast tissue, their chances of developing this disease are much higher than males. In females, breast cancer is the most diagnosed cancer (excluding non-melanoma skin cancer) and contributes significantly to cancer deaths, second only to lung cancer. Breast cancer can strike at any age and deaths do occur in women under 50. All women over 50 years of age are encouraged to have a free mammogram every two years through BreastScreen Australia, a joint venture of the federal and state/territory governments (see the interest box at left).

Colorectal cancer

Colorectal cancer includes cancers of the colon (sometimes referred to as the large intestine) and rectum. This type of cancer was the second most diagnosed cancer in men and women in 2010. It was also the third leading cause of cancer death in men and women in 2010.

The National Bowel Cancer Screening Program operates in a similar way to BreastScreen. The program is in the process of being phased in, and in 2015 was available for people turning 50, 55, 60 or 65 years of age. Eligible individuals are sent an invitation in the mail to get a free screening. A faecal sample is sent to pathology and the results analysed to determine who requires further testing. Like all cancers, early detection increases the success of treatment. Colorectal cancer is diagnosed early in fewer than 40 per cent of cases.

Lung cancer

Lung cancer is a major killer of both men and women. Smoking is the biggest risk factor for lung cancer, but non-smokers can also develop the condition. Lung cancer in non-smokers is generally attributable to genetic predisposition and exposure to pollutants including environmental tobacco smoke (sometimes called second-hand or passive smoke), radon gas (see the interest box below), asbestos and air pollution.

Radon is an odourless, colourless, tasteless gas that occurs naturally in the environment. It is present all over the world and can contribute to lung cancer. In outdoor environments, the levels of radon are generally too low to cause any severe health effects. Indoor areas, however, can have higher rates of radon if there is insufficient ventilation. Radon gas is thought to be the second leading cause of lung cancer after exposure to tobacco smoke.

Melanoma skin cancer

Australia has the highest rate of skin cancer in the world. More than 1400 Australians die from skin cancer each year, with at least two in three Australians being diagnosed with skin cancer before the age of 70. There are many types of skin cancer. Most are non-melanoma skin cancers, which can usually be treated reasonably effectively. Melanoma, on the other hand, is an extremely dangerous type of skin cancer and can cause death if left undiagnosed and untreated. Fair and freckly skinned people are more at risk of skin cancer. The risk also increases with age and UV exposure.

Melanoma is cancer of the melanocytes (see figure 4.38). Melanocytes are the cells in the skin that are responsible for making melanin, which is a pigment in skin and hair. It gives skin its tan colour.
4.7 Cancer control

the skin that gives the skin its colour and also protects it from harmful UV rays. When a person spends extended time in the sun without using adequate skin protection, more melanin is made to protect the skin. This is why the skin turns darker after exposure to the sun. Too much UV exposure can cause the melanocytes to grow abnormally and become malignant. If not diagnosed and treated in the early stages, the cancerous cells can grow deeper into the skin and eventually metastasise. If this occurs, the risk to health is serious.

Exposure to UV radiation, which is present in sunlight and solariums, is the biggest risk factor for skin cancer. The cancer usually appears as a spot that changes over time. Some moles can turn cancerous and should be monitored by a doctor.

**Non-melanoma skin cancer**

Non-melanoma skin cancers are the most commonly diagnosed skin cancers in Australia. About two-thirds of Australians are diagnosed with a non-melanoma skin cancer before the age of 70. The two most common forms of non-melanoma skin cancers are basal cell carcinoma and squamous cell carcinoma (see figure 4.38). The names of these cancers refer to the cells in the skin where they develop (see figure 4.38).

Basal cell carcinoma is the most commonly diagnosed skin cancer in Australia (figure 4.39) but is the least dangerous. This type of cancer tends to grow slowly over a long period of time and rarely spreads to other parts of the body. Most commonly found on the face, head and neck, basal cell carcinomas can cause damage to tissues and organs nearby if left untreated. This type of cancer is most commonly found in people over the age of 40, although it can occur at any age.

Squamous cell carcinomas are less common than basal cell carcinomas but have the potential to cause more damage to the body. They usually grow faster than basal cell carcinomas and can metastasise if not treated.

Like melanoma, risk factors for non-melanomas include:

- skin type. Fair skin, moles and freckles increase the risk of skin cancer development.
- advancing age
- genetic predisposition
- exposure to UV rays, particularly exposure leading to sunburn
- work environment. Outdoor workers are more at risk.
- early life experiences. Those who had extended periods of sun exposure during childhood are more at risk of developing skin cancer.

Non-melanoma skin cancers are generally treated with medication, radiation or by surgically removing the affected tissue.

**Cancer of the cervix**

Cervical cancer is diagnosed in over 700 women per year and leads to over 200 deaths. Although these figures are not as high as for other types of cancer, cervical cancer is largely preventable through the HPV vaccine and responds well to treatment if detected in the early stages. Therefore, there is room for improvement with regards to burden of disease attributable to cervical cancer.
The cervix is the opening between the end of the vagina and the start of the uterus (see figure 4.40). Cervical cancer death rates have decreased over time and should continue to do so in the future. The national vaccination program (see spread 2.7) is predicted to prevent up to 70 per cent of cervical cancer cases.

The National Cervical Cancer Screening Program was established to encourage eligible women (those aged between 18 and 70 who have ever been sexually active) to have regular Pap smears every two years. Unlike BreastScreen and the National Bowel Cancer Screening Program, individuals may have to pay some of the cost of the Pap smear and the resulting pathology. The federal government pays a certain amount for each test through Medicare, but some doctors may charge more than the government contribution, meaning the individual must pay the difference (known as a patient co-payment). The National Cervical Cancer Screening Program maintains a registry of Pap smear tests and sends reminders to women who are overdue for a Pap smear. A policy has also been developed regarding testing procedures and quality control to ensure Pap smears are carried out effectively and efficiently.

**Non-Hodgkin’s lymphoma**

Non-Hodgkin’s lymphoma is a type of cancer that affects the lymph nodes. The lymph nodes are clusters of cells located throughout the body that form an important part of the immune system. Individuals may have their lymph nodes examined by a doctor when they are sick to check for inflammation (under the jaw and under the arms are common sites to check). One of the functions of the lymph nodes is to help to filter out substances and cells that may be dangerous to the body.

Although it can occur in children, non-Hodgkin’s lymphoma is most common in adults. Non-Hodgkin’s lymphoma is a common type of cancer affecting thousands of Australians and causes about 1300 deaths every year.

**Why is it an NHPA?**

Cancer is a leading cause of death in Australia, second only to cardiovascular disease. Although mortality rates for cancer have decreased in recent years, significant improvements can still be made. Other reasons for its inclusion as an NHPA include:

- many cancers are preventable with lifestyle changes
- in 2012, cancer accounted for 42 457 deaths or 29 per cent of all deaths registered (23 994 male deaths and 18 463 female deaths). Lung cancer was the leading cause of cancer deaths, accounting for 19 per cent of all cancer deaths
- cancer contributes more to YLLs than any other cause
- it is the largest contributor to overall burden of disease
- it contributes significant costs to the community and to individuals.

**Costs associated with cancer**

**Direct**

Cancer accounted for 6 per cent of allocated recurrent health system expenditure in 2008–09, when $4.5 billion was spent on direct costs. A significant portion of the direct costs associated with cancer are due to medical treatment. Chemotherapy,
radiotherapy and surgery are commonly used to treat cancer and cost a significant amount. Individuals may make co-payments for these services, but these procedures are often carried out in hospitals, with Medicare and private health insurance companies paying the majority of the associated fees.

Medication is an important part of cancer treatment and many cancer drugs are subsidised through the Pharmaceutical Benefits Scheme, with individuals making co-payments.

Numerous health promotion programs have been implemented by government and non-government organisations, including Quit, SunSmart and BreastScreen Australia. These initiatives represent direct costs to the community.

**Indirect**

The indirect costs associated with cancer (lost productivity, social security payments and carers) were estimated by Access Economics (2008) to be in excess of $2 billion.

Indirect costs to the individual include lost income, lost time due to travel to and from treatment, and the costs associated with paying for services around the home if the individual is unable to complete these tasks themselves. Cancer treatment can continue for months or years, which further increases indirect costs.

Indirect costs to the community include lost taxation revenue, lost productivity and social security payments.

**Intangible**

As cancer is so common in Australia, the effects touch most people in society. The intangible costs associated with cancer affect family and community members as well as the individual suffering from the condition. Some examples of intangible costs to the individual include:

- **the pain and suffering associated with this condition**
- **anxiety**. Many people feel anxious and stressed as they wait for the treatment to run its course. As cancer often leads to death, the prospect of not surviving treatment causes further anxiety
- **missing school or work**. This can affect socialisation and self-esteem levels.
- Supporting those with cancer can contribute to feelings of sadness and despair for friends and family members, representing additional intangible costs to the community.

**Determinants of health acting as risk factors for cancer**

Different types of cancers can often have different determinants or risk factors. However, most types of cancer involve a combination of biological, behavioural, physical environment and social risk factors.

**Biological determinants**

Some biological determinants include:

- **body weight**. There is a relationship between obesity and higher rates of some cancers, including colorectal cancer and breast cancer
- **age**. Advancing age is a risk factor for developing cancer
- **genetic predisposition**. Some people are more likely to develop cancer than others. The genetic influence seems to be particularly important for certain cancers, such as breast cancer and prostate cancer.
Behavioural determinants

Some behavioural determinants are:

- **tobacco smoking.** Tobacco smoke contains chemicals that can contribute to cancers in almost all parts of the body, especially the lungs.
- **alcohol consumption.** This can contribute to certain cancers, such as breast cancer.
- **poor food behaviours.** A low-fibre, high-fat diet increases the risk of colorectal, lung and prostate cancer. Fruit and vegetables are rich in nutrients and antioxidants, which reduce the risk of these cancers.
- **lack of sun-protection behaviours.** Over-exposure to UV radiation increases the chances of developing skin cancer.
- **unsafe sexual behaviours.** Being infected with the human papillomavirus (HPV) is a risk factor for cervical cancer. This is a very common virus and many forms of it are sexually transmitted. HPV can lead to cervical cancer.
- **vaccination behaviours.** Since 2007 there has been a vaccine available for HPV. People who have been vaccinated against HPV are less likely to develop cervical cancer.

Physical environment determinants

As obesity is a risk factor for some cancers, aspects of the physical environment that can increase the risk of obesity, such as access to recreation facilities and transport, can also increase the risk of some cancers.

Other aspects of the physical environment that can increase the risk of cancer include:

- **work environment.** Individuals who spend prolonged time outdoors as a part of their job may have increased exposure to UV radiation and an increased risk of skin cancer. Exposure to hazardous substances in the workplace can also increase the risk of cancers such as lung cancer.
- **air quality.** Up to 80 substances often found in air pollution are thought to increase the risk of cancer. People living in industrial areas and major cities may be at higher risk as a result.
- **environmental tobacco smoke.** Exposure to environmental tobacco smoke increases the risks of many types of cancer.
- **climate.** Ultraviolet radiation levels are often high in many parts of Australia. Increased exposure to UV radiation increases the risk of developing skin cancer.
- **geographical location of resources.** Resources such as cancer screening services do not necessarily decrease the risk of cancer, but they can contribute to early detection and higher survival rates. People in rural and remote areas may have difficulty accessing these services.

Social determinants

Some social determinants include:

- **socioeconomic status.** People of low socioeconomic status are more likely to develop lung cancer. People in low socioeconomic status groups have higher rates of smoking and alcohol consumption, which could account for the highest rates of lung cancer being in these groups.
- **food security.** People who do not have access to an affordable, healthy food supply may rely on processed foods. As a result they may consume excess saturated fat and inadequate amounts of fruits and vegetables, which can increase the risk of colorectal, lung and prostate cancer.
- **stress.** Although there is no conclusive link between stress and cancer, it is believed that stress may suppress the immune system and therefore allow cancerous cells to develop.
- access to health care. Cultural barriers and lack of education surrounding cancer screening may restrict access to health care and may contribute to lower rates of early detection. The rate of successfully treating most cancers is higher if they are detected early.

**Health promotion programs**

There are a range of health promotion programs that target different types of cancer. Some of these include:

- **Quit.** A joint initiative between the Victorian Government (including VicHealth), the Heart Foundation and the Cancer Council that aims to reduce the burden of cancer caused by tobacco smoking.
- **Breastscreen Australia,** the National Bowel Cancer Screening Program and the National Cervical Cancer Screening Program. These are federal government initiatives aimed at early detection of breast, bowel and cervical cancers.
- the National HPV Vaccination Program. A federally funded initiative that provides free HPV vaccines for girls aged 12–13 to decrease the rates of cervical cancer.
- **SunSmart** (see below).

**Case study**

**SunSmart**

SunSmart is an initiative of the Cancer Council Victoria. It was launched in 1988 and is funded by the Cancer Council Victoria and the Victorian Health Promotion Foundation (VicHealth). The program uses a mix of health promotion strategies to promote a healthy UV exposure balance that minimises the risk of skin cancer and improves awareness of the importance of vitamin D.

Whenever the UV index level reaches three and above, SunSmart recommends using a combination of sun protection measures: slip on covering clothing, slop on SPF 30+ broad spectrum sunscreen, slap on a wide brimmed hat, seek shade and slide on some sunglasses.

One of the first campaigns developed to promote sun protection was Cancer Council’s ‘Slip, Slop, Slap’ campaign featuring Sid the Seagull in 1980. Cancer Council has firmly established SunSmart as a world leader in skin cancer prevention and, in 2004, SunSmart was appointed the World Health Organization’s Collaborating Centre for UV Radiation.

The SunSmart campaign has enjoyed many successes. In Victoria melanoma rates are now levelling and starting to fall in people under 40 years. This suggests that the SunSmart program is having a positive effect on generations who have grown up with the SunSmart campaigns.

SunSmart has helped prevent more than 100,000 skin cancers and over 1000 deaths since 1988 but there is still work to do in reminding people of the importance of being vigilant. Australian adolescents still have the highest incidence of malignant melanoma in the world compared with adolescents in other countries. In young people aged 12–24 years in Australia, melanoma is the most common cancer, with more than double the number of cases of any other kind of cancer.

Specific actions of SunSmart include:

- media campaigns — these include paid and unpaid media strategies (TV, radio, web, digital media, PR) that help people know when they need sun protection and when it is safe to get some sun for vitamin D.

**Figure 4.42** In Victoria, the SunSmart brand is recognised by 94 per cent of the population (sunsmart.com.au).

**Figure 4.43** Sid the Seagull featured in one of the first sun protection mass advertising campaigns.
• advocacy for environmental change and policy development in schools, early childhood services, sports clubs, workplaces and local government areas including:
  – lobbying government for changes to regulations and guidelines
  – developing partnerships with key organisations
• working with community groups to ensure SunSmart policies and practices are effective and sustainable
• using strong research and evidence to guide the program. SunSmart works collaboratively with other researchers and also uses a number of research tools such as surveys and focus groups to ensure the best practice strategies are employed. Research is available to health professionals, community groups and the public to ensure access to the latest information on UV exposure
• providing resources such as posters, DVDs, online learning modules, a SunSmart UV alert widget, booklets and smartphone apps
• The SunSmart Schools program (for primary schools) and Secondary Schools UV program encourage schools to implement a SunSmart policy that meets the Cancer Council Victoria’s criteria. These include using a combination of sun protection measures whenever UV index levels reach three and above. Sun protection measures include shade, sunscreen, covering clothing and wearing a hat. SunSmart also encourages SunSmart education within the school’s curriculum.

TEST your knowledge
1 In your own words, explain what cancer is.
2 Define the following terms:
   (a) malignant
   (b) tumour
   (c) neoplasm.
3 Explain why ‘cancer control’ is the name of this NHPA.
4 List the cancers that are the focus of this NHPA.
5 According to figure 4.35, what are the three most common sites of cancer for males and females?
6 Suggest two reasons why Australia has the highest rates of skin cancer in the world.
7 Explain how screening for cancer can reduce cancer death rates.
8 Add cancer control to your NHPA summary table (see question 6 of section 4.2).

APPLY your knowledge
9 What preventative measures can people take to reduce their risks of developing cancer?

10 Why might cancer rates have decreased in recent years?
11 The rates for lung cancer in males have decreased in the past decade while increasing for women. Explain possible reasons for these trends.
12 Rank the actions of SunSmart in order from most effective to least effective based on your own judgement. Compare your list with others’ and discuss reasons for any differences.
13 Justify the implementation of the SunSmart campaign.
14 Discuss the determinants that are or could be addressed by the SunSmart campaign.
15 Use the Solarium links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
16 Use the McGrath Nurses links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
4.8 Diabetes mellitus

**KEY CONCEPT** Diabetes mellitus as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion programs designed to address it

Diabetes mellitus (often referred to simply as diabetes) is a chronic condition in which the sufferer is unable to utilise blood glucose correctly. Glucose is the basic unit of fuel for energy and is therefore required by the body’s cells to maintain normal function. When glucose is not being taken into the cells, the blood glucose levels are high and the cells cannot function normally.

Insulin is a hormone that is secreted by the pancreas to facilitate the uptake of glucose from the blood into the cells. In all cases of diabetes mellitus, this process is interrupted by one of a number of causes.

There are three types of diabetes that are the focus of this NHPA: type 1 diabetes, type 2 diabetes and gestational diabetes. There are a number of possible long-term effects of diabetes, regardless of the type experienced. These include:

- **poor circulation and cardiovascular disease.** Blood vessels can be damaged due to excess glucose in the bloodstream, resulting in poor circulation. This can cause a range of effects from tingling to cell death and amputation of limbs in the most serious cases. The risk of stroke and heart attack also increases if blood glucose levels are not controlled.
- **blindness.** Excess blood glucose can cause damage to the blood vessels supplying the retina, which can lead to vision problems and blindness.
- **kidney disease.** The kidneys must work harder to filter the excess glucose in the blood. This can lead to kidney damage and kidney disease.

**Type 1 diabetes**

Children and youths are most commonly diagnosed with type 1 diabetes, although it can occur at any stage of life.

Type 1 diabetes is characterised by the pancreas not producing enough (if any) insulin to allow glucose from the blood into the cells. The causes of type 1 diabetes are unknown; however, it is believed there is a strong genetic link, and exposure to certain viruses such as influenza is also thought to be a cause.

As little or no insulin is produced by the body, insulin must be administered regularly by individuals themselves. In the past, this was done using a needle and syringe, but it is now more commonly administered through an insulin pump. An insulin pump is a small computerised device that is attached to the individual and provides insulin constantly through a tube inserted under the skin.

Individuals with type 1 diabetes must monitor their blood glucose levels to ensure they remain within the desired range. If blood glucose levels get too high (hyperglycaemia) or too low (hypoglycaemia) a range of side effects can occur,
such as tiredness, confusion and headaches. Special attention must therefore be paid to diet, exercise and body weight.

**Type 2 diabetes**

Type 2 diabetes usually occurs in older, often overweight people, although more and more cases are being reported in younger Australians. In type 2 diabetes the pancreas does not produce enough insulin, or the body cannot use the insulin effectively (known as insulin resistance).

Being overweight is the greatest risk factor for type 2 diabetes. The exact relationship is unknown, but there are a number of possibilities:

- Fat cells may be more resistant to insulin than muscle cells. This means that someone who is overweight is naturally more resistant to the effects of insulin and therefore high amounts of glucose remain in the bloodstream.
- People who are overweight have put a strain on their pancreas as it has tried to produce enough insulin to metabolise blood glucose. After a period of time, the insulin-producing cells in the pancreas become inefficient.
- High levels of fat in the body may destroy insulin-producing cells in the pancreas, resulting in a lower level of insulin available for glucose metabolism.

Although type 2 diabetes cannot be cured, it can be managed effectively. Lifestyle changes regarding diet, physical activity levels and weight management are usually the first steps for controlling type 2 diabetes. Medication may also be required to assist with glucose regulation.

Type 2 diabetes is associated with other conditions such as obesity, cardiovascular disease, hypertension and high cholesterol.

**Gestational diabetes**

Gestational diabetes occurs during pregnancy in 3 to 8 per cent of pregnant women. As the baby develops, hormones are released to assist its growth and development. These hormones are essential for the development of the baby but also reduce the impact that insulin has on blood glucose levels of the mother. As energy requirements increase over the course of the pregnancy, so does the need for insulin. The mother may not be able to produce enough insulin to metabolise the glucose, which may result in diabetes.

Gestational diabetes can mean that more glucose is passed onto the baby, which can increase gestational growth. This results in a high birth weight and can cause low blood glucose in the newborn, but does not cause diabetes. Gestational diabetes usually disappears after the baby is born and the mother's body weight and energy needs begin to return to normal. However, women who experience gestational diabetes are at higher risk of developing type 2 diabetes.

**Why is it an NHPA?**

Reasons for diabetes mellitus being included in the NHPA initiative include the following.

- Diabetes is a leading contributor to the burden of disease. In 2010, diabetes was estimated to be ranked sixth with regards to burden of disease, contributing 6.2 per cent of total DALYs.
- Results from the 2011–13 Australian Health Survey indicate over 850,000 Australians (about 4 per cent) reported having diabetes as a long-term condition.
- In 2012 diabetes mellitus was the underlying cause of death in 2.8 per cent of all deaths registered. In a further 10 per cent of deaths in 2012, diabetes was listed as an associated (or contributing) cause of death. Diabetes was considered to play a role in approximately 13 per cent of all deaths.
The data suggest that diabetes is a growing health problem in Australia. In fact the rate more than doubled between 1989 and 2012 (as shown in figure 4.45). The number of individuals with diabetes is predicted to continue to increase significantly in the future.

Type 2 diabetes is influenced by a range of modifiable risk factors. Addressing these risk factors can reduce the incidence of type 2 diabetes.

Costs associated with diabetes mellitus

Direct

In 2008–09, approximately $1.5 billion (2.3 per cent of the total spent) was spent on the direct costs of diabetes. As there is no cure, many of the direct costs associated with diabetes are due to management of the condition. This includes doctors’ and specialists’ consultations and pharmaceuticals. Many of these costs are funded by the community through Medicare, the Pharmaceutical Benefits Scheme and private health insurance companies. Health promotion programs targeting diabetes also contribute to the direct costs associated with this NHPA.

Direct costs to the individual include co-payments for health services and medication. Uncontrolled diabetes can lead to ‘diabetic coma’ and unconsciousness, which can require ambulance transport, another direct cost to the individual.

Indirect

According to Access Economics (2008) the indirect costs associated with diabetes amount to almost $3 billion. Indirect costs to the community include government social security payments, lost productivity and payment for carers. Individuals with diabetes also experience a range of indirect costs associated with their condition. These can include paying for a dietitian or personal trainer to assist with weight management, and lost income if they are unable to work.

Intangible

Living with diabetes involves making lifestyle changes to diet and activity levels to manage the condition. These changes may have to be made by both the individual and those living with them. Some examples of intangible costs include:

- frustration over having to make changes to exercise and diet routines
- loss of self-esteem from being diagnosed with diabetes
- anxiety about the possibility that the condition could progress. Diabetes can have a number of long-term effects such as blindness and limb amputations.
individual living with diabetes may experience stress as a result of the possibility of these effects occurring.

Intangible costs to the community include frustration experienced by family members about those with diabetes as they too may have to make lifestyle changes. Relatives and friends may also experience anxiety and stress if the condition progresses.

**Determinants of health that act as risk factors for diabetes mellitus**

Many of the biological, behavioural, physical environment and social determinants that influence diabetes are related to being overweight or obese and factors that lead to impaired glucose regulation.

**Biological determinants**

- **Body weight.** Being overweight or obese is a risk factor for type 2 diabetes. The exact relationship between body weight and diabetes is not completely understood. However, excess body weight is known to increase the risk of type 2 diabetes.
- **High blood pressure and high cholesterol.** These are more common in people with type 2 diabetes. There is conflicting evidence as to whether these determinants contribute to the onset of diabetes or whether the higher rates of obesity in diabetes sufferers increase the likelihood of developing these conditions.
- **Impaired glucose regulation.** This is often seen as a precursor to type 2 diabetes. If impaired glucose regulation is not addressed by lifestyle changes, the risk of developing type 2 diabetes increases.
- **Genetic predisposition.** People who have family members who have diabetes are at a higher risk of developing all types of diabetes than those who don’t.
- **Age.** The risk of type 2 diabetes increases with age. Those over 55 are most susceptible although rates among younger Australians have increased over time, largely due to higher obesity rates among these groups.

**Behavioural determinants**

- **Tobacco smoking.** Studies suggest that smoking contributes to higher blood glucose levels and can lead to insulin resistance. Smokers are more likely to develop type 2 diabetes. This may occur as a result of smokers being more likely to be sedentary and overweight.
- **Excessive alcohol consumption.** Many forms of alcohol contain large amounts of energy, especially beer and mixed drinks, which can contribute to obesity, which is a risk factor for type 2 and gestational diabetes.
- **Dietary behaviour.** Eating an energy-dense or high-fat diet can contribute to weight gain and is a risk factor for type 2 and gestational diabetes.
- **Physical inactivity.** Being physically inactive can lead to weight gain, which increases the chances of obesity and therefore type 2 and gestational diabetes.

**Physical environment determinants**

As obesity is a risk factor for type 2 diabetes, aspects of the physical environment that increase the risk of obesity also increase the risk of type 2 diabetes. These include:

- **Access to recreation facilities.** If recreation facilities such as sporting ovals and walking paths are not accessible, individuals may not get the required amount of physical activity, which can increase body weight and contribute to obesity and type 2 diabetes.

**FIGURE 4.46** Adequate physical activity can assist in maintaining a healthy body weight, which reduces the risk of type 2 diabetes.
work environment. A work environment that does not promote incidental physical activity can increase the risk of type 2 diabetes. A work environment that has car parking next to the entrance, no stairs and a small office space can reduce the level of incidental physical activity and contribute to obesity and type 2 diabetes.

transport systems. Transportation systems that foster passive methods of transport, such as car travel, can increase the risk of obesity and type 2 diabetes.

Social determinants

Socioeconomic status: people with low socioeconomic status have higher rates of obesity and higher rates of type 2 and gestational diabetes.

Occupation: people in managerial and other sedentary occupations may be more at risk of obesity and type 2 diabetes due to a lack of physical activity.

Food security: people with a lack of food security are more likely to eat energy-dense, processed foods that can increase the risk of obesity and contribute to type 2 and gestational diabetes.

Early life experiences: low birth weight increases the risk of developing type 2 diabetes in later life (National Health Priority Areas Report, Diabetes mellitus, 1998, AIHW cat. no. PHE 10). The link appears to be between malnutrition and damage to the insulin-producing cells in the pancreas.

Health promotion programs

Some of the programs developed to address diabetes are listed below.

The LiveLighter campaign. An initiative that promotes physical activity and healthy eating in an attempt to decrease obesity rates and associated chronic conditions including diabetes.

Prevention of Type 2 Diabetes program. A federal government funded project that aims to decrease or delay the development of diabetes in high risk individuals aged 40–99.

Programs run by the Juvenile Diabetes Research Foundation.

National Diabetes Week. An annual event coordinated by Diabetes Australia. It aims to raise awareness about type 2 diabetes and to reduce the risk factors that contribute to its development.

Life! Taking action on diabetes (see the case study below).

Case study

Life! Taking action on diabetes

The Life! Taking action on diabetes program is a Victorian state government-funded strategy that aims to reduce the incidence of type 2 diabetes among those at risk. Diabetes Australia (Victorian branch) is administering the Life! program.

Established in 2007, the Life! program is aimed at Victorians aged over 50 and Aboriginal and Torres Straight Islanders of all ages.
Aims

The aims of the Life! Taking action on diabetes program are to:
• prevent people from developing type 2 diabetes. Specifically, it aims to prevent the onset of diabetes in 25,000 high risk people over a four year period.
• contribute to early diagnosis in those who have type 2 diabetes but don’t know they do.

Actions

The main action of the Life! Taking action on diabetes program is the delivery of a lifestyle behaviour change course to 25,000 Victorians who are at high risk of developing diabetes.

In order to assess prospective participants, the Life! program has two diabetes risk tests; one is over the phone (13RISK) and the other is through their website. These can be used to identify prospective participants and to provide feedback for members of the general public who feel they may be at an increased risk of developing type 2 diabetes. If they choose, those who are considered at risk can then consult their GP to get a referral for the Life! lifestyle and behaviour change course. As the focus of this strategy is prevention, people who have already been diagnosed with type 2 diabetes are ineligible to enrol for the Life! courses.

The course involves six group sessions over an eight-month period that educates individuals about type 2 diabetes and the lifestyle and behavioural changes required to reduce their risk, including those relating to eating habits and physical activity. Participants also analyse their current lifestyle and set goals for behaviour change, aiming for a five per cent loss of weight over the course of the eight months. Life! courses have been established throughout metropolitan, rural and remote Victoria to minimise access restrictions due to geographical barriers. Diabetes Australia (Victorian branch) has been responsible for training the workforce required for course implementation.

Most of the funding is being met by the government, but there is a $50 co-payment per person taking part in the program (although this fee can be waived for those experiencing financial hardship).

As well as the Life! course, the program is promoting the awareness of diabetes prevention through a mass media campaign. This includes print, radio and television advertising campaigns.

The Life! Taking action on diabetes program has also established an informative website that provides resources and education to individuals and health professionals regarding the prevention of type 2 diabetes.

Case study

Kids’ diabetes rate soars

By Kamahl Cogdon

Childhood obesity experts warn of an unprecedented explosion in type 2 diabetes and other weight-related diseases in children.

Obesity expert Dr Matt Sabin said the Royal Children’s Hospital treated 15 children with type 2 diabetes between January 2001 and December 2006. Another 16 cases had been diagnosed in the last 18 months.

‘We have had more in the last two years than in the previous five years,’ he said.

‘Some of those we didn’t pick up initially but predominantly they’re new cases and obesity is the main driver.’

Dr Sabin, part of a new obesity strike force at the Murdoch Children’s Research Institute at the Royal Children’s Hospital, said the hospital’s weight clinic saw about 250 new families each year and was also treating overweight children with high cholesterol and blood pressure, conditions historically confined to fat, middle-aged adults.

He said it was time for a new strategy to tackle the epidemic, focusing on the role genetics and environmental influences played in obesity and the risk of obesity-related diseases, including type 2 diabetes, cardiovascular disease and cancer.

‘We have a one-size-fits-all approach and it’s not working,’ he said.

‘We need to understand why some children are different to others, why some people can be healthy (continued)
and fat and others get the full range of metabolic complications.’

Dr Sabin said the hospital’s weight clinic had an 89 kg 10-year-old who had high cholesterol, high blood pressure and was at risk of developing type 2 diabetes, while a 155 kg 10-year-old with a similar history had no signs of disease.

He said one of the main aims of the MCRI’s new multidisciplinary pediatric obesity and weight research group was learning what regulated genes involved in obesity and diabetes, and understanding the relationship between genetics and environment.

Colleague Prof Melissa Wake backed the call for a new approach to the obesity epidemic.

She said that while the rise in childhood obesity appeared to be slowing, an explosion of health impacts was likely to be felt for many years.

She said many of today’s overweight youngsters would take serious health problems with them into adulthood.

‘Those children will probably be more unhealthy as adults than adults who are overweight now, because they will have been living with their conditions for so much longer,’ she said.

‘The worst impacts of the obesity epidemic are yet to come, and will be with us for many years.’

Prof Wake said one of Australia’s main strategies for dealing with the epidemic was to have GPs and health care workers screen for overweight and obesity in primary school-aged children and offer counselling in diet and exercise.


Case study review
1 List reasons why childhood cases of type 2 diabetes are increasing.
2 Explain how a child who is more obese than another child of the same age doesn't show symptoms of disease when the other child does.
3 Suggest a health-promotion program that could be implemented to reduce the chances of children developing type 2 diabetes.
4 Why might overweight children be unhealthier as adults than people who became overweight as adults?

TEST your knowledge
1 Briefly explain diabetes mellitus.
2 Briefly describe the following:
   (a) type 1 diabetes
   (b) type 2 diabetes
   (c) gestational diabetes.
3 Give two examples from each determinant of health that act as risk factors for type 2 diabetes.
4 (a) What is the emerging trend for type 2 diabetes?
   (b) Discuss possible reasons for this trend.
5 Add diabetes mellitus to your NHPA summary table (see question 6 of section 4.2).

APPLY your knowledge
6 Design a poster that could be used to promote the Life! Taking action on diabetes strategy. Include key aspects of how the program works.

7 (a) Type 2 diabetes has been called ‘adult onset diabetes’ in the past, but is no longer referred to as this. Discuss possible reasons for this shift in name.
   (b) Type 2 diabetes has more recently been labelled ‘diabesity’. Explain why diabesity may have been chosen as an alternative name for type 2 diabetes.
8 (a) Briefly explain the Life! Take action on diabetes program.
   (b) Identify the examples of determinants being addressed by this program and explain how they are being targeted.
   (c) Justify the implementation of the Life! Take action on diabetes program.
9 Use the Diabetes links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
KEY CONCEPT  Asthma as a National Health Priority Area, including the associated costs, the associated determinants of health and health promotion programs designed to address it

Asthma is a condition characterised by inflammation of the airways in response to certain ‘triggers’. Triggers include pollen, pet hair, cigarette smoke, physical activity, colds and flu. When exposed to triggers, the airways narrow, making it difficult to breathe. This is commonly referred to as an ‘asthma attack’ (see figure 4.48). During an asthma attack, the individual struggles to fill their lungs and often experiences coughing and wheezing. Although there is no known cure, most episodes can be easily controlled by a reliever, such as Ventolin. Sometimes an attack can be severe and cause respiratory arrest (when a person stops breathing), which can result in hospitalisation and in some cases death.

Asthma can begin at any stage in life but is most likely to develop during childhood.

Although asthma has a relatively low mortality rate (386 deaths in 2012) and death rates have declined in the past decade (see figure 4.49), it has a significant impact on the community, especially children.

FIGURE 4.48 Asthma causes inflammation of the airways, making breathing difficult.

FIGURE 4.49 Death rates for asthma over time

Source: AIHW, Asthma in Australia, 2011.
4.9 Asthma

Why is it a NHPA?

Asthma contributes significantly to the overall burden of disease in Australia. Specifically, asthma:
• was responsible for 2.3 per cent of the disease burden in 2010
• was suffered by about 2.2 million Australians in 2011–12
• is the most commonly reported long-term condition of 0–14 year olds and is the leading contributor to the burden of disease in this age group
• is one of the most frequent reasons for hospitalisation among children aged 0–9
• has significant treatment costs.

![Prevalence of asthma, by age, 2010–11](source: ABS, Australian Health Survey: First Results, 2012)

Case study

Asthma cases decreasing but disadvantaged at risk

A new report has found asthma is on the decline in Australia, especially among young people.

The Australian Institute of Health and Welfare report found just over 2 million people were suffering from asthma in 2004–05. That is 1.3 per cent less than the previous year.

But it found more Indigenous Australians are suffering from the disease.

Dr Guy Marks from the Centre for Asthma Monitoring says it is difficult to say why that is the case but says it is an issue of concern.

‘There’s a higher prevalence amongst people living in disadvantaged areas compares to people living in advantaged areas, and that gap seems to have widened since the last survey in 2001,’ he said.

‘We can’t say confidently why that is the case except that there are many health problems that do seem to show differences between disadvantaged and advantaged people.’

A large number of people with the disease reported to be current smokers and 11 per cent of children with asthma were exposed to passive smoke in their homes.

Dr Marks says that is a concern.

‘It’s disappointing that the message about health promotion hasn’t been as effectively delivered to people with asthma as one might have hoped,’ he said.

The report has been released to coincide with World Asthma Day.


Case study review

1 Suggest reasons that might account for the higher rates of asthma among disadvantaged groups.
2 What ‘message about health promotion’ hasn’t been effectively delivered according to Dr Marks?
Costs associated with asthma

Direct
In 2008–09, 0.9 per cent of health expenditure was spent on asthma. This equates to about seven hundred million. Doctors’ appointments, hospital admissions and pharmaceuticals make up a relatively high amount of this expenditure. Medicare and the Pharmaceuticals Benefits Scheme contribute another significant portion of this amount. The Asthma Friendly Schools Initiative and the Sensitive Choice program also contribute to the direct costs to the community.

For the individual, direct costs include patient co-payments for health services and pharmaceuticals, and ambulance transport in the event of a severe attack.

Indirect
The indirect costs to the individual associated with asthma include lost income and the cost of carers (especially for young children and older adults). Indirect costs to the community include lost productivity and lost tax revenue. For example, children with asthma miss school more often than those without the condition, and this often requires parents to stay home from work. This affects the parents’ productivity and incurs financial costs to the industries and sectors in which they work.

Intangible
Asthma affects many Australians of all ages and can usually be managed effectively. Occasionally, however, an asthmatic individual may have an attack that requires hospital care or bed rest. These episodes can be particularly stressful for the individual. Other intangible costs to the individual include:

- missing school due to sleep disturbances, which are more common among children with asthma and are associated with higher rates of school absenteeism
- increased anxiety if attacks become more frequent or more severe than usual
- frustration at not being able to participate in certain physical and social activities (such as SCUBA diving or school sport).

Intangible costs to the community include anxiety experienced by parents of young children with asthma and by family and friends of elderly sufferers, especially if they live alone.

Determinants of health that act as risk factors for asthma

The causes of asthma are still not fully understood, but it is known that some factors have a correlation with asthma rates. People who suffer from asthma are susceptible to triggers (things that cause an asthma attack). Triggers for asthma include exercise, smoke, pet hair, pollen and other allergens such as dust.

Biological determinants
Some biological determinants are:

- excess body weight. Research suggests that individuals who are overweight or obese have a higher risk of developing asthma
- genetic predisposition. People who have a family history of asthma are more likely to develop the condition themselves
• gender. Up to the age of 15, males are more likely to develop asthma
• age. Asthma is most common in those aged 0–24.

**Behavioural determinants**

Smoking increases the risk of asthma. Exposure to tobacco smoke in the uterus (that is, having a mother who smokes) and during infancy may lead to an increased asthma risk.

**Physical environment determinants**

Aspects of the physical environment that can increase the risk of asthma include:
- **air quality.** Air pollution is a risk factor for asthma. Those living in major cities or near industrial areas may be at an increased risk
- **work environment.** Exposure to pollutants in the workplace can increase the risk of asthma
- **environmental tobacco smoke.** Environmental tobacco smoke, particularly in the younger years, is a risk factor for asthma
- **housing.** Housing that does not have adequate ventilation may increase indoor pollution and can increase the risk of asthma among the inhabitants.

**Social determinants**

Some social determinants are:
- **low socioeconomic status.** Low socioeconomic status groups are more likely to have asthma. This is most likely due to higher smoking rates and increased exposure to environmental tobacco smoke
- **early life experiences.** Mothers who smoke during pregnancy may elevate their child’s risk of developing asthma.
Health promotion programs

A range of programs have been developed to decrease the impact of asthma in the Australian population. Some examples include:

• the Asthma Friendly Schools program. A joint initiative of the Australian Asthma Foundation, this program aims to reduce exposure to potential triggers in the school environment and to provide education regarding asthma management.
• programs conducted by the National Asthma Council, such as the Sensitive Choice program.
• the Triple A program. The Triple A program is a strategy developed by the Asthma Foundation of Victoria that facilitates peer education to reduce the impact of asthma on young sufferers.

Case study

The Sensitive Choice® program

The Sensitive Choice® program was developed and implemented by the National Asthma Council Australia (NAC) in 2006 and is run in conjunction with the New Zealand Asthma Foundation. The program aims to assist those with asthma and allergies make better lifestyle choices. As a result, exposure to triggers and therefore asthma symptoms and allergic reactions may be reduced. To achieve this goal, the Sensitive Choice program encourages manufacturers to produce products and services that reduce the risk of asthma and allergic reactions.

The objectives of the Sensitive Choice program are to:
• make Australians aware of the need to manage their asthma
• encourage manufacturers and suppliers to produce products and services that are low irritant and low allergy and may benefit people with asthma and allergies. If interested, manufacturers are required to submit their product or service for consideration of suitability to the Product Advisory Panel of the NAC.
• provide consumers with a way of identifying products and services that may benefit people with asthma and/or allergies and improve health and wellbeing.

The program works by allowing manufacturers of approved products to display the Sensitive Choice blue butterfly logo on packaging and advertising. The blue butterfly logo allows consumers to easily identify and choose products and services that may carry a reduced risk of triggering asthma symptoms and other allergic reactions.

Manufacturers can apply to join the Sensitive Choice Program and display the blue butterfly logo. Their product or service is then assessed and, if accepted, the payment of a fee allows the use of the blue butterfly logo.

While avoiding known asthma and allergy triggers is important, people with asthma and allergies are always advised to seek regular medical advice and take their medication as prescribed.
4.9 Asthma

TEST your knowledge
1 Briefly explain asthma.
2 Why is asthma an NHPA?
3 What is the trend in the asthma mortality data? Why do you think this is the case?
4 (a) Outline the Sensitive Choice program. (b) How does it work to decrease the impact of asthma on sufferers?
5 Add asthma to your NHPA summary table (see question 6 of section 4.2).

APPLY your knowledge
6 Why do you think people of lower socioeconomic status groups are more likely to develop asthma?
7 List three:
   (a) direct costs associated with asthma
   (b) indirect costs associated with asthma
   (c) intangible costs associated with asthma.
8 Describe the possible impact on the physical, social and mental health of a primary school aged child with severe asthma.
9 Write a children's story that could be used to help educate children about asthma.
10 Use the Asthma and Triple A links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
11 Use the Asthma and Triple A links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
4.10 Dementia

**KEY CONCEPT** Dementia is a national health priority area.

Dementia is the most recent addition to the NHPA initiative, having been added in 2012. Dementia is not a specific disease, but a term used to describe over 100 conditions that are characterised by progressive and irreversible loss of brain function. As brain function deteriorates, dementia interferes with normal behaviour patterns and affects memory, language, speech, attention and personality. As brain cells continue to die, dementia will eventually lead to complete dependency on other people and ultimately death.

The most common forms of dementia include:

- Alzheimer's disease
- vascular dementia
- dementia with Lewy bodies (also known as Lewy body disease).
- frontotemporal dementia.

**Alzheimer’s disease**

Named after the German physician who first described it in 1907 (Alois Alzheimer), Alzheimer's disease is the most common form of dementia, accounting for about two-thirds of all dementia cases. Alzheimer disease is most commonly reported in those aged 65 and over, but can occur at younger ages.

Alzheimer’s disease is characterised by the build-up of proteins both in and around brain cells. This build-up limits the ability of messages to be transmitted between the cells. As a result, brain function becomes impaired (see figure 4.54).

The first signs of Alzheimer's disease often include memory loss and general vagueness in conversation. As the deterioration of brain cells continues, the symptoms become worse and impact on memory, thinking skills, emotions, behaviour and mood.

**Vascular dementia**

Vascular dementia is a form of dementia that occurs as a result of reduced blood flow to the brain. This can occur due to a stroke or series of small strokes, or other damage to blood vessels and circulation. As the amount of oxygen and nutrients to the brain is reduced, brain cells die and function is impaired.

The main symptoms of vascular dementia include problems with attention, **spatial awareness**, planning, reasoning and judgement (compared to Alzheimer's disease where the main symptoms relate to memory loss).

**Dementia with Lewy bodies**

Dementia with Lewy bodies (also known as Lewy body disease) is a common form of dementia that is caused by spherical proteins known as Lewy bodies (named after the doctor who first described them, Friedrich Lewy) inside the nerve cells of the brain. Lewy bodies cause the degeneration and death of the nerve cells.

Dementia with Lewy bodies has many similarities to Alzheimer’s disease, and accurate diagnosis can often be difficult. Symptoms of Dementia with Lewy bodies include problems with concentration and attention, confusion, visual hallucinations, tremors and stiffness (similar to that seen in Parkinson’s disease), variations in mental state and loss of alertness.

**FIGURE 4.54** In these brain scans, the yellow and red sections reflect brain activity. The brain scan on the top shows a healthy brain; the scan on the bottom shows a brain affected by Alzheimer’s disease.
Frontotemporal dementia

Frontotemporal dementia is a disease characterised by progressive damage to two specific parts of the brain: the frontal lobe and the temporal lobe (see figure 4.55).

Frontotemporal dementia may affect the frontal or temporal lobe, but often both lobes are affected. The frontal lobe is responsible for judgement and social behaviour, so people with this type of dementia can have problems maintaining appropriate behaviour in social situations.

The temporal lobe is responsible for language. Symptoms occurring when this part of the brain is affected include the loss of the meaning of words, the inability to speak fluently, and difficulty understanding language.

Why is it an NHPA?

In 2010, dementia was the third most common cause of death, accounting for 6 per cent of all deaths nationally and contributing significantly to morbidity rates. Dementia accounts for about four per cent of the total burden of disease in Australia and is the fourth largest contributor to burden of disease overall. For those aged over 65, dementia is the second largest contributor to burden of disease behind cardiovascular disease.

TABLE 4.3 Projected prevalence of dementia, by age and sex, 2014

<table>
<thead>
<tr>
<th>Age group</th>
<th>Rate (per cent)</th>
<th>Number</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
<td>Men</td>
</tr>
<tr>
<td>0–64</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>13 000</td>
</tr>
<tr>
<td>65–74</td>
<td>3.0</td>
<td>3.3</td>
<td>3.2</td>
<td>29 200</td>
</tr>
<tr>
<td>75–84</td>
<td>8.7</td>
<td>10.3</td>
<td>9.6</td>
<td>42 600</td>
</tr>
<tr>
<td>85 and over</td>
<td>24.7</td>
<td>33.1</td>
<td>30.0</td>
<td>42 300</td>
</tr>
<tr>
<td>Total 65 and over</td>
<td>7.0</td>
<td>10.3</td>
<td>8.8</td>
<td>114 100</td>
</tr>
<tr>
<td>Total</td>
<td>1.1</td>
<td>1.8</td>
<td>1.4</td>
<td>127 000</td>
</tr>
</tbody>
</table>

Source: AIHW, Australia’s health 2014, p. 274.

Dementia affects many Australians, and rates are predicted to increase significantly in the future as Australia’s population ages. In 2014, there were about 332 000 people living with dementia in Australia. This number is expected to increase to about 400 000 by 2020 and 900 000 by 2050.

Dementia accounted for around $5 billion in health-related costs in 2009–10. This includes GP visits and the cost of care.

Those with advanced dementia may require constant care. This places a large strain on the government in terms of providing formal care and on the tens of thousands of Australians who provide informal care for family and friends suffering from dementia.
Direct costs

As there is currently no cure for dementia, most of the direct costs are associated with diagnosis and management of these conditions. In 2011, the direct costs associated with dementia were estimated to be over $1 billion.

In 2009–10, the government contribution for medication used specifically to treat dementia was about sixty million dollars. As these medications are funded through the Pharmaceutical Benefits Scheme, sufferers or their families are also responsible for making a co-payment.

The cost of implementing health promotion programs such as the Your Brain Matters program is a community cost of dementia.

Indirect costs

As the condition progresses, dementia leads to complete dependence on other people for activities such as transport, shopping, cleaning, cooking, eating, and washing. Most dementia sufferers who require care gain assistance from a combination of formal and non-formal sources. Formal assistance relates to carers who are paid by the individual, by their family or by government funded financial assistance. Non-formal sources include the care provided free of charge by family, friends and neighbours. The cost of carers can therefore fall on the government, the sufferer, or their family and friends.

In 2009–10, the cost for the government of providing formal care was more than $3 billion.

If carers are family members or friends, they may be required to give up their employment and activities within the community to care for their loved one. This reduces productivity and can impact on the wider community.

Many people with advanced dementia will often require residential care. Depending on the individual’s ability to pay, the cost of this care will be met by government funding, or a combination of government and individual contributions. In 2009–10, more than 50 per cent of those living in residential care had some form of dementia.

Intangible costs

When first diagnosed, the individual may experience a range of emotions such as sadness, anger, frustration, fear and despair. As the condition progresses, the individual may no longer be able to participate in the activities that they once did, such as sporting and recreational pursuits. This can contribute to feelings of sadness and despair for the individual and those close to them.

Family and friends of those with dementia will also experience a sense of loss and sadness if the individual no longer remembers who they are and the relationship they share. When the individual dies, the family and friends will feel grief.

Determinants of health acting as risk factors for dementia

The relationships between determinants of health and the onset of dementia are complex. Although many determinants have been identified as risk factors, relatively few of these have been definitively proven. Research continues into the causes of dementia.
Biological determinants
The biological determinants of dementia include:

• **age.** Advancing age is the greatest risk factor for most forms of dementia, with rates increasing in those aged 65 and over. Beyond 65, the prevalence of dementia doubles approximately every six years.

• **sex.** Lewy body disease is more common in males although the exact reasons for this are unknown.

• **genetic predisposition.** Those with a family history of dementia have an increased risk of suffering from dementia.

• **Down Syndrome.** Those with Down Syndrome appear to be at greater risk of suffering from dementia than the rest of the population.

• **blood pressure.** Those with high blood pressure (hypertension) have an increased risk of dementia.

• **body weight.** Obesity has been identified as a risk factor for Alzheimer’s disease although the reasons for this are not clear.

Behavioural determinants
The behavioural determinants of dementia include:

• **tobacco use.** Tobacco use contributes to impaired blood flow and increases the risk of vascular dementia.

• **physical inactivity.** A sedentary lifestyle contributes to the deterioration of blood vessels which, in turn, increases the risk of vascular dementia.

• **lack of mental stimulation.** Those who do not regularly utilise their memory, attention and problem-solving abilities, particularly throughout middle age, may experience an increased rate of dementia compared to the rest of the population.

• **alcohol consumption.** Alcohol abuse can contribute to specific types of dementia including ‘alcohol dementia’, a type of dementia caused by excessive alcohol consumption over a period of time.

• **poor dietary behaviours.** High intakes of saturated and trans-unsaturated fats are associated with increased risk of dementia. A higher intake of poly- and mono-unsaturated fats is associated with reduced risk. High blood cholesterol, particularly in mid-life, is associated with an increased dementia risk.

Physical environment determinants
Factors in the physical environment that increase the risk of cardiovascular disease also increase the risk of vascular dementia. These include:

• **environmental tobacco smoke.** Exposure to environmental tobacco smoke can increase the risk of cardiovascular disease by clogging blood vessels and therefore increase the risk of vascular dementia.

• **access to recreation facilities.** Individuals who lack access to recreational facilities such as swimming pools, walking paths and sporting clubs may not exercise as much as they otherwise would. This can increase the risk of cardiovascular disease and vascular dementia.

• **transport systems.** Transport systems that do not promote active transport increase the risk of cardiovascular disease and vascular dementia.

• **quality of air.** An environment that exposes individuals to smoke, chemicals or other hazardous substances can increase the risk of vascular dementia.

• **work environment.** A work environment that does not facilitate incidental physical activity such as walking stairs or walking around the office or factory may increase the risk of vascular dementia.
Aspects of the physical environment that may increase the risk of dementia include:

- **transport systems.** Not having access to transport systems can decrease the opportunities to socialise with friends and family. Lack of social stimulation is thought to increase the risk of dementia.

### Social determinants

The link between social determinants and dementia have not been proven; however, some possible links seem to exist:

- **level of education.** Those with lower levels of education may be at higher risk of dementia.
- **social exclusion.** Those who are less socially active than the rest of the population may experience an increased rate of dementia.

### Health-promotion programs

Many health-promotion programs have been developed to raise awareness of, and for sufferers of dementia and their families. Some examples include:

- **'Know the Signs' of dementia.** This federal government initiative aims to raise awareness of dementia by providing educational posters and brochures for display in public areas.
- **Living with Memory Loss program.** This Alzheimer's Australia program provides people in the early stages of dementia and their families and carers with a tailored program that includes information, advice and peer support to assist them to come to terms with their condition and plan for the future.
- **Your Brain Matters.** This Alzheimer’s Australia program aims to promote healthy behaviours that may decrease the risk of dementia (see the case study below).

#### Case study

**Your Brain Matters (Alzheimer’s Australia)**

Use the Your Brain Matters links in the Resources section of your eBookPLUS to find the weblink and questions for this activity to read more about this program and to access online puzzles, games and brainteasers that assist in promoting brain health.

Your Brain Matters is a program initiated by Alzheimer’s Australia, a non-government organisation that raises awareness and works to reduce the risk of dementia. Based on scientific evidence, Your Brain Matters focuses on improving modifiable risk factors in order to reduce the risk of developing dementia. Your Brain Matters works by providing a number of resources including the Brain Health Program, the BrainyApp, and dementia-related help sheets.

1. **Brain Health Program**

This resource is broken down into three areas of focus: the Brain, Body and Heart. The Brain Health Program provides information about research into each of the three areas and practical ways to reduce the risks associated with each one.

**Brain**

The Brain focus area outlines the importance of staying mentally and socially active in order to reduce the risk of dementia. It emphasises the importance that learning new skills, participating in mentally challenging activities such as quizzes and puzzles, playing board games, and taking up different hobbies all have on promoting brain function and reducing the risk of dementia or delaying its onset. Being involved with the local community, engaging with friends and family and talking to pets when no one else is around can promote social activity.

(continued)
Body
The Body focus area outlines the links between alcohol, diet and physical activity and the risk of developing dementia. It provides practical suggestions to assist individuals in modifying these risk factors, including limiting alcohol intake, eating a wide variety of nutritious foods and participating in regular physical activity.

Heart
Heart and brain health are linked and the Heart focus area provides advice on reducing the risk of dementia by addressing blood pressure, cholesterol, diabetes, body weight and smoking. These factors have been shown to have a relationship with dementia and Your Brain Matters provides advice on controlling these factors through healthy eating and exercise.

2. BrainyApp
The BrainyApp resource is a mobile phone and tablet app that educates individuals and provides them with suggestions for reducing the risk of developing dementia. The app includes a quiz that assesses an individual’s current level of risk for dementia and awards points to the user’s profile every time they record participation in a behaviour that may reduce their risk. BrainyApp includes a word game and a memory game that promote thinking and problem solving abilities.

3. Dementia-related help sheets
A range of help sheets is provided in 22 different languages to assist people from different cultures to understand and implement behaviours that may prevent dementia.

**FIGURE 4.57** The Your Brain Matters program aims to reduce the risk of dementia.

**FIGURE 4.58** The BrainyApp is available for free download.

TEST your knowledge
1. Is dementia a specific disease? Explain.
2. Complete the following table for four common types of dementia.

<table>
<thead>
<tr>
<th>Type of dementia</th>
<th>Description</th>
<th>Examples of determinants that act as risk/protective factors</th>
</tr>
</thead>
</table>

3. Outline two reasons why dementia was selected as an NHPA.

4. (a) Briefly outline one direct, one indirect and one intangible cost to the individual associated with dementia.
   (b) Briefly outline one direct, one indirect and one intangible cost to the community associated with dementia.

5. Discuss two ways that the Your Brain Matters program works to reduce the impact of dementia in Australia.

6. Add dementia to your NHPA summary table (see question 6 of section 4.2).
APPLY your knowledge

7 Explain three ways that dementia may affect an individual’s health.

8 (a) Table 4.3 gives the prevalence (number) of dementia cases by age and sex. For the 85 and over age group, outline the difference between the projected number of males and females with dementia.

(b) Explain how the differences in life expectancy between males and females contributes to the difference identified in part (a).

9 Justify the implementation of the Your Brain Matters program.

10 Use the BrainyApp info links in the Resources section of your eBookPLUS to find the weblink and questions for this activity.
The LiveLighter program is a joint project between the Heart Foundation and Cancer Council with funding from the Victoria Government that focuses on preventing and reducing the rates of obesity and its associated conditions, including cardiovascular diseases.

LiveLighter works by implementing advertising campaigns and web-based resources.

The advertisements are displayed on television, in print media such as newspapers, and online and aim to educate people about the dangers of abdominal fat.

A range of tools and resources are available on the LiveLighter website for use by consumers including the 12-week Meal and Activity Planner and ‘Top Tips’.

The Meal and Activity Planner is based on an individual’s specific characteristics such as sex, age, height, weight and physical activity levels to produce a planner that includes ideas for physical activity and a range of recipes that will meet the user’s own needs.

‘Top Tips’ provide practical advice relating to making healthier choices in daily life including considerations when eating out, such as filling up on salads and other, healthier side dishes.

The treatment of cardiovascular disease costs the health care system billions of dollars each year in direct costs. The LiveLighter campaign aims to reduce obesity, which is a major biological determinant for cardiovascular disease. The program does this by assisting consumers to make changes to their current food intake and physical activity behaviours. The 12-week Meal and Activity Planner provides consumers with activity advice and recipes to meet their daily needs based on their age, sex, height, weight and physical activity levels. The LiveLighter website contains practical advice for increasing physical activity and healthy eating in daily life, such as how to order healthier foods at restaurants to reduce energy intake and the risk of cardiovascular disease.

Cardiovascular health accounts for more deaths in Australia than any other health condition and contributes significantly to morbidity figures, with millions of Australians suffering from it. The treatment of cardiovascular disease costs the health care system billions of dollars each year in direct costs. The LiveLighter campaign aims to reduce obesity, which is a major biological determinant for cardiovascular disease. The program does this by assisting consumers to make changes to their current food intake and physical activity behaviours. The 12-week Meal and Activity Planner provides consumers with activity advice and recipes to meet their daily needs based on their age, sex, height, weight and physical activity levels. The LiveLighter website contains practical advice for increasing physical activity and healthy eating in daily life, such as how to order healthier foods at restaurants to reduce energy intake and the risk of cardiovascular disease.
**PRACTISE the key skills**

1 Diabetes mellitus was made an NHPA in 1997. Discuss one health promotion program that has been implemented to target diabetes in Australia and justify it using the structure described in this section.

2 (a) Select one NHPA besides diabetes mellitus and cardiovascular health and describe it briefly.
   (b) Outline one health promotion program that has been implemented to address this NHPA.
   (c) Justify this program in relation to the NHPA selected in part (a).
Chapter summary

- The National Health Priority Areas (NHPAs) are diseases or conditions that were selected so they could become the target of a national focus.
- The current NHPAs are obesity, cardiovascular health, arthritis and musculoskeletal conditions, injury prevention and control, mental health, cancer control, diabetes mellitus, asthma and dementia. The list of NHPAs is updated regularly.
- The direct cost of the NHPAs account for a large percentage of health care expenditure.
- The indirect costs associated with the NHPAs often end up costing more than the direct costs. Examples include lost productivity and loss of income.
- The intangible costs associated with the NHPAs are considerable and can include pain and suffering, anxiety and stress, and reduced self-esteem.
- The biological, behavioural, physical environment and social determinants of health play a large and complex role in each NHPA.
- Obesity is rising in Australia at an alarming rate and is a risk factor for many conditions, including cardiovascular disease, diabetes mellitus, some cancers, arthritis and asthma.
- Programs designed to reduce the impact of obesity include the Stephanie Alexander Kitchen Garden Foundation, the Go for 2 and 5 program and the LiveLighter campaign.
- Cardiovascular disease is the leading cause of death in Australia. It is largely preventable and contributes significant direct costs to individuals and the community. Types of cardiovascular disease include hypertension, coronary heart disease, stroke and peripheral vascular disease.
- Programs designed to promote cardiovascular health include the LiveLighter and Go for 2 and 5 campaigns, the Quit program, VicHealth’s Food for All program and the Heart Foundation Tick program.
- Arthritis is a leading cause of morbidity in Australia and is also largely preventable. Osteoarthritis, rheumatoid arthritis, osteoporosis, juvenile arthritis and back pain are the focus of this NHPA.
- Programs designed to reduce the impact of arthritis and musculoskeletal conditions include Better Arthritis and Osteoporosis Care, Arthritis Australia programs, the Waves Warm Water Exercise Program and Bone Health for Life.
- Injury prevention and control focuses on falls in older people, falls in children, and drowning, near drowning and poisoning in children. Injuries are always preventable and contribute significantly to burden of disease in Australia.
- Programs focusing on injury prevention and control include the National Binge Drinking Strategy, the National Slips and Falls Prevention Project, programs conducted by Kidsafe and the National Road Safety Strategy.
- Mental health is a leading cause of morbidity among Australians and rates have increased in recent decades.
- Programs aiming to promote mental health include the National Mental Health Strategy and KidsMatter, and programs delivered by beyondblue and headspace.
- Cancer contributes more to YLLs than any other condition. Prostate cancer, breast cancer in females, colorectal cancer, lung cancer, melanoma and non-melanoma skin cancer, cancer of the cervix and non-Hodgkin’s lymphoma are the focus of this NHPA.
- Programs designed to decrease the prevalence and impact of cancer in Australia include the Quit campaign, Breastscreen Australia, the National Bowel Cancer Screening Program and the National Cervical Cancer Screening Program, the National HPV Vaccination Program and SunSmart.
- Type 1, type 2 and gestational diabetes are the focus of the diabetes mellitus NHPA.
- The rate of type 2 diabetes is increasing. Type 2 diabetes can lead to many problems, including limb amputation, kidney failure, blindness and death.
- Programs aiming to reduce the prevalence and impact of diabetes in Australia include the LiveLighter campaign, the Prevention of Type 2 Diabetes program, programs implemented by the Juvenile Diabetes Research Foundation, National Diabetes Week and Life! Taking action on diabetes.
• Asthma is the leading cause of morbidity in children and affects about ten per cent of the population.
• Programs aiming to reduce the impact of asthma in Australia include the Asthma Friendly Schools program, the Triple A program, and programs developed by the National Asthma Council such as the Sensitive Choice program.
• Dementia is a leading cause of death and as Australia’s population ages, these conditions are becoming more common. Types of dementia include Alzheimer’s disease, vascular dementia, dementia with Lewy bodies and frontotemporal dementia.
• Programs aimed at reducing the impact of dementia include Know the signs of vascular dementia, dementia with Lewy bodies and frontotemporal dementia.

TEST your knowledge
1. Outline the purpose of identifying certain conditions as NHPAs.
2. List three reasons why conditions are selected as NHPAs.
3. (a) Complete table 4.4 by placing a tick in the box of the risk factors that correspond to each NHPA.
   (b) Which risk factors most frequently appear across all NHPAs?
   (c) Which risk factor(s) do you think are the most influential with regards to the NHPAs? Explain.
4. Complete the following summary table for each health promotion program discussed in this chapter.

<table>
<thead>
<tr>
<th>Name of program</th>
<th>Organisation responsible for its implementation</th>
<th>NHPA(s) targeted by the program</th>
<th>How the program is implemented</th>
</tr>
</thead>
</table>

APPLY your knowledge
5. Analyse the NHPA summary table you created during this chapter to answer the following questions:
   (a) For which NHPA is obesity a risk factor?
   (b) Which programs apply to more than one NHPA? Explain each program and identify the NHPAs they target.
   (c) Based on the direct, indirect and intangible costs associated with each NHPA, rank the NHPAs in order from those requiring the most attention to those requiring the least. Compare your list with a partner and discuss.
6. (a) Identify which NHPAs are most relevant to the following population groups:
   i. males
   ii. females
   iii. children
   iv. indigenous Australians
   v. those living in rural and remote areas
   vi. those living in socioeconomic disadvantage.
   (b) Identify determinants that lead to the differences identified in part (a).
   (c) Compare your list with a partner and discuss similarities and differences.
7. (a) Do you believe that indirect or intangible costs could be more substantial for all NHPAs than the direct costs? Why or why not?
   (b) Why is it relatively easy to get statistics on direct costs?
   (c) Why is it difficult to get accurate figures on indirect and intangible costs?
8. Edmund is 42 and has recently been advised by his doctor to lose weight. His BMI is 32 and he leads a sedentary lifestyle. Edmund has recently experienced a number of symptoms that his doctor associated with his weight. They include shortness of breath, lack of energy and some chest pain. As a result, he has had to take time off work and has not been able to drive his children to school, or to sporting or social commitments. He feels bad about his current situation but is not sure he has the willpower to change his lifestyle.
   (a) Which NHPAs could Edmund be affected by?
   (b) List the direct, indirect and intangible costs to both Edmund and the community associated with his current condition.
   (c) List the determinants that may have contributed to Edmund’s current condition.
   (d) Identify two programs that could assist Edmund in losing weight.
9. Esther is 73 and was recently admitted to hospital after experiencing her fourth fracture due to osteoporosis. Her doctor has told her that she needs to consider moving into an aged care facility so she can have round-the-clock monitoring. Esther is reluctant to do this as it would mean moving away from her husband, Franco, who she still shares a house with. Franco suffers from Alzheimer’s disease and Esther is his main carer. Franco would also be forced to move into an aged care facility if Esther did, but none of the local facilities have two spots available, meaning they would be separated or would have to move away from their children and friends.
   (a) Which two NHPAs are impacting on Esther and Franco?
   (b) Outline each of these NHPAs.
   (c) Explain why these conditions were selected as NHPAs.
   (d) List the determinants that may have contributed to Esther and Franco’s conditions.
   (e) Brainstorm the direct, indirect and intangible costs to Esther, Franco and the community associated with their conditions.
   (f) Outline one program that could promote Esther and Franco’s health.
### TABLE 4.4 Summary table linking the NHPAs to selected determinants of health

<table>
<thead>
<tr>
<th>Biological</th>
<th>National Health Priority Areas</th>
<th>Obesity</th>
<th>Cancer control</th>
<th>Cardiovascular health</th>
<th>Diabetes mellitus</th>
<th>Injury prevention control</th>
<th>Arthritis and musculoskeletal conditions</th>
<th>Asthma</th>
<th>Mental health</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood cholesterol levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetic predisposition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietary behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual behaviours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccination status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk-taking behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status (income, occupation, education)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social exclusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment and unemployment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to health care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early life experiences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food, air and/or water quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental tobacco smoke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to recreation facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Unrelated text:**

**CHAPTER 4 review**

**Abel 4.4**

Summary table linking the NHPAs to selected determinants of health

<table>
<thead>
<tr>
<th>National Health Priority Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Blood pressure levels</td>
</tr>
<tr>
<td>Blood cholesterol levels</td>
</tr>
<tr>
<td>Glucose regulation</td>
</tr>
<tr>
<td>Genetic predisposition</td>
</tr>
<tr>
<td>Birth weight</td>
</tr>
<tr>
<td>Tobacco smoking</td>
</tr>
<tr>
<td>Alcohol consumption</td>
</tr>
<tr>
<td>Drug use</td>
</tr>
<tr>
<td>Physical activity</td>
</tr>
<tr>
<td>Dietary behaviour</td>
</tr>
<tr>
<td>Sexual behaviours</td>
</tr>
<tr>
<td>Vaccination status</td>
</tr>
<tr>
<td>Risk-taking behaviour</td>
</tr>
<tr>
<td>Socioeconomic status (income, occupation, education)</td>
</tr>
<tr>
<td>Social exclusion</td>
</tr>
<tr>
<td>Employment and unemployment</td>
</tr>
<tr>
<td>Stress</td>
</tr>
<tr>
<td>Food security</td>
</tr>
<tr>
<td>Access to health care</td>
</tr>
<tr>
<td>Early life experiences</td>
</tr>
<tr>
<td>Food, air and/or water quality</td>
</tr>
<tr>
<td>Environmental tobacco smoke</td>
</tr>
<tr>
<td>Access to recreation facilities</td>
</tr>
<tr>
<td>Transport systems</td>
</tr>
<tr>
<td>Housing</td>
</tr>
<tr>
<td>Work environment</td>
</tr>
</tbody>
</table>

---

**Unrelated text:**

**Abel 4.4**

Summary table linking the NHPAs to selected determinants of health