

## Activity 2: Melanoma rates

### Aims

- To increase student knowledge about skin cancer statistics with respect to different demographic groups.

**Assessment outcomes** English 4.11; H&PE 4.6, 4.7

**Reference fact sheet** Fact sheet 3: Melanoma

**Worksheets** Worksheet 2A Melanoma incidence and mortality  
Worksheet 2B Melanoma rates by body site  
Worksheet 2C DVD: *60 Minutes Sunburnt Country*  
Worksheet 2D Ben's story

### Teacher guidelines

- 1 Distribute Worksheet 2A: Melanoma incidence and mortality.
- 2 Discuss with students the meaning of the following:  
*Incidence* – the number of new cases of a disease occurring during a given period (usually one year) in a given population.  
*Mortality* – the incidence of death in the population over a given period.
- 3 Develop an understanding of what is meant by *population group*, specifically with respect to age, gender, geographic location, culture and socioeconomic status.
- 4 Complete Worksheet 2B: Melanoma rates by body site.
- 5 For Worksheet 2C watch the DVD “60 Minutes Sunburnt Country”\* (available on loan from The Cancer Council South Australia, call **The Cancer Council Helpline 13 11 20**).

**\*Warning: Important information relating to the DVD “60 Minutes Sunburnt Country”**  
**There are images and stories in this DVD that could upset students for various reasons. Due to the sensitive nature of the issues in the DVD and footage of some surgical procedures, it is recommended that you watch the DVD beforehand to ensure it is suitable for students in your class. This DVD is recommended for year levels 9-12. It is not recommended for primary school students without parental permission.**

- a) Answer the questions on Worksheet 2C: 60 Minutes Sunburnt Country while watching the DVD.
- b) Work through the following discussion questions below after watching the DVD.

### Discussion questions – 60 Minutes Sunburnt Country

These are questions for the class to be discussed after viewing the DVD.

- What part of the video made an impact on you? Why?
- What did you discover from the video that you didn't know before?
- What might be some of the reasons tanning is popular with teenagers especially when most know the risks?
- What will happen if a person deliberately tries to get a tan?
- Melanoma is the number one cancer affecting 12–24 year olds. Does this surprise you? Why / Why not?
- Other than the physical symptoms of melanomas, what are some of the other consequences? Consider personal, social, family, and financial factors.



## Activity 2: Melanoma rates (cont.)

- Dr Jonathon Stretch says 'there's a difference in enjoying activity out in the sun and wilfully just lying around and deliberately baking'. Discuss what this statement means. How can people enjoy activity safely in the sun?
- What are some sun protection strategies we can use to protect our skin from the sun?
- At what times of the year is it particularly important to use sun protection? (Consider which months and times throughout the day UV radiation levels reach their peak in your area.)
- How would you encourage your friends and family to adopt sun protective behaviours?
- As a class develop your own sun protection plan to keep you safe from the harmful effects of the sun.

6 For Worksheet 2D: Ben's story, read the article and answer the associated questions.

### Extension activities

- 1 Research and compare Australian melanoma statistics within each state. Look at the similarities and differences and try to explain these.
- 2 Research and compare Australian melanoma statistics with other countries. Look at the similarities and differences and try to explain these.

### References

The Cancer Council South Australia, February 2002, *The incidence of melanoma in South Australia by country of birth*, <[www.cancersa.org.au/cms\\_resources/documents/CALDMelanoma.pdf](http://www.cancersa.org.au/cms_resources/documents/CALDMelanoma.pdf)>

The Cancer Council South Australia, August 2002, *Sun related cancers of the skin and lip*, <[www.cancersa.org.au/cms\\_resources/documents/Monograph2v2.pdf](http://www.cancersa.org.au/cms_resources/documents/Monograph2v2.pdf)>.

# Worksheet 2A: Melanoma incidence and mortality

**Melanoma is more common in Australia than anywhere else in the world. For men, melanoma ranks fourth for new cancers and for women it is third. The data below shows incidence and mortality rates for males and females in South Australia in 2003.**

## Incidence

During 2003 there were 658 newly diagnosed cases. There were more new cases among men (377) than women (281). The lifetime risks of developing this cancer were 1 in 31 for men and 1 in 39 for women.

## Mortality

In 2003 melanoma caused 49 deaths among men and 19 among women.



**Table: South Australia 2003 – Melanoma incidence and mortality**

Years of age	Incidence (new cases)			Mortality (deaths)		
	Males	Females	Persons	Males	Females	Persons
0–4	0	0	0	0	0	0
5–9	0	0	0	0	0	0
10–14	0	0	0	0	0	0
15–19	3	3	6	0	0	0
20–24	4	3	7	0	0	0
25–29	4	8	12	0	1	1
30–34	16	14	30	0	0	0
35–39	15	15	30	2	0	2
40–44	16	20	36	1	1	2
45–49	29	22	51	5	2	7
50–54	37	32	69	2	1	3
55–59	36	36	72	4	1	5
60–64	32	26	58	5	1	6
65–69	26	28	54	4	3	7
70–74	45	18	63	6	2	8
75–79	63	21	84	8	4	12
80–84	26	15	41	6	2	8
85+	25	20	45	6	1	7
<b>Total</b>	<b>377</b>	<b>281</b>	<b>658</b>	<b>49</b>	<b>19</b>	<b>68</b>

SA Cancer Registry, Department of Health, South Australia. October 2005, *Cancer in South Australia 2003*. <[www.dh.sa.gov.au/pehs/cancer-report-03/cancer2003-append-feb06.pdf](http://www.dh.sa.gov.au/pehs/cancer-report-03/cancer2003-append-feb06.pdf)>

## Questions

- 1 What is the meaning of the word incidence?

---



---



---

## Worksheet 2A: Melanoma incidence and mortality (cont.)

---

2 What is the meaning of the word mortality?

---

---

---

3 What do the statistics indicate about particular age groups in relation to melanoma incidence?

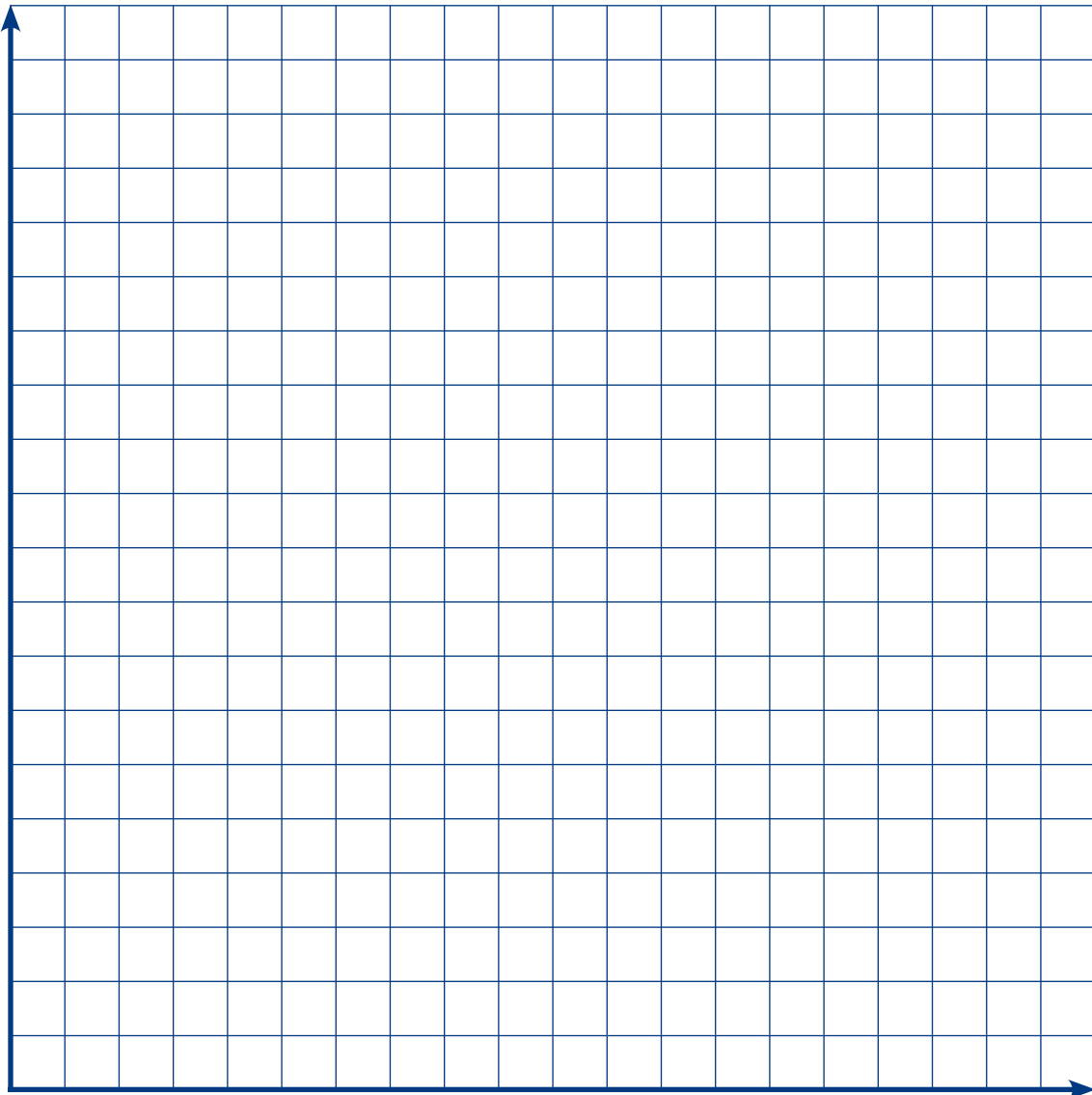
---

---

---

4 Using the incidence data, complete a bar graph of the information on the previous page. Put the age group on the x-axis, and the incidence data on the y-axis. Use different colours to distinguish the data for males and females.

**Incidence of melanoma for males and females in South Australia in 2003.**



## Worksheet 2A: Melanoma incidence and mortality (cont.)

---

5 At which age is the incidence highest for males?

---

6 At which age is the incidence highest for females?

---

7 What reasons can you suggest for this difference in incidence?

---

---

8 How many new cases of melanoma were recorded in 60–80 year old males and females? (Fill in the table)

	Males	Females
60–64		
65–69		
70–74		
75–79		
<b>Total</b>		



There is a difference in the incidence of new cases of melanoma for males and females in this age group. What reasons can you suggest for this difference?

---

---

---

9 There is a significant difference in the incidence and the number of people dying of melanoma. Suggest reasons for this. (Hint: think about early detection and treatment).

---

---

---

10 Select any one of the following population groups that are listed below. (Students to work individually or in groups).

- boys/men 15–29 years old spending a day at the cricket
- girls/women 15–24 years old spending a day at the beach
- 3–5 year olds at child care/kindy
- 15–19 year olds at the Big Day Out
- 20–29 year olds at the Schutzenfest
- 45–49 year old sportsmen and women who regularly play outdoors

# Worksheet 2A: Melanoma incidence and mortality (cont.)

---

Answer the following questions in relation to the group you have chosen:

a) What is the incidence of melanoma for this group?

---

b) Develop a comprehensive list of factors that may influence the health (in relation to skin cancer) of this group. Ideas include thoughts, feelings, behaviours, attitudes, provision of shade/sunscreen/clothing, etc.

---

---

---

c) What strategies would be required to maximize protection of the skin and eyes?

---

---

---

d) Design appropriate clothing specifying protection factors.

e) Outline suggestions to make their environment more sun safe.

---

---

---

f) Present your case study and proposed strategies to the class for further discussion and evaluation.

g) Write an article for the school newsletter outlining your chosen scenario and the strategies you have developed for being more SunSmart.



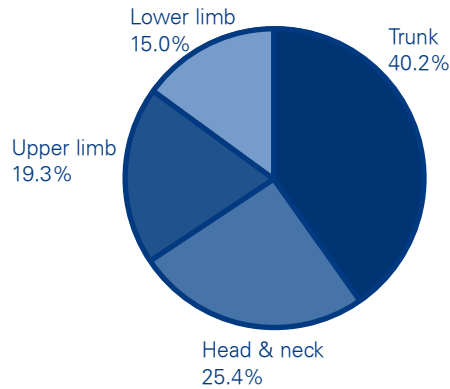
# Worksheet 2B: Melanoma rates by body site

The pie graph and table show areas of the body where melanomas are most common. Both the graphs and the table show the same information.

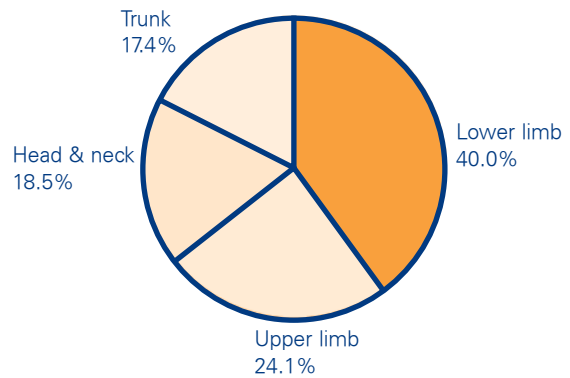
## Percentage (%) melanomas by body site; South Australia 1977-2000

Source: South Australian Cancer Statistics, Centre for Cancer Control Research, *Monograph 2*, August 2002. <[www.cancersa.org.au/asp/centre\\_for\\_cancer\\_research.aspx](http://www.cancersa.org.au/asp/centre_for_cancer_research.aspx)>.

### Males



### Females



## Percentage (%) melanomas by body site; South Australia 1977-2000

Source: South Australian Cancer Statistics, Centre for Cancer Control Research, *Monograph 2*, August 2002. <[www.cancersa.org.au/asp/centre\\_for\\_cancer\\_research.aspx](http://www.cancersa.org.au/asp/centre_for_cancer_research.aspx)>.

	Male	Female
Head and neck	25.4%	18.5%
Trunk	40.2%	17.4%
Upper limb	19.3%	24.1%
Lower limb	15.0%	40.0%

a) Where are melanomas most commonly found:

Males \_\_\_\_\_

Females \_\_\_\_\_

b) Melanomas are not always found in areas exposed to the sun. What does this imply for people when they are checking their skin for changes?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



# Worksheet 2C: DVD *60 Minutes – Sunburnt Country* – about melanoma

---

**Answer these questions while you are watching the DVD.**

1 Why is tanning so popular in Australian society?

---

---

---

---

2 How many Australians will die of melanoma this year?

---

---

**Ben Foley – 16 years old**



3 What is Ben Foley's risk of getting another melanoma?

---

---

**Steven Nielson – 28 years old**

4 a) Where has Steven's melanoma spread?

---

---

b) How did Steven spend his summer afternoons as a young person?

---

---

---

**Renee Marchment – 24 years old**

5 What happened to a freckle that she noticed?

---

---

6 Professor John Thompson examines some young people's skin. He makes a number of comments during this segment.

a) What did he find when examining the skin of these young people?

---

---

---

b) What do these findings mean for young people? What is the prognosis or outcome?

---

---

---

# Just 18, and a victim of melanoma's cruel odds

## Ben's courage a lasting legacy

By Sarah Blake

Extract from: Sunday Telegraph, Sunday 28/5/2006, p11.

The red hair and alabaster skin shared by the four Foley children drew attention all their lives, but for one of them, the striking combination took a fatal toll.

Ben Foley was just 18 when he died last week of melanoma.

And his death comes at a time when cancer experts are concerned Australians are continuing to ignore clear and unequivocal evidence that the sun here is a killer.

"We have the highest rate of skin cancer deaths in the world, but you still see parents letting their children play in the sun at the beach. It's really just criminal," said Professor John Thompson, the director of the Sydney Melanoma Unit at Royal Prince Alfred Hospital.

Ben Foley, a popular, athletic teenager who managed to complete his HSC last year during months of gruelling treatment, had no doubt what caused the disease that would end his life.

"I spent too much time in the sun without sunscreen," he told 60 Minutes when the current affairs program interviewed him last year.

Showing the courage that his mother, Sue, said was innate and inspiring, he then took the television crew to Cronulla to warn other teenagers about how dangerous it was to get a suntan.

"Seeing him over the past year, how strong he was, it showed me that he was an extraordinary person," Mrs Foley said last week

at her Bexley home.

"He wanted to help other people understand about skin cancer, about how it wasn't something that only happened to older people."

"He never felt embarrassed about showing the scars on his back from his operations, even though they were terrible."

Ben's sister, Erin, said she had never really accepted that her baby brother was going to die.

"He just seemed so strong. He never complained about anything: you never would have known that he was suffering," she said.

"I didn't think he would die. Young boys don't get skin cancer and die – it just doesn't happen..."

Professor Thompson said it was rare for someone Ben's age to die from melanoma.

"The vast majority of people we treat are older, but we have teenagers and even children with melanoma," he said.

He said Ben's skin type made him more susceptible to the disease.

"People with fair complexions are at much higher risk," Professor Thompson said. "If you have a single Celtic ancestor, you are at significantly higher risk, and 75 per cent of the Australian population is of Celtic ancestry – that's why we have the highest incidence in the world."



Skin cancer accounts for about 81 per cent of all new cancers in Australia each year, with more than 374,000 Australians diagnosed with non-melanoma skin cancer.

And more than 8800 Australians are diagnosed with melanoma, with nearly 1000 of these dying, according to The Australian Cancer Council.

Survival rates have risen significantly since the early 1980's as a result of skin cancers being detected earlier and improved treatment methods.

However, the Council advises people to stay out of direct sun between 10 am and 3 pm when UV levels are at their highest, wear water-resistant sunscreen, a hat and sunglasses.

Note: Over-exposure to the sun as a child and teenager is an important factor in the development of skin cancer later in life. The Cancer Council South Australia.

## Worksheet 2D: Ben's story (cont.)

---

### **Just 18, and a victim of melanoma's cruel odds. Ben's courage a lasting legacy** **Extract from: Sunday Telegraph – Sunday 28th May 2006**

This is the story about the death of Ben Foley – one of the young people interviewed in the *60 Minutes Sunburnt Country* documentary.

Ben's death is especially sad, as we consider such a young loss of life. His courage was notable, as he became an advocate for sun protection before his death.

#### **Read the article and answer the following questions**

- 1 How old was Ben Foley when he died of melanoma?  
\_\_\_\_\_
- 2 What comments does Professor John Thompson make about the rates of skin cancer in Australia?  
\_\_\_\_\_  
\_\_\_\_\_
- 3 What did Ben Foley say caused his skin cancer?  
\_\_\_\_\_  
\_\_\_\_\_
- 4 What did Ben Foley want people to understand before he died?  
\_\_\_\_\_  
\_\_\_\_\_
- 5 What are other ways that Ben's message can be shared?  
\_\_\_\_\_  
\_\_\_\_\_
- 6 Everyone is at risk of developing skin cancer, even those with darker complexions. How can you be sure your risk of developing skin cancer is lower?  
\_\_\_\_\_  
\_\_\_\_\_
- 7
  - a) What percentage of all new cancers diagnosed in Australia are skin cancer related?  
\_\_\_\_\_
  - b) How many Australians are diagnosed with non-melanoma skin cancers each year?  
\_\_\_\_\_
  - c) How many Australians are diagnosed with melanomas and how many people die of melanoma each year?  
\_\_\_\_\_
- 8 Why have survival rates improved since the early 1980s?  
\_\_\_\_\_  
\_\_\_\_\_

## Worksheet 2D: Ben's story (cont.)

---

- 9 a) What does the article say people should do to protect themselves from the sun?

---

---

---

- b) Can you think of other protection strategies apart from these?

---

---

---

- c) What are two changes you can make in your regular outdoor routine to help protect yourself from the sun? (e.g. during leisure time, sports sessions, at school)

---

---

---



# Fact sheet 3: Melanoma

## Introduction

Australia has the highest rate of skin cancer in the world. Melanoma is one of three main skin cancer types accounting for approximately 5% of all skin cancers. It was the fourth most common cancer amongst men and women in South Australia in 2003, with 658 people diagnosed that year. There was a total of 68 deaths from melanoma in South Australia the same year.<sup>1</sup>

If diagnosed and treated early, the survival rate for people with melanoma is high.

## Structure and function of the skin

The skin is the largest organ of the body. It has several important functions. It acts as a protective layer against injury and disease and also regulates our body temperature and maintains its hydration.

The skin consists of three layers:

- the epidermis or the outer layer
- the dermis or the inner layer
- the subcutaneous fat layer.

The epidermis is made up of cells that produce keratin, a substance that covers the outside of the skin and resists heat, cold and the effects of many chemicals. The cells in the epidermis also produce melanin, the substance that gives our skin its colour. Melanin is able to absorb ultraviolet light and provide some protection from its damaging effects. The dermis is a tough, elastic structure that contains sweat and oil glands, hair follicles, nerves and blood and lymph vessels.

## What is melanoma?

Melanoma, like other cancers, is a disease of the body's cells. Normally, the body's cells grow and divide in an orderly manner so that worn out or injured tissue is replaced or repaired. Sometimes cells begin to grow and behave in an abnormal way and grow into a mass or lump of tissue called a tumour.

Tumours can be benign (non-cancerous) or malignant (cancerous). Benign tumours do not spread to other parts of the body.

Malignant tumours or cancers can invade neighbouring tissues and may also spread to other parts of the body. This can result in new cancer deposits called secondaries or metastases.

The epidermis consists of different types of cells. They are: squamous cells, basal cells and melanocytes. Skin cancers are named after the type of cells from which they originate.

Melanoma occurs in the melanocytes (or pigment cells). It is the most serious of all skin cancers as it may be fast growing and it can spread to other parts of the body.

Melanoma can occur in the skin anywhere on the body, however it is more common in some sites than others eg. in males it is most common on the trunk, while in females the legs are the most common site. Rare melanomas can occur in the eyes, the nervous system and the mucous membrane.

## Signs and symptoms of melanoma

The first sign of a melanoma is a change in the colour, size and shape of an existing mole. The letters ABCD may help you remember the signs of change to watch out for:

- Asymmetry - the shape of one side of the mole may not match the other.
- Border - the edges of the mole may be irregular, and not well defined.
- Colour - the colour is often uneven. Shades of black, brown, tan or other colours like red, pink or blue may be present.
- Diameter - there is usually an increase in the size of the mole.

It may be that only one or all four of the above features are present as melanomas can vary greatly in the way they look.<sup>2</sup>

## Stages of melanoma

Like other cancers, melanoma can spread to other areas of the body. The extent or stage of melanoma depends upon the level of spread at the time of diagnosis. The treatment plan for a person with melanoma would therefore take into account the location and thickness of the melanoma, how deeply the melanoma has invaded the skin and whether the melanoma has spread to the lymph nodes or to other parts of the body.

## Fact sheet 3: Melanoma (cont.)

### What causes melanoma?

Melanoma is associated with exposure to ultraviolet radiation from the sun. Artificial ultraviolet light, from solariums for example, can also cause skin damage and increase the risk of melanoma. Melanoma seems to be related to episodes of sunburn that are short and sharp, especially during childhood which is a crucial time for sun protection. It is also associated with prolonged exposure to ultraviolet radiation.

Listed below are certain risk factors which would increase a person's risk of melanoma.

- **Fair complexion**  
People who have fair skin are at a greater risk of developing melanoma, due to the fact that there is less melanin in their skin, and therefore less protection against ultraviolet radiation.
- **Number of moles on skin**  
Having many moles (more than 10 on the arms and more than 200 on the body) also increases the risk.
- **Dysplastic nevi**  
The presence of abnormal, precancerous moles or dysplastic nevi increases one's risk of melanoma. The larger the number of dysplastic nevi present, the greater the risk.
- **History of melanoma**  
People who have already been diagnosed with melanoma are at high risk of developing melanoma again.
- **Family history and genetic predisposition**  
About 10% of people with melanoma in Australia have a first degree relative (parent, child, brother or sister) who also has had a melanoma. This may be due to family members being exposed to similar environmental influences. It may also be due to an inherited faulty gene in the family that causes members to be more susceptible to developing cancer. The more close relatives with melanoma, the higher the risk.
- **Age**  
Melanoma is diagnosed more often in older adults. However it also occurs in young adults and occasionally in teenagers. It is important to note that it is the most common cancer in people aged between 15 and 44 years and that it is the major cause of cancer death in young adults.<sup>3</sup>

### What can be done to reduce the risk of melanoma?

It is never too early or too late to protect your skin. Here are a few simple steps that can protect you from ultraviolet radiation:

- Avoid the sun when the ultraviolet radiation is at its strongest, between 10 am and 3pm.
- Slip on a long sleeved shirt, preferably with a high collar and made from closely woven material.
- Wear a broad brimmed hat when outside.
- Apply SPF 30+ sunscreen 20 minutes before going outside and reapply it regularly. Water resistant sunscreen is best if you are active. Remember to reapply it regularly, especially after swimming or exercise.
- Wear sunglasses with an EPF of 10 or which comply with the Australian Standards AS1067.

### Early detection

As skin cancers are visible, they can be seen and checked as soon as they develop. Early symptoms of skin cancer may seem quite minor but any suspicious spot should be seen by a doctor immediately. In particular, a new or existing mole or freckle that changes in colour, shape or size over a period of weeks to months should be checked.

### Diagnosis and treatment

#### Surgery

If a doctor suspects that a mole on the skin is melanoma, a biopsy of the mole is taken. The biopsy is sent to a laboratory in order to confirm whether the mole is a melanoma or not. If the melanoma is at an early stage the whole melanoma is removed and no further treatment is required.

A larger melanoma that has grown deeper into the skin may require admission into hospital for surgery under a general anaesthetic. During surgery it may be necessary to remove a section of normal looking skin around the cancer.

#### Skin grafts

Sometimes it is necessary to perform a skin graft to cover the wound. This involves the removal of skin from another part of the body to replace the skin around the area that has been removed in the operation.

## Fact sheet 3: Melanoma (cont.)

### Lymph node biopsy and resection

A fine needle aspiration biopsy or sentinel lymph node biopsy may be performed if the doctor suspects that the cancer has spread to the lymph nodes.

A fine needle aspiration biopsy involves the insertion of a fine needle into the lymph node suspected of being affected by cancer. The tissue removed is sent to a laboratory to confirm whether there are cancer cells present. If cancer is found the lymph nodes are surgically removed.

A sentinel node biopsy involves the insertion of a harmless dye into the melanoma site. The dye is taken up by the sentinel node(s), or the first lymph node(s) that the cancer is likely to spread to. If found to be positive for cancer, the sentinel node(s) as well as the surrounding lymph nodes are surgically removed.

### Radiotherapy

Radiotherapy is the use of x-ray beams to kill cancer cells. Treatment is planned to minimise the effects on normal cells. Radiotherapy may be used following removal of the lymph nodes. It may also be used for certain types of melanoma at the site where it was removed. Some side effects of radiotherapy are temporary and may include nausea, headache and tiredness. The skin in the treatment area may become sore and inflamed. Discomfort can be minimised by avoiding clothes that irritate the skin and by taking care with gentle washing and avoiding shaving.

### Chemotherapy

This is the treatment of cancer by drugs; the aim is to kill cancer cells, whilst doing the least damage to normal cells. The side effects of chemotherapy depend mainly on the drugs and the dosages given. They may include nausea, vomiting, tiredness and hair loss. Chemotherapy is used in treating advanced melanomas.

### Prognosis/outlook

The majority of people with melanoma can be treated very effectively if the melanoma is diagnosed at an early stage, when the cancer is confined to the epidermis and upper dermis. The location of the melanoma on the body appears to have a bearing on one's prognosis. Melanomas on the limbs have a better outlook than those on the trunk, head or neck.

### Follow-up

People who have been successfully treated for melanoma still have a greater than average chance that another melanoma will appear. The risk of recurrence is greater for patients whose melanoma was thick or had spread, than for patients with very thin melanomas.

It is important that your doctor examines your skin at regular intervals if:

- you have ever had a melanoma
- you have a family history of melanoma
- you have many moles or dysplastic nevi.

### Seeking help and support

People react in different ways when they are diagnosed with melanoma and following treatment. It is quite normal to experience intense anxiety, grief and depression.

It may be helpful to talk about your feelings with your family and friends. It may also be beneficial to talk to a caring professional such as a social worker, nurse, psychologist or chaplain.

### Website information

Melanoma information is available on the internet. Here are a few useful websites:

The Cancer Council South Australia  
[www.cancersa.org.au](http://www.cancersa.org.au)

The Cancer Council Victoria  
[www.sunsmart.org.au](http://www.sunsmart.org.au)

American Cancer Society  
[www.cancer.org](http://www.cancer.org)

National Cancer Institute  
[www.cancernet.nci.nih.gov](http://www.cancernet.nci.nih.gov)

The Cancer Council acknowledges the SA Cancer Registry for information supplied in this document. Consultation with a dermatologist occurred in the development of this resource.

### References

- 1) South Australian Cancer Registry. Cancer in South Australia 2003- with incidence projections to 2006 and prevalence and mortality projections to 2011. Adelaide; SA Dept of Health, 2005.
- 2) National Health and Medical Research Council, Guidelines for the Management of Cutaneous Melanoma, July 2000
- 3) Australian Institute of Health and Welfare Cancer in Australia 1996 Canberra 1999

