

Sun and Health

This leaflet gives tips on how to protect your skin from the harmful effects of sunlight. **In particular, it is very important to protect children from the sun.** Children's skin is more sensitive to sun damage than adults. Sun damage *can* lead to skin cancer in later life.

Understanding sunlight and the skin

Too much exposure to sunlight is harmful and can damage the skin. Some of this damage is short-term (temporary), such as sunburn. However, allowing your skin to burn can lead to future problems, such as skin cancer due to long-term skin damage.

There are two main types of damaging ultraviolet (UV) sunlight: UVA and UVB. UVA rays penetrate deeper into the skin, damaging the middle layer (the dermis). The dermis contains the elastic tissues that keep the skin stretchy. UVA rays therefore have the effect of ageing the skin and causing wrinkles. UVB rays are absorbed by the top layer of skin (the epidermis). This causes sun tanning but also burning.

Both UVA and UVB rays increase your risk of developing skin cancer. Getting sunburnt is therefore a warning sign that you are putting yourself at risk.

Melanin is the coloured pigment in our skins. When skin is exposed to sunlight, more melanin is produced to help protect the skin against the UV rays. This makes the skin darker - what people refer to as a suntan. Although melanin stops your skin burning so easily, it does not prevent the harmful effects of UV rays.

Who is at risk from the sun?

Everyone is potentially at risk from excessive sun exposure.

People most at risk are those with fair skin, blue eyes, freckles, and red or ginger hair. People with Caucasian (white) skins have less melanin than those with black skins, so are at more risk of burning. However, anyone *can* get sunburnt, even those with dark skins and higher levels of melanin.

It is not just people who sunbathe who are at risk. Outdoor workers and people simply being outdoors who do not protect their skin are also at risk. This is particularly the case if you live in a country close to the Equator, you live or work at high altitude, or you are outside when the sun's rays are strongest (between 11 am and 3 pm).

What are the possible problems from the sun?

Sunburn

Short-term overexposure to sun can cause burning. The skin becomes red, hot and painful. After a few days the burnt skin may peel. A cool shower or bath will help. Soothing creams such as calamine lotion will help. After sun lotions cool the skin and contain moisturisers (emollients) to counteract skin dryness and tightness. Any plain emollient can be used on unbroken skin to help with comfort. Paracetamol or ibuprofen will help with pain, if you are able to take them. A mild steroid cream may be advised by a pharmacist or doctor to reduce inflammation in the skin.

You should never allow babies or children to develop sunburn. If they do, you should seek medical advice.

Sunburn can also result from exposure to other sources of UV light, such as sunbeds or sunlamps. The treatment is the same.

Heat exhaustion

This occurs when the temperature inside the body (the core temperature) rises to up to 40°C (104°F). A normal temperature is about 37°C (98.6°F).

At these temperatures, you may feel sick and develop headaches, excessive sweating and feel faint. The body is losing water and becoming dehydrated. If untreated, heat exhaustion can progress to heat stroke

which can be serious.

The treatment for heat exhaustion is to move swiftly to a cool place, out of direct sunlight, and to drink plenty of cool fluids. Recovery should happen quickly, usually within 30 minutes, and there are no long-term complications. If you have heat exhaustion, or are looking after someone with heat exhaustion, and improvement is not occurring, it is important to seek urgent medical advice.

Heatstroke/sunstroke

Heatstroke is when the core body temperature rises above 40°C (104°F). It is potentially very serious. The cells in the body begin to break down, important bodily functions cease, internal organs can fail (such as the brain) and, in extreme cases, death can occur.

Symptoms include vomiting, confusion, hyperventilation (fast shallow breathing) and loss of consciousness. **Heatstroke is a medical emergency and you should summon immediate medical help (call 999 for an ambulance).**

Treatment for heatstroke in a hospital involves cooling the body to lower the core temperature, and replacing the fluids lost with an intravenous drip.

Skin damage

Repeated exposure to too much sun over a number of years can cause damage to skin. The effects of sun damage include: premature skin ageing and wrinkling, brown spots, actinic keratoses (benign warty growths on the skin), and skin cancer.

Skin cancer

About 9 in 10 non-melanoma skin cancers, and about 6 in 10 melanoma skin cancers (the most serious form of skin cancer) are thought to be caused by excessive exposure to the sun. In particular, episodes of sunburn greatly increase the risk. Skin cells that are damaged are at greater risk of becoming abnormal and cancerous.

All people of all ages should protect their skin, but it is even more vital to protect children. Although skin cancer is rare in children, the amount of sun exposure during childhood is thought to increase the risk of developing skin cancer in adult life. Therefore, take extra care with children, and keep babies out of the sun completely.

(See separate leaflets called '*Cancer of the Skin - An Overview*', '*Cancer of the Skin - Melanoma*', '*Cancer of the Skin - Non-melanoma*' and '*Cancer of the Skin - Prevention*' for more information.)

How can I protect skin from the sun?

In short: Avoid the sun when it is strong, cover up, and use high-factor sunscreen:

Avoid the sun as much as possible when the sun is strong

In the UK, stay in the shade or indoors as much as possible between 11 am and 3 pm in the summer months (May to September). This applies all year round in hotter countries nearer to the equator. This middle time of the day is when the sun's rays are the strongest. Trees, umbrellas and canopies can all provide good shade.

Cover up

Cover up the body as much as possible when you are out in the sunshine.

- Wear wide-brimmed hats with a brim that goes all around the hat to protect the face and neck. These are the areas most commonly affected by sun damage. Men, in particular, seem most likely to develop skin cancers on their necks, shoulders and backs (women tend to get skin cancers more on their legs and arms). Baseball caps are not as effective as they shade the face but not the neck, lower face and ears (unless you buy one with a cotton neck protector). Young children should wear hats with neck protectors too.
- Wear loose baggy T-shirts (or even better - long-sleeved tops) and baggy shorts. The material should be tightly woven to block out sunlight.
- Wear wrap-around sunglasses (your eyes can get sun damage too). Make sure the sunglasses conform to the European Standard, indicated by the CE mark (or equivalent) and are labelled as providing protection against UV light.

Use high-factor sunscreen liberally

You should apply sunscreen of at least sun protection factor (SPF) 15 (SPF 30 for children or people with pale skin) which also has high UVA protection. SPF gives a guide to how much sun protection is afforded by a particular sunscreen. The higher the SPF, the greater the protection. The SPF label shows the protection against UVB, which leads to sunburn and the damage that can cause skin cancer.

It is also important that your high SPF sunscreen also has a high level of UVA protection. UVA can cause ageing effects of the skin and also, potentially, the damage that can cause skin cancer. Sunscreens with high UVA protection will have a high number of stars (these range from 0 to 5).

Be sure to cover areas which are sometimes missed, such as the lips, ears, around the eyes, neck, scalp (particularly if you are bald or have thinning hair), backs of hands and tops of feet.

You should not think of sunscreen as an alternative to avoiding the sun or covering up. It is used in addition. Sunscreens should not be used to allow you to remain in the sun for longer - use them only to give yourself greater protection. No sunscreen is 100% effective and so it provides less protection than clothes or shade.

Ideally:

- Apply sunscreen 20-30 minutes before going out into the sun (it takes a short time to soak into the skin and to work).
- Re-apply frequently, at least every two hours, and always after swimming, towelling yourself dry or excessive sweating (even those that are labelled waterproof).
- Re-apply to children even more often.

Sunblock is different to sunscreen. Sunblock is opaque and stronger than sunscreen. It is able to block *most* UVA and UVB rays, owing to the ingredients it contains (usually titanium dioxide or zinc oxide). As with sunscreen, you should not consider sunblock as an alternative to other strategies for protecting the skin against the sun's harmful rays.

Some things that you might not realise

- Sunscreens with an SPF of less than 15 do not give much protection. Always use factor 15 or above.
- Sunscreens can go off and not work after a time. Therefore, do not use out-of-date sunscreen (see the use by date on the bottle). Most have a shelf-life of 2-3 years.
- Being kept in the sun can cause deterioration of the active protective ingredients in sunscreen. Be wary of buying bottles of sunscreen that have been kept on a shelf in direct sunlight or outside in hot countries. Try to keep your sunscreen somewhere cool and shaded.
- Some experts think that the increased use of sunscreen lotions and creams may give a false sense of security. This may encourage people to go into the sun more and, as a result, cause an increase in your risk of developing skin cancers. It has to be emphasised that sunscreen only partially protects your skin. Using sunscreen does not mean that you can sunbathe for long periods without harm. If you tan then you have done some damage to your skin.
- Reflected light can damage too. On sunny days, even if you are in the shade, sun can reflect on to your skin. Sand, water, concrete and snow are good reflectors of sunlight.
- Wet clothes let through more UV light than dry clothes. Take spare clothes with you if you expect to get wet.
- You can burn in the water. Even if you are swimming in a pool or snorkelling in the sea, you can still get burnt.
- Clouds may give a false sense of security. Most of the UV radiation from sunshine still comes through thin cloud. Thick cloud provides some protection, but you still need protection when there is thin cloud.
- Many clothes worn in hot weather (such as thin T-shirts) actually allow a lot of sunlight through. You need to wear tightly-woven clothes to protect from the sun's rays. If you can see light through a fabric then damaging UV rays can get through too.
- The sun's rays are more powerful at higher altitudes. It may be cooler up a mountain but you will need more skin protection.
- Fair-skinned people who sunburn easily are at particularly high risk of developing skin cancer and should be most careful about protecting their skin.
- There is no such thing as a healthy tan. A tan is the skin's response to the sun's damaging rays and is therefore an indicator of sun damage.

- Artificial tanning from sun-ray lamps and sunbeds is just as damaging as sunshine - so avoid them. Studies have shown that women under the age of 35 who use sunbeds could actually increase their risk of melanoma by as much as 75%.
- Fake tan from a bottle is safer than a natural tan because no sun exposure is required. Remember that fake tan is not a sunscreen, and, if you plan to go out in the sun, you will need to apply another product. Some fake tans are bronzers that simply stain the skin and can be washed off. Other products contain a chemical that reacts with the skin to give a tanned colour. We don't yet know the long-term effects of these chemicals but, at the moment, we know they are safer than tanning in the sun or under a sunbed.
- It's not the heat that does the damage but the UV radiation in sunlight, which is present all year. You can get a lot of exposure to UV doing winter sports, such as skiing, as it is often done in sunny weather and at high altitudes. In particular, when out in ice and snow which reflects a lot of sunlight, wear a hat, sunscreen, lip balm containing an SPF, and sunglasses.

The Solar UV Index

The Met Office provides information called the Solar UV Index with their weather forecasts. The index is given as a figure in a triangle over the maps they use when giving forecasts. Basically, the higher the index (from 1 to 10), the greater the risk from the sun, and the more care you should take of your skin when outside. See their website (given below) for details.

Sunshine and vitamin D

Vitamin D is vital for good health. Vitamin D is made in the skin with the help of sunlight. Sunlight is actually the main source of vitamin D, as there is very little found in the foods that we eat.

This means that to be healthy you need a certain amount of sun exposure. There is concern that some people may go to the extreme of avoiding the sun altogether and then become deficient in vitamin D. The aim is to enjoy the sun sensibly, so as to make enough vitamin D, whilst not increasing the risk of skin cancer.

It is estimated that, to prevent deficiency of vitamin D, we need 2-3 sun exposures per week in the summer months (April to September). Each exposure should last 20-30 minutes and be to bare arms and face. It needs to occur in direct sunlight and not through a window. It is not the same as suntanning and sunburn should be avoided at all costs. (See separate leaflet called '*Vitamin D Deficiency*' for more information.)

Further help and information

SunSmart

Web: www.cancerresearchuk.org/sunsmart/

Run by Cancer Research UK, the UK's national skin cancer prevention campaign.

Solar UV Index forecast

Web: www.metoffice.gov.uk/weather/uk/uk_forecast_uv.html

The Met Office is the UK's National Weather Service.

Sun awareness sunscreen factsheet

Web: www.bad.org.uk/site/734/default.aspx

From the British Association of Dermatologists.

References

- Fry A, Verne J; Preventing skin cancer. *BMJ*. 2003 Jan 18;326(7381):114-5.
- McStay CM et al; Sunburn, *eMedicine*, May 2010
- Joint Position Statement on Vitamin D, Cancer Research UK in association with British Association of Dermatologists, Diabetes UK, Multiple Sclerosis Society, National Heart Forum, National Osteoporosis Society and Primary Care Dermatology Society, Dec 2010

Disclaimer: This article is for information only and should not be used for the diagnosis or treatment of medical conditions. EMIS has used all reasonable care in compiling the information but make no warranty as to its accuracy. Consult a doctor or other health care professional for diagnosis and treatment of medical conditions. For details see our conditions.

© EMIS 2011 Reviewed: 7 Jan 2011 DocID: 4362 Version: 38
For the planned review period see the Data Creation and Quality Control Process.