

Activity 1: Facts about skin cancer

Aims

- To provide an introductory exercise relating to skin cancer.
- To increase students' knowledge of skin cancer.
- To address issues associated with the prevention of skin cancer.

Assessment outcomes English 4.11; H&PE 4.6

Reference fact sheet Fact sheet 1: Skin cancer

Worksheet Worksheet 1: Facts about skin cancer

Teacher guidelines

- 1 Brainstorm information that students already know about skin cancer.
Enlarge copies of Worksheet 1: Facts about skin cancer and cut into cards
- 2 Divide the class into pairs or threes and give each group a set of cards.
 - a) Instruct groups to take turns to pick up a card, read it to the rest of the group and discuss if the statement is true or false.
 - b) If everyone agrees, place the card in an appropriate (true or false) pile. If there is uncertainty among the group, then the card should be placed in an 'unsure' pile for later discussion.
- 3 When everyone is finished discuss each statement, particularly those about which the students are unsure using the answers provided on pages 46-48 as a reference.

Extension activities:

- 1 Divide class into two teams and use the information from Fact sheet 1: Skin cancer to form questions and conduct a 'skin cancer' quiz. Each team to take turns in answering questions.
- 2 Students could use the information from Fact sheet 1: Skin cancer to prepare a set of ten questions about skin cancer to ask the class or another class member.



Worksheet 1: Facts about skin cancer

1 Ultraviolet (UV) radiation from the sun causes skin and eye damage	2 UV radiation is at its strongest in January	3 UV radiation cannot be felt
4 It is healthy to get a tan because it will prevent sunburn and skin cancer	5 The major cause of skin cancer is exposure to UV radiation from the sun over many years	6 Some skin types have an immunity to skin cancer, such as people with olive or tanned skin
7 UV radiation is present in the sun's rays throughout the year	8 Australia has the highest rate of skin cancer in the world	9 Getting sunburnt occasionally doesn't harm your skin
10 In Australia approximately 380,000 people will be diagnosed with skin cancer each year	11 Skin cancer can be cured if detected early	12 The colour or darkness of the lens in sunglasses gives no indication of its ultraviolet (UV) radiation absorbing characteristics
13. A fake tan will provide a person with protection against UV radiation	14. As long as you keep re-applying a good SPF 30+ broad-spectrum sunscreen you will be protected from the sun all day	15. It is important to reduce exposure to the sun between 10 am and 3 pm
16. The wind can cause sunburn (i.e. windburn)	17. UV radiation is still present on cloudy days	18. Sunburn can increase the risk of melanoma later in life
19. Over-exposure to the sun as a child and teenager is an important factor in the development of skin cancer later in life	20. A tanning lamp (solarium) will give you a tan without damaging your skin	21. UV radiation can reflect off sand, snow, water and other light-coloured surfaces such as concrete

Answers for worksheet 1

	The facts about skin cancer – answer sheet	True	False
1	<p>Ultraviolet (UV) radiation from the sun causes skin and eye damage</p> <p>Sunlight is made up of different types of radiation. As well as the warming infrared radiation, there is a type of radiation we can neither see nor feel, known as ultraviolet radiation or UV. UV is not hot, so it is not affected by temperature. Overexposure to UV radiation can cause sunburn, skin cancer and eye damage.</p>	✓	
2	<p>UV radiation is at its strongest in January</p> <p>The level of UV varies from day to day. Even on a clear day in September or April the UV is strong enough to burn your skin. Due to the angle of the earth to the sun it is strongest in January.</p>	✓	
3	<p>UV radiation cannot be felt</p> <p>Sunburn is caused by UV radiation which cannot be felt.</p>	✓	
4	<p>It is healthy to get a tan because it will prevent sunburn and skin cancer</p> <p>A suntan is a sign of skin damage. The longer your skin is exposed to the sun, the greater your chance of developing skin cancer. Excessive sunbaking also damages and ages the skin prematurely. Sun damage causes premature ageing, wrinkles and loss of skin elasticity.</p>		✓
5	<p>The major cause of skin cancer is exposure to UV radiation from the sun over many years</p> <p>Skin cancer is the result of UV damage that has occurred over an extended period of time. See answers 18 and 19 on page 46 re: link between sunburn during childhood and melanoma.</p>	✓	
6	<p>Some skin types have an immunity to skin cancer, such as people with olive or tanned skin</p> <p>No skin type is immune to skin cancer. People with olive, fair or tanned skin are all at risk, but people who burn easily and rarely tan are at the greatest risk. Those who burn in early summer and then tan are also at high risk if they do not protect their skin.</p>		✓
7	<p>UV radiation is present in the sun's rays throughout the year</p> <p>Although UV radiation is always present, the distance of the earth from the sun during winter makes it far less of a hazard.</p>	✓	
8	<p>Australia has the highest rate of skin cancer in the world</p> <p>One out of two Australians will develop a skin cancer at some time during their lives. Australian sunlight is very harsh.</p>	✓	
9	<p>Getting sunburnt occasionally doesn't harm your skin</p> <p>Sunburn causes irreversible damage to the skin and increases the risk of skin cancer later in life.</p>		✓
10	<p>In Australia approximately 380,000 people will be diagnosed with skin cancer each year</p> <p>About 380,000 Australians will be diagnosed with skin cancer each year. Approximately 1200 will die from skin cancer each year.</p>	✓	

Answers for worksheet 1 (cont.)

		True	False
11	<p>Skin cancer can be cured if detected early Because skin cancers are visible, you can see them and have them 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. The signs to look for are:</p> <ul style="list-style-type: none"> a crusty, non-healing sore a small lump which is red, pale or pearly in colour a new spot, freckle or mole changing in colour, thickness or shape over a period of several weeks to months. Particular attention should be paid to spots that are dark-brown to black, red or blue-black. It is important to check your body for any skin changes. 	✓	
12	<p>The colour or darkness of the lens of sunglasses gives no indication of its ultra violet radiation (UVR) absorbing characteristics. Wearing good quality sunglasses can substantially protect the eye against both short-term and long-term exposure in bright sunlight and everyday outdoor situations. The important indicator of a safe pair of glasses is the Eye Protection Factor (EPF) rating of 1-10 for sunglass lenses. Sunglasses labelled with an EPF of 10 provide 100% UV protection and comply with Australian Standards 1067 (revised 2003).</p>	✓	
13	<p>A fake tan will provide a person with protection against UV radiation. People mistakenly believe that their fake tan will provide them with protection against UV radiation. Some fake tan lotions and sprays do contain sunscreen, but they only provide short-term protection from the time of application. As a result, people may not take appropriate sun-protection measures, which places them at risk of skin cancer.</p>		✓
14	<p>As long as you keep re-applying a good SPF 30+ sunscreen you will be protected from the sun all day Sunscreen only protects for a limited period. For example, without any sun protection a person with fair skin will begin to burn in about five minutes in midsummer. If they apply a SPF 30+ sunscreen before going out in the sun, the time before burning can be extended up to approximately 150 minutes – 30 times their normal exposure time. Similarly, a person with olive skin who begins to burn in midsummer in about 10 minutes, can extend this period to approximately 300 minutes with an SPF 30+ sunscreen applied before going into the sun. Sunscreen should NEVER be used to extend the time you spend in the sun and should always be used in combination with other skin protection.</p>		✓
15	<p>It is important to reduce exposure to the sun between 10 am and 3 pm This is when the sun is strongest. 60% of the days total UV radiation occurs during these hours..</p>	✓	
16	<p>The wind can cause sunburn (ie. windburn) There is no such thing as windburn; it is in fact sunburn from undetected UV. It may be cloudy but UV radiation can still get through, or UV could be reflecting off sand, water or other light-coloured surfaces. Have you ever been burnt on a windy night?</p>		✓

Answers for worksheet 1 (cont.)

		True	False
17	<p>UV radiation is still present on cloudy days Up to 80% of solar UV radiation can penetrate light cloud cover and still cause damage.</p>	✓	
18	<p>Sunburn can increase the risk of melanoma later in life Every case of sunburn in childhood increases the risk of melanoma later in life. It is particularly important that children are protected against over-exposure.</p>	✓	
19	<p>Over-exposure to the sun as a child and teenager is an important factor in the development of skin cancer later in life Childhood exposure to the sun is an important factor in the development of skin cancer later in life. Research also suggests that there may be a link between sunburn during childhood and melanoma — the most dangerous type of skin cancer — in adulthood.</p>	✓	
20	<p>A tanning lamp (solarium) will give you a tan without damaging your skin A tanning lamp (solarium) emits UVA and UVB radiation to make your skin produce melanin, which is the pigment that gives skin its brown colour. This is the same as sunbaking. The result will be skin damage and premature ageing. There is no such thing as tanning safely.</p>		✓
21	<p>UV radiation can reflect off sand, snow, water and other light-coloured surfaces such as concrete UV radiation bounces off these surfaces in all directions, thereby increasing the amount of radiation reaching your skin.</p>	✓	

Fact sheet 1: Skin cancer

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.

What is cancer?

Cancer is a disease of the body's cells. Normally the body's cells grow and divide in an orderly manner so that growth and healing of injured tissue occurs.

Occasionally some cells behave in an abnormal way and may grow into a lump which is called a tumour.

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

A malignant tumour is made up of cancer cells. These cells have the ability to spread beyond the original site and if left untreated may invade and destroy surrounding tissues. Sometimes cells break away from the original [primary] cancer and spread to other organs. When these cells reach a new site they may form another tumour often referred to as a secondary cancer or metastasis.

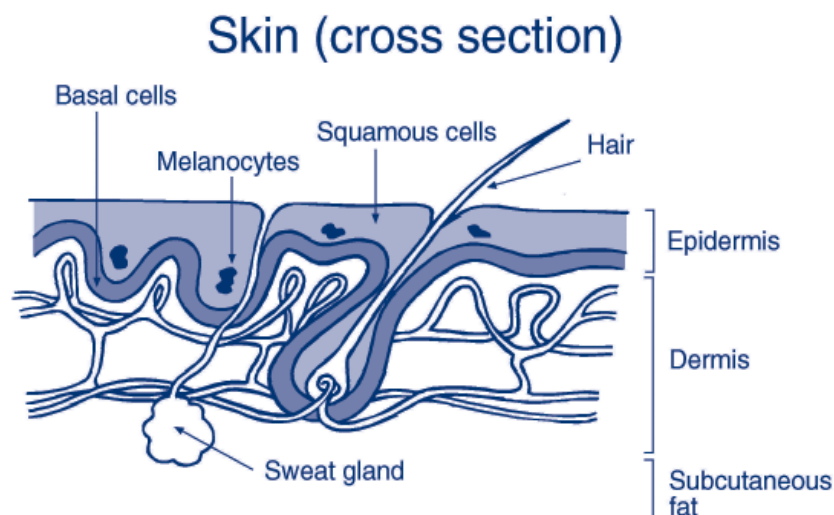
What is skin cancer?

Skin cancer is a type of cancer that begins in the basal layer of the epidermis. There are three main types of skin cancer: basal cell carcinoma, squamous cell carcinoma and melanoma. Melanomas start in the pigment cells [melanocytes] while basal and squamous cell carcinomas develop from the epidermal cells. [Carcinoma is a term used for some types of cancer].

Basal cell carcinoma [BCC]

Basal cell carcinomas are the most common but least dangerous type of skin cancer. They grow slowly over months to years but if left untreated a deep [rodent] ulcer may form. Fortunately they very rarely spread to other parts of the body. If you have one basal cell carcinoma you may have others, either at the same time or in later years.

Basal cell carcinomas are most commonly found on the face, neck and upper trunk. They appear as a lump or scaly area and are pale, pearly or red in colour. They may have blood vessels on the surface.



Fact sheet 1: Skin cancer (cont.)

Radiation therapy is another option although less commonly used now. It causes a crusting sore which takes some weeks to heal and then leaves a scar.

Melanoma

Surgery is the preferred method of treatment for melanoma. Very thin melanomas are usually removed along with a small area of normal skin, under local anaesthetic.

For deeper melanomas a wide area of skin may need to be removed to make sure that all the cancer cells have been taken out. The local lymph glands may also be removed at this time.

Outlook

Virtually all basal and squamous cell carcinomas that are found and treated early are cured.

The majority of people with early melanoma which is appropriately treated do not have any further trouble with their disease. However because there is a chance that the melanoma will reappear, your doctor will examine you at regular intervals.

For further details on outlook you should speak to your own doctor who is familiar with your full medical history.

Causes of skin cancer

The major cause of skin cancer is exposure to the ultraviolet rays of the sun over many years.

Sunlight exposure

Childhood exposure to the sun is an important factor in the development of skin cancer later in life. Research also suggests there may be a link between sunburn during childhood and melanoma in adulthood.

Occupation

People who work outdoors have a greater risk of developing the common skin cancers than indoor workers. This is because of their greater exposure to sunlight. Workers in some industries have to take precautions against other known causes of common skin cancers, such as arsenic, polycyclic hydrocarbons and a number of other chemical compounds.

Who is at risk?

Everyone is at risk of skin cancer, although people with skin that burns easily and rarely tans are at the greatest risk. Those who burn in early summer and then tan are also at high risk if they do not protect their skin. Unprotected skin, whether tanned or not, is likely to be damaged by the sun and may develop skin cancer later in life.

Skin type

Skin cancer is seen most often in fair skinned people who have lived in Australia all their lives. It is most common in people of Celtic [Scottish, Irish and Welsh] background. However it also occurs in people whose parents migrated from Southern Europe e.g. Greece or Italy and who have themselves spent all or most of their lives in Australia. This is because the Australian sunlight is very harsh.

Existing skin damage

Solar keratoses [sunspots] are dry, rough spots on the skin that are common in people over 40. They are not skin cancers but an indication that the skin has had enough sun exposure to develop skin cancer. People with keratoses should take particular care to protect their skin from the sun. Keratoses may progress and develop into SCCs.

They should also be examined to make sure a skin cancer is not present.

How can you reduce your risk?

- Minimise your time in the sun between 10.00 am – 3.00 pm.
- Use shade as much as possible when outdoors.
- Wear protective clothing - a wide brimmed hat and cover-up clothing.
- Apply SPF 30+ broad spectrum sunscreen to skin which isn't covered by clothing.



Fact sheet 1: Skin cancer (cont.)

Squamous cell carcinoma [SCC]

Squamous cell carcinomas are less common but more dangerous than basal cell carcinomas. They usually grow over a period of weeks to months. These cancers may spread to other parts of the body [metastasise] if not treated promptly.

Squamous cell carcinomas appear on areas of the skin most often exposed to the sun. They have scaling, red areas which may bleed easily and ulcerate, looking like an unhealed sore.

These common skin cancers generally occur in people over the age of 40. However basal cell carcinoma can occur in younger adults. The major cause of these skin cancers is sun exposure over many years.

Melanoma

Melanoma is the rarest but most dangerous skin cancer. If left untreated melanoma can spread to distant parts of the body to form secondary cancers or metastases.

Melanomas can appear anywhere on the body not only in areas that get a lot of sun. The first sign of a melanoma is usually a change in a freckle or mole, or the appearance of a new spot on normal skin. Changes are normally seen over a period of several weeks to months, not over several days. The changes are in size, shape or colour.

Melanoma can occur from adolescence onwards and is the most common cancer in the 15–44 year age group. In rare instances it may develop in children.

How common is skin cancer?

Skin cancer rates are higher in Australia than anywhere else in the world. It is the most common form of cancer in Australia affecting all age groups from adolescents upwards. Most common is basal cell carcinoma which accounts for about 75% of all skin cancers. Squamous cell carcinoma accounts for 20% and melanoma less than 5%.

One out of two Australians will develop a skin cancer in their lifetime – usually a basal cell carcinoma. In South Australia in 2003 the lifetime risk for developing melanoma was 1 in 31 for men and 1 in 39 for women.

Signs and symptoms

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.

The signs to look for are:

- A crusty, non-healing sore.
- A small lump which is red, pale or pearly in colour.
- A new spot, freckle or mole changing in colour, thickness or shape over a period of several weeks to months. Particular attention should be paid to spots that are dark brown to black, red or blue-black.

Diagnosis

If a doctor suspects a skin cancer, a biopsy may be performed. A biopsy is the removal of all or part of the affected skin, generally under local anaesthetic. It is a simple procedure that can be done by your family doctor or you can be referred to a specialist. The piece of skin that has been removed is then examined under a microscope. However in many cases the whole tumour is removed and a specimen is then sent to the laboratory for diagnosis.

Treatment

Common skin cancers



A variety of methods are available to treat the common skin cancers. Your doctor will choose your treatment by taking into consideration a number of factors. These will include the type of skin cancer, its size and position on your body and your personal preference.

Surgery can be used to remove the skin cancer and a small area of normal skin. This is quite simple and can usually be done under local anaesthetic.

Sunspots or pre-cancers can be briefly frozen with liquid nitrogen. This is called cryotherapy. Following cryotherapy the skin can become intensely red and peel away. Healing will begin in about a week.

Another technique is simply scraping off small common cancers [curettage] and burning the spot [cautery or diathermy].