Activity 8: School sunburn survey

Aims

- To enable students to identify areas of the body where sunburn occurs.
- To enable students to identify the influences on behaviour which causes sunburn.
- To enable students to consider strategies for sun protection.

Assessment outcomes H&PE 4.7; Maths 4.1

Reference fact sheets Fact sheet 1: Skin cancer
Fact sheet 6: Suntan and sunburn information

Worksheet Worksheet 8: School sunburn survey

Teacher guidelines

1 Teachers should spend some time outlining survey methods.

2 In small groups, preferably at a time when other students are outside, students should survey their peers using Worksheet 8: School sunburn survey to establish answers to the questions on the following page. Do a visual scan of the types of behaviour in the school and approach those who look as if they practise SunSmart behaviour as well as those who do not.

3 If students suggest alternative questions (or answers) that they believe are valuable then they should also be included.

4 Results should be collated on a master sheet and then graphed for easy analysis.

5 It would be useful to compare behaviour statements with attitude statements to emphasise the gaps that exist between the two.

6 These results can be plotted as bar or pie charts to give a visual representation of the proportions of students with alternative answers.

Worksheet 8: School sunburn survey

Complete the following survey

What you do (Behaviour)

		Rarely	Sometimes	Usually
1	How often during summer would you be outside between 10 am and 3 pm?			
2	How often do you seek shade during recess and lunch breaks?			
3	How often do you wear a hat?			
4	How often do you wear clothes covering most of your body?			
5	How often do you deliberately wear briefer clothing?			
6	How often do you use SPF 30+ sunscreen?			
7	How often do you wear sunglasses?			

Your opinions (Attitude/belief)

		Disagree	Not sure	Agree
8	I like to be out of the sun between 10 am and 3 pm.			
9	I like to stay mainly in the shade.			
10	I will wear a SunSmart hat to protect myself in the sun.			
11	I wear clothing to protect my skin from the sun.			
12	I like to wear briefer clothing during summer.			
13	Sunscreen should be used and reapplied to prevent burning by the sun.			
14	Sunglasses are an important part of sun protection.			

Questions

1 Plot the class results of each behaviour statement with the corresponding attitude statement (Statement 1 corresponds with Statement 8).

2 a) Which SunSmart behaviours are usual according to your results?

_____

_____

b) Which SunSmart behaviours are rare according to your results?

_____

_____

3 What are some of the major attitudes/beliefs that are evident in the group you surveyed?

_____

_____

_____

Worksheet 8: School sunburn survey (cont.)

4 Do students behave in the way that they know they should with respect to sun protection? Explain why/why not.

_____

_____

_____

5 To what extent do you think peer pressure influences 'suntanning' behaviour?

_____

_____

_____

6 What other situations have an influence on personal attitudes, beliefs and behaviour?

_____

_____

_____

7 We know what we should do in relation to sun protection but we don't always do it because our attitudes and beliefs get in the way. Think about your knowledge and attitudes and about your actual behaviour. Where do the gaps occur?

_____

_____

_____

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.

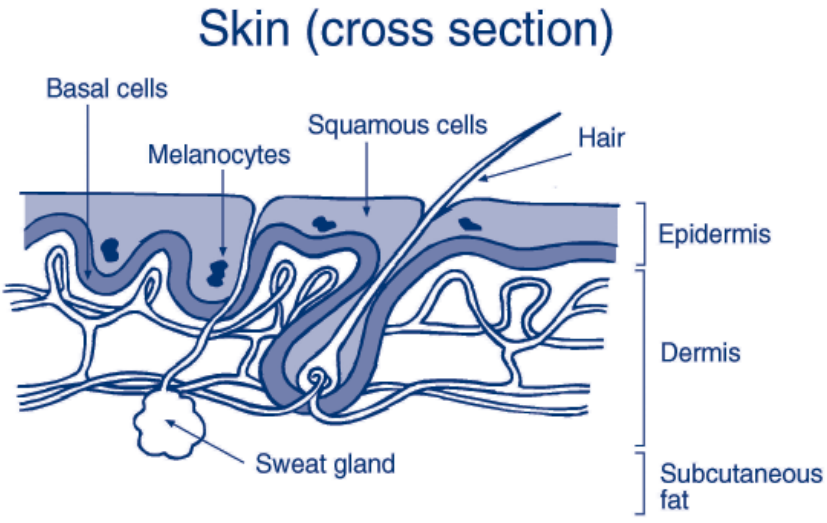
What is skin cancer?

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.



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].

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 6: Suntanning and sunburn

Tanning

A tan is much more than the skin just turning brown. Skin cells located in the epidermis produce a pigment called melanin that gives skin its natural colour. When skin is exposed to UV radiation, melanin production is stimulated, causing the skin to darken.

Many people refer to a healthy tan – but even a light tan is a sign the skin has been exposed to too much sun. Tanning without burning may still cause DNA and skin damage leading to premature ageing, and potentially skin cancer.

Fair skinned people (a large proportion of the Australian population) have a less protective form of melanin than people with darker skins. When fair-skinned people spend time in the sun, cells called melanocytes produce melanin, which then stays in the top layer of skin for four or five days, sometimes giving a tanned appearance. The melanin produced by fair-skinned people is much less protective, meaning no amount of sunbaking will result in a lasting tan – just sunburn and skin damage.

Sunburn

In Australia, sunburn can occur in as little as fifteen minutes on a fine January day (Cancer Foundation of Western Australia 1994).

It is the UV radiation in the sun that causes our skin to burn. UV radiation is invisible; it is not warm and can pass through light cloud, so sunburn can occur on cool, cloudy days.

As soon as UV radiation hits our skin, the epidermis releases chemicals that cause the blood vessels to swell and leak fluids, causing inflammation, pain and redness – otherwise known as sunburn. This type of damage will continue to develop for twenty-four to seventy-two hours after exposure to the sun.