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# Melanoma Skin Cancer

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Melanoma (also called malignant melanoma) is the most serious type of skin cancer. It affects young adults as well as older people. It can be caused by too much sun exposure, but sometimes even people who haven't had much sun get melanoma too. The treatment is mainly surgical: the melanoma is cut out. Unfortunately other treatments that are used for other cancers, like chemotherapy and radiotherapy, don't work for melanoma. Some new treatments, such as monoclonal antibodies, are showing promise but at the moment melanoma is very hard to treat once it has spread.

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## How common is melanoma?

Thankfully melanoma is not very common. If you take 100,000 people, between 10 and 20 of them a year will get melanoma. In the UK this equates to about 9,000 cases of melanoma a year; in the USA it is about 65,000 cases a year. The number of cases has about doubled over a period of 20 years or so, possibly because it is being picked up more easily by dermatologists and family doctors.

Half of all melanomas occur in the those aged over 65 years; but melanoma can affect young adults too: even people in their 20s and 30s.

## What causes melanoma?

Melanoma has a number of causes: some of which you can do something about, others which are beyond your control.

### Sun or sunbed damage to skin

In general, sunlight is good for you: it boosts your vitamin D levels and is also good for your emotional well-being. However too much sun, particularly getting sunburnt, is bad for you. In melanoma it is thought that 'intermittent' sun exposure is important: for example, getting a lot of sun just a few times a year; on holiday, for example, but then staying indoors, working in an office perhaps, for the rest of the year. People who are outside most of the time, like gardeners, are not at an increased risk of melanoma.

About 6 out of 10 cases of melanoma are thought to be caused by sun exposure. However, the picture is not that clear: some studies have shown that people in cold countries like Sweden have higher rates of melanoma than warm countries like Greece. On the other hand, sunny countries like Australia and Israel have high rates of melanoma. Some of this might be down to how accurate countries are at recording melanoma.

People most at risk of sunlight skin damage are people with fair skin - in particular, those with skin which always burns and never tans, red or blond hair, green or blue eyes. Melanoma is uncommon in dark-skinned people, as they have more protective melanin in their skin.

Children's skin is most vulnerable to damage. Sun exposure in childhood is the most damaging. People who had a lot of freckling in childhood, or had frequent or severe sunburn in childhood, are most at risk of developing melanoma as adults. (The damage to the skin can occur many years before a cancer actually develops.)

Being fair-skinned, pale and getting sunburnt on holiday are certainly risk factors for getting melanoma.

However, some people get melanoma without having had much sun exposure in their lives. For these people, the melanoma has developed because of a genetic mutation: this is beyond their control and there is nothing that can be done to prevent it.

### Other risk factors

Other factors which increase the risk of developing melanoma include the following:

- A family history. If a close blood relative develops melanoma then your risk is approximately doubled. This increased risk may be due to a shared family lifestyle of frequent sun exposure and/or having fair skin. It may also be due to inherited faulty genes. Around one in ten people with melanoma will have a relative who has also had a melanoma. Further research aims to clarify the role of these and other genes which may be involved. Gene testing for melanoma is not yet possible. As a rule, if you have a family history of melanoma you should take extra care to protect your skin from sun damage. Also, check your skin regularly for early signs of melanoma (see below).
- Using sunbeds or similar tanning machines which emit UV light. Damage caused by sunbeds seems to be worse in people with red hair and freckles and also in young people under the age of 20 years.
- Having a weakened immune system (for example, due to HIV infection, or if you are taking immunosuppressive medicines, perhaps after an organ transplant) increases the chance of getting a melanoma.

## What are the signs of melanoma?

Melanomas generally grow from fresh skin. They are a new mole that grows over a few months. Generally speaking if you've had a mole for years it is very unlikely to change into a melanoma. If a long-standing mole does change though, it's always best to get it checked by a doctor.

Melanomas can grow on skin that is very hard to see yourself: on the back of your shoulder blade, the sole of your foot, or in between your buttocks (what doctors call the 'natal cleft').

The following diagrams show some of the differences between a melanoma and a mole. The diagrams on the left show the features of asymmetry, poorly defined edges, variations in colour and larger size that are typical of a melanoma. These features are different from the moles shown in the pictures on the right side, which are smaller with well-defined edges and consistent colour.

Sadly in reality many melanomas do not look like these textbook images and are often very hard to diagnose without being cut out.



Some melanomas are not dark, some are nice and smooth to the naked eye, and a melanoma has to start somewhere, so at some point will have been small. The size of a mole doesn't really correlate at all to whether it is cancerous.

The take home message is: see a doctor if you develop a lump or patch on the skin, which you are unsure about, or if a mole grows out of fresh skin and you are worried about it.

A melanoma can develop on any area of skin. The most common place for a melanoma to develop in a woman is on the legs; whereas for men it is on the chest or back. Rarely, a melanoma can develop in the iris or back of the eye: this might be noticed by an optician at a routine eye check, but will not cause any problems with your vision.

If some cells break off and spread (metastasise) to other parts of the body, various other symptoms can develop. A common early symptom of spread is for the nearby **lymph glands** (nodes) to swell.

The situation is complicated further by the fact that some melanomas can spread to the lymph nodes and then fade and disappear from the skin (what doctors call 'regression').

This is all in direct contrast to skin cancer that isn't melanoma: squamous cell carcinoma and basal cell carcinomas. For these, they are easier to diagnose and have a typical appearance that will be familiar to most family doctors. The role of sun exposure is also much more straightforward for basal cell carcinomas. [You can read more about these more common skin cancers in the separate leaflet called Non-melanoma Skin Cancer.](#)

## How is a melanoma diagnosed?

Diagnosing melanoma with the naked eye is very hard and there are no particularly accurate ways to do it. Two scoring systems have been developed which can help guide patients and doctors as to whether a mole needs to be seen by a specialist:

- The ABCDE rule:
  - Asymmetry of a mole (not being a circle, or an oval).
  - Border irregularity (instead of having a smooth outline).
  - Colour being uneven (instead of one colour all over).
  - Diameter more than 6 mm.
  - E stands for evolving (a mole that is changing or getting bigger) or expert: see an expert if you're worried.
- The 7-point check list:
  - The three major features of change in size; an irregular border; or an irregular colour.
  - And the four minor features of a size more than 7 mm; inflammation of a mole (where it gets red); oozing or crusting; and a change in sensation or itch.

However, some melanomas scores very low on these checklists and so you might be falsely reassured; on the other hand some completely harmless moles or bumps score very highly and don't need cutting out.

Most skin specialists, and some family doctors, use a handheld microscope called a dermatoscope to help diagnose melanoma. By looking closely at a mole through the dermatoscope a doctor can quite confidently 'rule out' melanoma and tell you the mole is harmless. If the dermatoscope shows a suspicious mole then most specialists will advise to have it cut out (excised).

If a melanoma is suspected then your doctor is likely to advise an excisional biopsy (where the mole and some surrounding skin will be cut out, with the skin numbed so it doesn't hurt).

Some family doctors (GPs) have the skills to do this, but in the UK generally a family doctor will refer you to a skin specialist (a dermatologist) or a plastic surgeon (who is an expert at cutting out skin problems).

In this procedure, the entire abnormal area of skin is removed by a minor operation. (Local anaesthetic is injected into the skin to make this painless.) This tissue is looked at under the microscope. This is to:

- Confirm the diagnosis - abnormal melanoma cells can be seen.
- Assess the melanoma's thickness (how deep it has spread into the skin). The thickness of the melanoma helps to guide treatment and the need for further assessment.

Some pharmacists and supermarkets offer you a 'skin check' using cameras to see if you have skin cancer. These are not accurate and may do more harm than good, by suggesting to you that you have skin cancer when you don't. They are best avoided. Instead, if you are worried about a mole, see your doctor.

## Initial treatment and assessment of melanoma

### The excisional biopsy may be curative

When doing an excisional biopsy (described above) the doctor will remove a margin of normal skin around the melanoma. When the biopsy is looked at under the microscope, if the doctor is sure that all the melanoma cells have been removed and the melanoma cells are confined to the top layer of skin, no further treatment may be needed. Otherwise, a second operation called a wide local excision is usually advised.

### Wide local excision may be needed

This aims to remove an area of normal skin around where the melanoma had been (before it was removed with excisional biopsy). This aims to make sure that any cells which may have grown in the local area of skin have been removed. The amount of normal-looking skin removed varies - depending on the thickness of the melanoma (how deep it has spread into the skin) as reported from the biopsy. It may be 1-2 cm around where the melanoma had been. This operation may be done under local or general anaesthetic. In some cases a skin graft may be needed to cover the wound.

### Staging of melanoma

The aim of staging is to find out how much a cancer has grown and spread. Finding out the stage of the cancer helps doctors to advise on the best treatment options. It also gives a reasonable indication of outlook (prognosis). [See the separate leaflet called Cancer for more details.](#)

Most cases of melanoma are diagnosed at stage 1 when there is a very good chance that simply cutting out the melanoma fully will cure the condition. Other stages (2-4) are diagnosed if the tumour has spread. The stage diagnosed depends on how much and how far the original tumour has spread to other parts of the body.

### How is melanoma assessed and staged?

If the initial biopsy and the tissue taken from the wide local excision show that the melanoma is just in the top layer of skin and is less than 0.76 mm thick then no further tests are usually needed. It is highly unlikely that it will have spread. This is an early stage 1 melanoma.

A doctor will examine you to see if you have any swollen lymph glands (nodes) near to the melanoma. If you have, the melanoma may have spread to these local lymph nodes.

It is possible that there may be some early spread without causing symptoms if the melanoma is thicker than 0.76 mm on the initial biopsy. In particular, there may be spread of some cells to the nearest lymph node without it yet causing it to swell. Therefore, a test called sentinel lymph node biopsy, and sometimes other tests, may be advised.

### Sentinel lymph node biopsy

This is a procedure in which the lymph node nearest to the melanoma is removed. For example, if you have melanoma on your leg, the surgeon will take out a lymph node up in your groin. The idea is to see if the melanoma has spread up to the lymph nodes; this can give an idea of the prognosis. Removing the lymph node doesn't make the survival rates any better unfortunately.

### Further tests

Cancer specialists (oncologists) will organise detailed scans if you have been diagnosed with melanoma. These scans can see if the melanoma has spread elsewhere in your body.

## What is the treatment for melanoma?

Cutting out the melanoma may be all that is needed if it hasn't spread yet. This is very good news and all that is required afterwards is for a skin specialist to keep a close eye on you in the future.

If the melanoma has spread to the lymph nodes or to other organs inside the body (like the liver) then things are more complicated.

Traditional treatments for cancer, like **radiotherapy** and **chemotherapy**, don't work for melanoma. Until about 2011 there were no effective treatments for melanoma if it had spread: it was fatal. However, since then some new treatments have been developed which aim to block the genetic mutations that cause the melanoma to grow. These treatments are called 'biologics' or 'monoclonal antibodies'. They are emerging treatments for melanoma but so far have shown some improvement in survival of melanoma, although they can't make the melanoma go away. You can read more about these treatments in the articles in Further reading, below.

## What is the outlook?

The outlook (prognosis) for people with malignant melanomas has been improving over a period of 25 years and people with melanomas now have amongst the best outlook for any cancer. Around three quarters of people who have a melanoma removed will have no further problems.

The outlook depends on the stage. Most cases of stage 1 melanoma are cured with a minor surgical operation to remove the tumour (described above). For people with deeper melanomas then there is still a chance of cure. People with advanced melanoma that has spread to other parts of the body are not likely to be cured. However, treatment can often slow down the progression of the cancer.

The treatment of cancer is a developing area of medicine. New treatments continue to be developed and the information on outlook above is very general. The specialist who knows your case can give more accurate information about your particular outlook and how well your type and stage of cancer are likely to respond to treatment.

## Can melanoma be prevented?

No one can prevent melanoma entirely: sometimes it happens because of a genetic mutation, which is beyond your control. However, some melanomas are related to sunlight and here are some tips to help prevent it:

- You should never use tanning beds or artificial tanning machines: they expose your skin to very strong UV light and have been linked to skin cancer.
- Staying indoors or in the shade as much as possible between 11 am and 3 pm.
- Try not to get sunburnt at all.
- Covering up with clothes and a wide-brimmed hat when out in the sunshine.
- Applying sunscreen with a sun protection factor (SPF) of 15 (SPF 30 for children or people with pale skin) which also has high ultraviolet A (UVA) protection.

These tips are particularly relevant to children and teenagers - particularly teenagers who might be tempted to use sun tanning booths: don't do it.

However, avoiding all sunlight is generally not a good idea and, even if you have a family history of melanoma, probably won't reduce your risk to zero.

You can read more about preventing skin cancer in the separate leaflet called [Preventing Skin Cancer](#).

## Further reading & references

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