

Patient information from the BMJ Group

Skin cancer (melanoma)

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Skin cancer (melanoma)

Melanoma is a type of skin cancer that usually starts as a dark spot or mole on your skin. It is the most serious type of skin cancer and can spread to other parts of your body. But, if you find melanoma early, treatment works well and can lead to a cure.

We've brought together the best research about malignant melanoma and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is melanoma?



More people may be getting melanomas because we're spending more time in the sun.

Melanoma is a type of skin cancer that usually starts as a dark spot or mole on your skin. It is the most serious type of skin cancer and can spread to other parts of your body. But if you find melanoma early, treatment works well and can lead to a cure.

Skin cancer (melanoma)

Your doctor may call this type of skin cancer malignant melanoma, but it is often simply called melanoma.

Key points for people with melanoma

- Melanoma is the most serious type of skin cancer.
- The number of people being diagnosed with melanomas seems to be increasing. ^[1]
- You may be able to prevent melanomas by protecting yourself from the sun.
- You're more likely to get a melanoma if someone else in your family has had one, if you have fair skin, or if you have more than 50 moles. ^[2]
- If you have a melanoma you will need surgery to remove it.
- If it's found early, melanoma can be cured.
- But if your melanoma has already spread to other parts of your body, treatment probably won't cure you.

Your skin

Your skin has special cells called melanocytes. These are found near the skin's surface. Melanocytes protect your skin from sun damage. When you get a melanoma it starts in these cells.

Here's how melanocytes protect your skin from the sun. ^[3]

- Melanocytes contain a chemical called melanin.
- Melanin is a dark pigment that protects your skin from sunlight.
- When the skin is exposed to a lot of sunshine, the melanocytes make more melanin and send it towards the surface of your skin. This is how you get a tan.
- Even though everyone has the same number of melanocytes, people from Africa and Asia have darker skin because their melanocytes work harder and make more melanin.

What are moles?

Most moles are perfectly normal. Many people are born with them. Moles usually look like small, round, dark spots. They may be slightly raised. But if their shape or colour changes, it may be a sign that you have skin cancer.

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To learn what to look out for, see [What are the symptoms of melanoma?](#)

What happens in skin cancer?

A melanoma is a kind of skin cancer. Cancers are diseases that start in your own cells. Sometimes cells grow and divide in an abnormal way, making too many other cells. These abnormal cells stick together. This makes a lump that's called a tumour. If the tumour is cancer, the cancer cells can spread to other parts of your body.

Not all tumours are cancer. Some are called benign tumours, which means that they won't kill you and they won't spread to other parts of your body. ^[4]

Melanomas

When you get a melanoma, the skin cells called melanocytes change to become cancer. Melanocytes make the dark pigment called melanin. So, when they grow out of control and become melanomas, they look like a dark spot or mole on your skin.

Finding melanomas early is important because of how they grow and spread.



Melanomas usually have uneven edges and aren't round.

- At first, most malignant melanomas look like moles that have become bigger. When they grow this way, they are still near the surface of your skin.
- If you get the melanoma treated at this stage there's a good chance that you can be cured.
- After a while the cancer begins to grow downwards, deeper into your skin.
- When the cancer cells grow into the lower layers of your skin they can get into your blood vessels or your **lymphatic system**. The lymphatic system is a network of vessels that is similar to your blood system, but it carries **lymph fluid** instead of blood. The vessels of the lymphatic system pass through **lymph nodes**. Lymph nodes filter the fluid that travels through them.
- Cancer cells can get trapped in your lymph nodes and start growing there, or they can travel on to other parts of your body. Cancer cells can also travel through your blood vessels.

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- If the cancer cells get into your blood or lymphatic system the melanoma can spread to other parts of your body. When cancer spreads in this way it is called **metastasis**.^[5]
- When melanoma cells spread into your body from your skin, they tend to go to the nearest lymph nodes and then to the lungs.^[4] You have lymph nodes throughout your body. For example, in your groin, in your neck and under your arms.

Different types of melanoma

Melanomas usually grow in the skin, but sometimes they're found in the eye or other parts of the body, such as the stomach.^[4] However, it's rare for melanomas to grow in these other places.

What causes it?

We're not sure what causes melanomas. Doctors think that rays from the sun called ultraviolet or UV rays may trigger changes in skin cells known as melanocytes. These changes may make the cells grow in an abnormal way and cause a melanoma.^[6] But we don't know why this happens to some melanocytes and not to others.

There are also other kinds of skin cancer. To learn more, see [Types of skin cancer](#) .

Melanoma: why me?

Some people are more likely than others to get a melanoma. Doctors call things that make you more likely to get a disease **risk factors**. If you have a risk factor for a disease, it doesn't mean that you will definitely get the disease. It just means that you may be more likely to get it.

The main risk factors for melanoma are having:^[1] ^[11]

- Lots of moles on your body (more than 50 moles is a lot)
- Moles with jagged edges or different colours in them
- A previous melanoma
- Relatives who have had melanomas
- Bad sunburn when you were growing up
- Fair skin
- Freckles
- Blonde or red hair

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- Blue or green eyes
- A job where you are exposed to chemicals such as coal tar and arsenic
- A weak immune system (for example, if you have HIV or AIDS).

You will also increase your risk by using a sunbed too often.

How melanomas are classified

Melanomas are classified using the TNM system. Your doctor will look at how thick your melanoma is and whether the cancer has spread to other parts of your body.^[12] Looking at your cancer in this way helps your doctor decide which treatments are best for you.

In the TNM system:

- **T** is for **tumour**
- **N** is for lymph **nodes**
- **M** is for **metastasis**. (Metastasis is when the cancer spreads to other parts of your body, such as your liver or lungs.)

Each of these categories is also given a number.

- For T: The number tells you how thick the melanoma is.
- For N: The number tells you how many lymph nodes have melanoma cells in them.
- For M: The number tells you whether the melanoma has spread beyond your skin to other parts of your body.

In general, lower numbers mean your melanoma is less serious.

The table below spells out what the different combinations of letters and numbers actually mean about your cancer.^[13] (The thickness of a melanoma is measured in millimetres. 1 millimetre is about 1/25 of an inch.)

TNM		What it means
T (tumour)	T0	There is no evidence of a tumour.
	Tis	Your melanoma has some of the changes that make it cancer, but it is not yet the kind that spreads into other tissues. This is also called melanoma in situ.
	T1	Your melanoma is 1 millimetre or less in thickness.

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	T2	Your melanoma is between 1 and 2 millimetres thick.
	T3	Your melanoma is between 2 and 4 millimetres thick.
	T4	Your melanoma is more than 4 millimetres thick.
N (lymph nodes)	N0	Your melanoma has not spread to the lymph nodes nearest to it.
	N1	Your melanoma has spread to one lymph node nearby.
	N2	Your melanoma has spread to two or three lymph nodes nearby.
	N3	Your melanoma has spread to four or more lymph nodes nearby.
M (metastasis)	M0	Your melanoma has not spread to another part of your body.
	M1	Your melanoma has spread to another part of your body. (This may mean it has spread to lymph nodes in another part of your body or to another organ, such as your liver.)

If your melanoma is classified as T1N0M0, this means that it's less than 1 millimetre thick. It has not spread to the lymph nodes nearest to it, and it has not spread anywhere else in your body.

Staging your cancer

Once your melanoma has been classified using the TNM system, your doctor can decide how serious your cancer is. This is called staging your cancer. Again, lower numbers usually mean your cancer is less serious.

The table below shows how cancers are staged using the information from the TNM system.

TNM	Cancer stage
Tis, N0, M0	0
T1, N0, M0	1
T2, N0, M0*	
T2, N0, M0*	2
T3, N0, M0	
T4, N0, M0	
Any T, N1, M0	
Any T, N2, M0	3
Any T, N3, M0	
Any T, Any N, M1	
	4

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* If your melanoma is between 1 and 2 millimetres thick (T2) and hasn't spread, then it may be stage 1 or 2. Which category it falls into depends on how it looks under a microscope.

What are the symptoms of melanoma?

The two main symptoms of melanoma are changes in moles that you already have and new moles on your skin.

See your doctor as soon as you can if a mole: ^[4]

- Changes shape or size
- Changes colour
- Feels different (rougher or scaly than before)
- Hurts or itches
- Oozes fluid or pus
- Crusts over
- Bleeds
- Becomes red or inflamed.

If you're a woman you're most likely to get a melanoma on your legs. If you're a man you're most likely to get a melanoma on your chest or back. ^[14] But these are just the most common places that melanomas appear. When you check your skin you should examine your whole body.

If you are at all worried about a mole, see your doctor as soon as you can.



Melanomas usually have uneven edges and aren't round.

How to check your skin

You should check the moles on your body regularly to see if they have changed.

When you're checking your moles: ^[10]

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- Make sure the light in the room is good
- Check every part of your body. Try to use a system. For example, you might check the left side of your body first and then the right. And then check your back
- Ask a friend or relative to check your back and other parts of your body that are hard-to-see
- Use a comb or hairdryer to check your scalp. You may need a friend to help you with this
- Don't forget to check your buttocks and genitals
- Use a full-length mirror and a hand-held mirror if you can't find someone to help you check the hard-to-see parts of your body.

How do doctors diagnose melanoma?

If you're worried about a mole or mark on your skin, you should see your doctor about it.

Your doctor will look at the shape, colour, thickness and size of any moles on your skin. If your doctor thinks it may be a melanoma he or she will refer you to a hospital specialist (usually a dermatologist).

You should be able to see a specialist within two weeks of your doctor asking for an appointment for you. ^[22]

Checking the mole for cancer

If a specialist thinks that your mole or mark might be a melanoma you'll need to have an operation to remove some or all of the mole. (Your doctor may call this a **biopsy**.)

You'll probably be awake while the operation is done. You'll be given an injection to numb the area around the mole so you won't feel any pain.

During this operation your specialist may:

- Remove part of the mole and send it to the laboratory to check for cancer
- Remove all of the mole and some of the tissue around it and send it to the laboratory to check for cancer.

If the mole is very big or on your face, your specialist probably won't cut all of it out until you know for sure whether it is a melanoma. This is to avoid scarring your skin. To find out more, see [Surgery to remove melanomas](#) .

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You will have to go back to your doctor to find out the results of your laboratory tests. This may be your doctor or the specialist at the hospital where you had your biopsy. Your doctor will tell you one of three things: ^[23]

- Your mole didn't contain any cancer cells. It wasn't a melanoma.
- Your mole had some cancer cells in it, but they were all removed during your biopsy. You won't need to have any more surgery. (When a laboratory technician checks a mole, he or she looks at how much healthy tissue there is around the melanoma. Healthy tissue contains no cancer cells. If enough healthy tissue is removed it means that all the cancer cells have been removed.)
- Your mole had some cancer cells in it . You will need to have surgery to remove all the cancer. You will also have some more tests to see if your cancer has spread. See the sections below for what happens next.

Your doctor may talk about the stage of your melanoma. All cancers are classified according to how serious they are. This helps doctors decide what treatment is needed. Melanomas are classified according to how thick they are and whether they have spread. To find out more, see [How melanomas are classified](#) .

Checking the lymph nodes

If cancer cells may have spread from your melanoma your doctor will probably check your lymph nodes for signs of cancer. ^[23]

Lymph nodes are part of the **lymphatic system**, a network of vessels that is similar to your blood system. But instead of blood, your lymphatic system carries **lymph fluid** . The vessels of the lymphatic system pass through **lymph nodes** . Lymph nodes are small, round or oval-shaped lumps that you can't usually see or feel very easily. They are found in various parts of the body, such as the neck, groin, and armpit. Cancer cells can get trapped in your lymph nodes and start growing there, or they can travel to other parts of your body.

Your doctor may feel the lymph nodes nearest to your melanoma to see if they are swollen. If they do not seem normal your doctor may advise you to have surgery to remove them. They will be sent to the laboratory and checked for cancer.

If your lymph nodes seem normal your doctor may not want to remove them straight away. Instead you'll probably be offered a test called a **sentinel node biopsy** . This test is used to find the first lymph node that your melanoma would drain into. This node (called the **sentinel node**) is then removed and tested for cancer cells. If there are no cancer cells in this node then it's very unlikely that there will be cancer cells further away.

This is what happens when you have a sentinel node biopsy.

- Your doctor injects a chemical around the melanoma.

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- When the chemical reaches the lymph nodes it makes them glow in pictures taken by special cameras.
- The first lymph node the chemical reaches glows the most.
- This is the sentinel node, or the node nearest your melanoma.
- The sentinel node is removed and checked for cancer.
- If the cancer has spread here, other lymph nodes nearby will be taken out during the same operation.
- If there's no cancer in the sentinel node, you won't need any more surgery.

Sentinel node biopsy is still a fairly new way of checking lymph nodes. It lets the surgeon check if there is cancer in the area first, so nodes aren't removed unnecessarily.

Taking out the lymph nodes can cause certain side effects, such as infection and swelling. To learn more, see [Side effects after surgery to remove your lymph nodes](#) .

The results of a sentinel node biopsy can very occasionally be wrong. The test may very occasionally show that your lymph nodes are clear when in fact there are cancer cells in them. ^[24] ^[25] One study found that this is happening less and less often, because doctors are getting more experienced at doing sentinel node biopsies. ^[26] In centres where surgeons do a lot of sentinel node biopsies, the test is very accurate. ^[27]

One thing that doctors still don't know is whether having a sentinel node biopsy is as safe as having traditional surgery to remove your lymph nodes. During traditional surgery doctors remove all the lymph nodes in the area where you had cancer. Studies are being carried out to check if cancer is more likely to spread in people who have a sentinel node biopsy than in those who have traditional surgery to remove the lymph nodes. ^[26] ^[28]

Checking the rest of your body

If your doctor finds cancer cells in your lymph nodes, you may need some more tests to see whether the cancer has spread to other parts of your body. (When cancer spreads, doctors say it has metastasised.)

Your doctor may: ^[23]

- Feel your abdomen
- Do a **CT scan** or **x-ray**
- Do some blood tests

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- Check the level of certain chemicals in your blood. Levels of some chemicals may go up if the cancer has spread.

How common is melanoma?

Melanoma occurs in several thousand people a year in the UK.

More and more people are being diagnosed with melanoma, but we're not sure why. ^[14]

- Every year close to 13,000 people in the UK are diagnosed with a melanoma.
- Around 2,000 people die of it each year.
- Melanoma affects slightly more women than men.

The number of people being diagnosed with melanomas is rising faster than the number of people with most other types of cancer. ^{[1] [15]} This may be because more people know what to look for and are finding melanomas they would have missed 10 years ago. ^[16]

But it's probably also true that more people are getting melanomas. There are different ideas about why this may be happening. It may be because:

- People are living longer and getting melanomas when they are older ^[1]
- Holes in the ozone layer are letting more damaging sun rays through the atmosphere ^[3]
- People are spending more time out in the sun. ^[6]

The good news is that the number of people dying of melanoma is not going up as fast as the number of people being diagnosed. This may be because we're finding melanomas earlier, when there's a good chance that they can be cured. ^[6] But it's also possible that some of the new melanomas we're finding are a kind that would never have spread anyway. ^[16]

What treatments work for melanomas?

Melanoma is a type of skin cancer that usually starts as a dark spot or mole on your skin. It is the most serious type of skin cancer and can spread to other parts of your body. If you find melanoma early, treatment works well and can lead to a cure.

Your doctor may call your skin cancer malignant melanoma, but it's often called melanoma for short.

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Key points about treating melanoma

- If you have a melanoma you'll need surgery to have it removed. Your surgeon will also take away normal-looking skin from around the melanoma.
- If your melanoma is thin (2 millimetres thick or less), then surgery that removes a small amount of normal-looking skin from around the melanoma works just as well as surgery that removes a lot of skin.
- If your doctor thinks your cancer has spread to your **lymph nodes**, you may need to have some taken out when you have surgery.
- If your melanoma is thick and your doctor thinks it might spread, you may need some other treatments after surgery.
- You may be offered high doses of a drug called interferon alfa-2b after surgery. But this drug is not widely available and has many side effects.
- You may also be offered injections of a vaccine after surgery to help kill cancer cells. Vaccines may not work as well as high doses of interferon alfa-2b. They are still experimental.
- If your melanoma has spread to other parts of your body, it is unlikely that treatment will cure you. Your doctor may advise you to have more surgery to help you feel more comfortable. To find out about this, see [Surgery for melanomas that have spread to other organs](#).
- Taking care in the sun by wearing sunscreen and covering up may help to prevent melanomas.

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works. We've divided this information into two parts.

- [Treatments for melanomas](#)
- [Treatments to prevent melanomas](#)

For help in deciding which treatment is best for you, see [How to use research to support your treatment decisions](#).

Treatment Group 1

Treatments for melanomas

Usual treatments

- [Surgery to remove melanomas](#) : If you have a melanoma, you'll need surgery to remove it. [More...](#)

Treatments that are unlikely to work

- [Low doses of interferon alfa-2b after surgery](#) : You may be offered this drug if doctors think your melanoma could spread. [More...](#)

Treatments that need further study

- [High doses of interferon alfa-2b after surgery](#) : You may be offered this drug if doctors think your melanoma could spread. [More...](#)
- [Vaccines after surgery](#) : These are injections to help your immune system recognise and kill melanoma cells. [More...](#)

Other treatments

We haven't looked at the research on this treatment in as much detail as we've looked at the research on most of the treatments we cover. (To read more, see Our method.) But we've included some information because you may have heard of it or be interested in it.

- [Surgery for melanomas that have spread to other organs](#) : Doctors will recommend this type of surgery only if they are sure it will help you. [More...](#)

Treatment Group 2

Treatments to prevent melanomas

- [Sunscreen](#) : These are lotions, creams, gels or sprays that protect your skin from sunlight. [More...](#)

What will happen to me?

If you've been told that you have melanoma it's normal to want to know what will happen to you. We can give you a general idea of what has happened to people with melanoma. But it's important to remember that everyone is different, and there's no way of knowing exactly what will happen.

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If you don't want to look at statistics about what tends to happen to people with melanomas then skip this section. If you do look at these numbers, bear in mind that you are not a statistic. Everyone responds to cancer treatment in a different way.

Overall, people who find their melanoma early and get treatment do well. If you are like most people and your melanoma is found before it has spread, there is a good chance that you will be cured. More than 9 in 10 people with a melanoma that is found early are still alive after five years.^[17] Most studies follow people who have had treatment for a melanoma for five years. If you have been clear of cancer for that length of time, doctors tend to say you are cured.

Some things seem to be important for how long people with a melanoma live:^[18]

- How thick the melanoma is
- Whether it has spread to the **lymph nodes** nearby
- How it looks under a microscope.

If you find your melanoma before it is too thick, your chances are very good. Nearly 19 in 20 people who have a stage 1 melanoma are alive at least five years after being diagnosed. Stage 1 is the least serious type of melanoma. (If you want to know more about the stages of melanomas, see [How melanomas are classified](#) .)

If your melanoma hasn't spread to your lymph nodes or to other parts of your body, there are two other things that determine what may happen to you.

- Your sex. Women with a melanoma seem to do better than men.^[18]
- Where the melanoma is on your body. People whose melanoma is on their trunk (between their neck and their waist) seem to do less well than people whose melanoma is on their arms or legs.^[19] Also, people whose melanoma is on their scalp or neck seem to do less well than people whose melanoma is somewhere else.^[20]

If you want to find out how long people who have had a melanoma live, see [Survival statistics for melanomas](#) . But please bear in mind when you look at this page that statistics cannot tell you what will happen to you as an individual. Everyone is different.

Will my melanoma come back after surgery?

After your melanoma is removed, you may wonder whether it will come back. There are three places a melanoma can come back:^[21]

- Close to the same spot on your skin
- In the lymph nodes nearby or other parts of your body nearby

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- In an organ somewhere else in your body, such as your lungs or brain.

No one can say for certain whether your melanoma will come back. But, in general, the smaller and thinner your melanoma is when you have surgery, the less likely it is to come back. ^[18]

But if you've had a melanoma, you're more likely than other people to get a new melanoma somewhere else on your skin. ^[2]

There are things you can do to find a melanoma early.

- Check your skin for moles that have changed. (To find out more, see [What are the symptoms of melanoma?](#))
- See your doctor regularly for check-ups.
- Watch out for lumps in the area near where the melanoma was removed (these could be swollen lymph nodes).
- Talk to your doctor as soon as you can if you notice anything unusual, such as a cough or headache that doesn't go away.

Questions to ask your doctor

If you're worried that one of your moles may be skin cancer you should see your doctor as soon as you can.

Here are some questions you might want to ask:

- Could my mole be a melanoma?
- Will I have surgery to remove part of the mole to check whether it is cancer or will I need to have all of it removed?
- What stage is my melanoma? (How advanced is my cancer?)
- What treatment do you recommend?
- What are the risks of treatment?
- Are people in my family at risk of getting a melanoma?
- What can I do to protect myself from another melanoma?
- What do you think is likely to happen to me?

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And here are some questions your doctor may ask you:

- Has anyone in your family ever had a melanoma?
- Have you ever had any type of skin cancer?
- Did you have bad sunburn when you were a child?
- Have any of your moles changed their colour, shape, size or texture?

Survival statistics for melanomas

These survival statistics come from a database of nearly 60,000 people with melanoma.

^[29] They show the percentages (numbers out of 100) of people who live for five or more years after being diagnosed with each stage of melanoma. However, the actual percentages of people surviving their cancer may be even higher, as some people who died within five years might not have died of their melanoma. For example, they might have died of heart failure or another problem.

Please remember that these numbers can give you a general idea of what happens to people with melanoma, but they can't tell you what will happen to you specifically.

How well you will do may also depend on what your melanoma looks like. If the skin on your melanoma is open and sore and doesn't heal (this is called an ulcer), you may not do as well as people without these symptoms.

Stage	What it means	Percentage of people who live for at least five years
1A*	Your melanoma is less than 1 millimetre thick	97%
1B*	Your melanoma is less than 1 millimetre thick and is sore and/or its cells are dividing quickly. Or, your melanoma is 1 to 2 millimetres thick	92%
2A*	Your melanoma is 1 to 2 millimetres thick and sore, or 2 to 4 millimetres thick and not sore	81%
2B*	Your melanoma is 2 to 4 millimetres thick and sore, or more than 4 millimetres thick and not sore	70%
2C*	Your melanoma is more than 4 millimetres thick and sore	53%
3A-C	Your melanoma is any thickness and has spread to the lymph nodes nearby	40% to 78%
4	Your melanoma has spread to other parts of your body (metastasised)	15% to 20%

* Stage 1 and 2 melanomas haven't spread to lymph nodes nearby.

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The thickness of a melanoma is measured in millimetres. A millimetre is about 1/25 of an inch.

Treatments:

Surgery to remove melanomas

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work](#)

[Can it be harmful](#)

This information is for people who have a melanoma. It tells you about surgery, a treatment used for melanoma. It is based on the best and most up-to-date research.

Does it work?

Yes. If you have a melanoma you will need surgery to remove it. This has been the standard treatment for many years. It helps stop the cancer spreading and increases your chance of being cured.

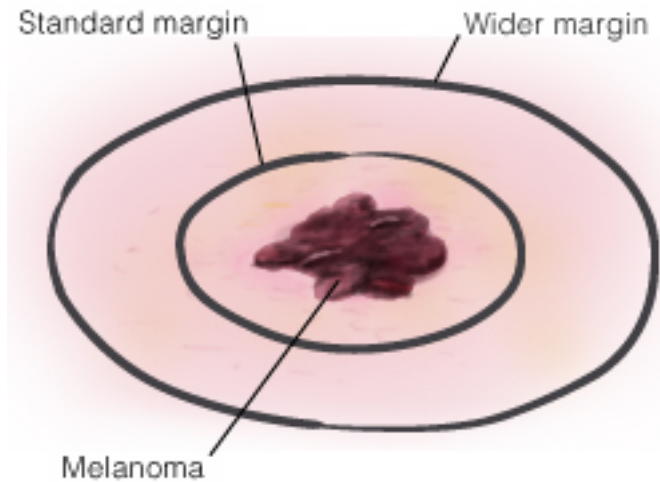
What is it?

Surgery involves removing the melanoma along with some of the healthy skin around it.

- You'll probably be awake during the surgery. You'll have a **local anaesthetic** that will numb the area around the melanoma so you won't feel anything.
- Your surgeon will then cut out the melanoma and some of the normal-looking skin around it. Taking out the skin from around the melanoma is called **taking a margin**. Your surgeon does this to make sure that all the cancer cells are gone. This means there is less chance that the melanoma will come back. ^[33]

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How much normal-looking skin should be taken out?



The surgeon cuts out the melanoma along with some of the normal-looking skin around it.

The amount of skin that's taken away usually depends on how thick the melanoma is.

Guidelines in the UK say that: ^[34]

- For melanomas that are less than 2 millimetres thick, doctors should remove between 0.2 centimetres and 2 centimetres from around the melanoma. Doctors might call this a **narrow margin**.
- For melanomas that are more than 2 millimetres thick, doctors should remove between 2 centimetres and 3 centimetres from around the melanoma. Doctors might call this a **wide margin**.

It takes about two weeks after surgery for most people's wounds to heal over and close.

Stitches are left in for different lengths of time in different parts of your body.

- If you have stitches on your face (especially around your eyes) they may be taken out after five to seven days.
- If the stitches are on your upper back (where the skin is tight) or lower leg (where wounds take longer to heal) the stitches may be left in place for two weeks or more.

Mohs micrographic surgery

Your doctor may suggest that you have a special type of surgery called Mohs micrographic surgery.

- This operation removes less skin than the usual type of surgery but it takes longer.

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- After the main part of the melanoma has been removed the surgeon takes out a very thin layer of skin from around it.
- The surgeon then uses a microscope to check whether there are cancer cells in the tissue.
- If there are cancer cells the surgeon takes out another very thin layer of skin and looks at it under the microscope.
- When the surgeon finds only normal cells, the operation stops.
- The idea is that using the microscope helps your doctor get rid of all of the cancer cells while taking out as little normal skin as possible.

This type of surgery is already used for other types of skin cancer (called basal cell cancer and [squamous cell cancer](#)), but we don't know whether it works as well as the usual surgery for melanomas.^[33] You may be offered this type of surgery if you have a slow-growing type of melanoma (called **lentigo maligna**) or if the melanoma is on your head or neck.^[35]

Surgery to remove lymph nodes

If there is a chance that cancer cells have spread from your melanoma your doctor will usually check your **lymph nodes** for signs of cancer.^[23]

Your lymphatic system is a network of tiny vessels in your body. It is part of your **immune system**. Just as blood vessels carry blood, lymph vessels carry **lymph**. Lymph circulates through your body in **lymph vessels** and passes through lymph nodes. Lymph nodes are small, round, or oval-shaped lumps that you can't usually see or feel very easily. They are found in various parts of your body, such as your neck, groin, and armpit. Cancer cells can get trapped in your lymph nodes and start growing, or they can travel to other parts of your body.

Your doctor may feel the lymph nodes nearest to your melanoma to see if they are swollen. If they do not seem normal, your doctor may advise you to have surgery to remove them. They will be sent to a laboratory and checked for cancer.

If your lymph nodes seem normal your doctor may not want to remove them straight away. Research shows that people whose lymph nodes seem normal do not benefit from having them removed.^[36] Also, having your lymph nodes removed can be a big operation, so doctors do not want to do it unless they have to. Instead you might be offered a test called a **sentinel node biopsy**. This test is used to find the first lymph node that your melanoma would drain into. This node (called the **sentinel node**) is then removed and tested for cancer cells. If there are no cancer cells in this node, then it's very unlikely that there will be cancer cells further away. To find out more, see [How do doctors diagnose melanoma?](#)

Skin cancer (melanoma)

Check-ups after surgery

It's important to have check-ups after your operation so that your doctor can keep a close eye on your skin. But there isn't enough good research about how often patients who have had surgery for a melanoma need to see their doctor. And doctors are also unsure which tests you should have at your check-up.

- Some people think it's a good idea to see your doctor often (every two or three months) after you've had surgery, so that if cancer comes back or you get another melanoma it gets picked up early.
- But there's no evidence that a melanoma that has come back will be picked up sooner if you see your doctor for check-ups more often. ^[21]
- Seeing your doctor more often after you have surgery may make you more worried than you would be if you didn't see your doctor as often.
- There is some evidence that people who had a thin melanoma (less than 0.75 millimetres thick) should be seen for many years after their surgery. This is because this type of melanoma is most likely to come back five to 10 years after surgery. ^[37]

How can it help?

Surgery for melanoma aims to get rid of your cancer and improve your chance of being cured. There doesn't tend to be any research that compares people who've had this operation with people who haven't. That's because doctors have known for a long time that this operation helps.

Studies have looked at how much skin should be removed with the melanoma. From the research we know that if your melanoma is thin (less than 2 millimetres thick) then having a lot of skin removed (3 to 5 centimeters) doesn't mean your cancer will be less likely to come back. ^[38] ^[39] ^[40] Also, it may take you longer to recover from surgery that takes away more skin. And you'll have a bigger scar and may need a skin graft. If your melanoma is thicker than 2 millimetres you may need to have more tissue removed from around it. But there isn't enough good research to say how much skin should be removed. ^[41]

One study looked at people with melanomas more than 2 millimetres thick. It showed that removing 1 centimetre of tissue wasn't as good as removing 3 centimetres. ^[42] The melanoma was more likely to come back if 1 centimetre of tissue was removed. But the amount of tissue removed didn't make any difference to how long people lived.

Skin cancer (melanoma)

How does it work

Cancer cells grow quickly. Without surgery the melanoma would continue to grow and cancer cells could break off and spread to other parts of your body. Having the melanoma removed helps prevent this from happening.

Can it be harmful

Surgery to remove a melanoma doesn't usually cause many side effects, although you might get an **allergic reaction** to the anaesthetic, an infection in the cut, or bleeding. You might have some pain after surgery but this can be helped with paracetamol or another painkiller recommended by your doctor.

If you have lymph nodes removed you may get other side effects, such as fluid building up in the wound that needs to be drained. You may get permanent swelling in the area where your lymph nodes were taken out. This happens because the lymph nodes are no longer there to drain extra fluid from your tissues. To learn more, see [Side effects after surgery to remove your lymph nodes](#) .

Scars after surgery

The type of scar you have depends on where the surgery was and how easy it was for the surgeon to close your wound. Some people are surprised and upset by the size of their scar. It's important to talk to your surgeon about the amount of skin he or she expects to take away and what the area may look like afterwards.

- If the skin is tight across the wound you're likely to have a more noticeable scar. Some parts of the body are more likely to scar than others. You're more likely to have a thicker, wider scar if you have surgery on your chest.
- If you get a thick scar you can try massaging it gently but firmly against the bone or other firm tissue beneath it for three to four minutes, four or five times a day. This may make it less thick.
- Your scar may itch slightly, especially in the first few months. But this should go away after a while.
- Your scar will probably be red for three months to six months.
- Your scar should fade to the colour of the skin around it, or slightly paler, by about a year after surgery.

Low doses of interferon alfa-2b after surgery

In this section

[Does it work?](#)

[What is it?](#)

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[How does it work?](#)

Skin cancer (melanoma)

[Can it be harmful?](#)

[How good is the research on low doses of interferon alfa-2b after surgery?](#)

This information is for people who have a melanoma. It tells you about having low doses of interferon alfa-2b after surgery, a treatment for melanoma. It is based on the best and most up-to-date research.

Does it work?

Low doses of interferon alfa-2b after surgery probably won't help you live longer if you have a melanoma. But if you have this treatment it may take longer for your cancer to come back.

However, this treatment has side effects.

What is it?

Interferon is usually made by cells in your body to help fight infections caused by viruses. The type of interferon used to treat people with melanoma is made by scientists in laboratories.

Interferon alfa-2b treatment is a type of immunotherapy. This means that it helps your **immune system** fight the cancer.

Everyone with a melanoma needs to have [surgery to remove the cancer](#) . Your doctor may recommend that you also have low doses of interferon alfa-2b after surgery if:

- Your melanoma is thicker than 1.5 millimetres but has not spread to any of your **lymph nodes** (stage 2 melanoma)
- Your melanoma has spread to your lymph nodes but not to other parts of your body (stage 3 melanoma).

The thickness of a melanoma is measured in millimetres. A millimetre is about 1/25 of an inch.

To learn more about the stages of melanoma, see [How melanomas are classified](#) .

How is it given?

Low doses of interferon alfa-2b are usually given as injections just under the skin (this is called a subcutaneous injection). You can give it to yourself using a thin needle.

You'll probably have one injection three times a week. Your treatment may last one year to two years.

Skin cancer (melanoma)

How can it help?

If you have a melanoma that is at a high risk of coming back, some research has suggested that low doses of interferon alfa-2b may stop it coming back as quickly. ^[43] But other research disagrees. ^[44] ^[45]

Research also shows that high doses of [interferon alfa-2b](#) may delay cancer coming back more than low doses. ^[43]

Low doses of interferon alfa-2b are unlikely to help you live longer. ^[46]

How does it work?

We're not sure how interferon alfa-2b might work. It may help your immune system fight to stop the cancer spreading. Or it may work directly on the cancer cells so that they can't grow and spread. ^[47]

Can it be harmful?

Most people who take low doses of interferon alfa-2b get some side effects.

One study looked at 248 people who had this treatment. Most people had at least one side effect. ^[48] And 13 in 100 people had to stop taking it because of the side effects.

In this study, the side effects included:

- Flu-like symptoms. Half the people had symptoms similar to having flu, such as a temperature and feeling achy and tired
- Weakness. Half the people felt weak
- Dizziness. About 13 in 100 people felt dizzy
- Depression. About 13 in 100 people felt depressed
- Headaches. About 33 in 100 people got headaches
- Nausea and vomiting. This affected 20 in 100 people.

How good is the research on low doses of interferon alfa-2b after surgery?

There have been many good-quality studies that looked at low doses of interferon alfa-2b. ^[43] ^[45] ^[44] ^[49] The studies included thousands of people with malignant melanoma.

High doses of interferon alfa-2b after surgery

Skin cancer (melanoma)

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on high doses of interferon alfa-2b after surgery?](#)

This information is for people who have a melanoma. It tells you about high doses of interferon alfa-2b after surgery, a treatment for melanoma. It is based on the best and most up-to-date research.

Does it work?

We can't be sure. If your doctor thinks your melanoma is likely to come back, there's a good chance that having high doses of interferon alfa-2b after surgery will give you more time before it does. But it may not help you live any longer, and it has serious side effects.

What is it?

Interferon is usually made by cells in your body to help fight infections caused by viruses. The type of interferon used to treat people with melanoma is made by scientists in laboratories.

Interferon alfa-2b treatment is a type of immunotherapy. This means that it helps your **immune system** fight the cancer.

Everyone with a melanoma needs to have [surgery to remove the cancer](#) . But doctors may recommend high doses of interferon alfa-2b afterwards if there is a strong chance that your cancer will come back.

There is a high chance that your melanoma will come back if:

- It has spread to your **lymph nodes**
- It is more than 4 millimetres thick, even if it has not spread to any lymph nodes. (The thickness of a melanoma is measured in millimetres. 1 millimetre is about 1/25 of an inch.)

Doctors don't usually recommend treatment with interferon alfa-2b if the cancer has already spread to other parts of your body (besides your lymph nodes).

How is it given?

Interferon alfa-2b can be given three ways.

- Through a small tube that is put directly into your vein. (If you are given drugs this way, it's called intravenous administration or IV.)
- As an injection into your muscles (called intramuscular or IM).
- As an injection just under your skin (called subcutaneous or SC).

Skin cancer (melanoma)

If you are given **high doses** of interferon alfa-2b, there are usually two steps. ^[50] ^[51]

- You get a high dose through your veins (as an IV) five days a week for one month. You will probably have to go to hospital for this.
- Then you inject a lower dose under your skin three times a week for 48 weeks. You give these injections to yourself at home.

How can it help?

If there is a high chance that your melanoma will come back, having high doses of interferon alfa-2b may give you more time before it does. ^[43] One study found that people who had this treatment had an extra seven months before their melanoma came back, compared with people who didn't have the treatment. ^[51] Having this treatment may also help you feel better so you can do more things. ^[52]

Taking high doses of this drug may also help you live longer, but we're not sure. Different studies have found different results. ^[51] ^[52]

High doses of interferon alfa-2b may delay cancer coming back more than [low doses](#) . ^[43] High doses of interferon alfa-2b may also delay cancer coming back and help you live longer than a vaccine would. ^[53] To learn more, see [Vaccines after surgery](#) .

One study found that the people who got most benefit from this treatment were those aged under 60 whose cancer had spread to their lymph nodes. ^[54] See [How melanomas are classified](#) to find out more.

How does it work?

We're not sure how interferon alfa-2b might work. It may help your immune system fight to stop the cancer spreading. Or it may work directly on the cancer cells so they can't grow and spread. ^[47]

Can it be harmful?

High doses of interferon alfa-2b have serious side effects that some people find hard to live with.

One study looked at 143 people who had this treatment. In this study, about 75 in 100 people couldn't stay on the full dose because of the side effects. Side effects included: ^[51]

- Bad flu-like symptoms. Most people got some symptoms similar to the flu, such as fever, sweats, and tiredness. About half of the people said these symptoms were very bad

Skin cancer (melanoma)

- Problems with their blood. This treatment can affect the way your bone marrow does its job. Your bone marrow makes red blood cells and white blood cells. The bone marrow stopped working well in about 25 in 100 people having this treatment. You need red blood cells to carry oxygen to all the cells in your body. And you need white blood cells to help you fight infections
- Liver damage. About 13 in 100 people had severe damage to their liver. In two people, this damage was so bad they died. These people may have already had damaged livers. This side effect happened early in the study, before doctors learnt to be more careful about watching out for liver problems caused by the treatment
- Headaches, depression, and mood changes. Just over 25 in 100 people got these side effects.

How good is the research on high doses of interferon alfa-2b after surgery?

Lots of good-quality studies have looked at high doses of interferon alfa-2b. ^[43] ^[53] ^[54]
The studies included thousands of people with malignant melanoma. But the results are mixed.

Vaccines after surgery

In this section

[Do they work?](#)

[What are they?](#)

[How can they help?](#)

[How do they work?](#)

[Can they be harmful?](#)

[How good is the research on vaccines after surgery?](#)

This information is for people who have a melanoma. It tells you about having vaccines after surgery, a treatment for melanoma. It is based on the best and most up-to-date research.

Do they work?

We're not sure. There hasn't been enough good research. But we do know that this treatment has side effects.

What are they?

Cancer vaccines are a type of immunotherapy. This means that they aim to help your immune system work to stop cancer spreading. Vaccines are given as an injection just under the skin.

A cancer vaccine can be made using your melanoma cells. But this takes a long time and is expensive, so vaccines are also made using cells from different people's melanomas.

Skin cancer (melanoma)

Vaccines are given after surgery to remove a melanoma. You may be offered a vaccine if there's a chance that your melanoma could spread. (A melanoma might spread if it is at [stage 2, 3, or 4](#).) Vaccines are used only in research trials and are not widely available. You will need to be part of a clinical trial to get a vaccine.

In trials, people usually have injections every week for a few weeks and then every two weeks or four weeks after this. Your treatment may last a long time.

How can they help?

There have been mixed results from research on vaccines that specifically target melanoma. Some research shows that vaccines can stop a melanoma coming back as quickly.^[55] But other research shows they don't help.^[56] ^[57] ^[58]

Research is still in its early stages and we'll need to see the results from more good-quality studies before we know for certain whether vaccines can help.

How do they work?

Cancer vaccines are made of a small amount of weak melanoma cells (or substances from these cells). The idea is that your immune system will recognise these cells as foreign and produce antibodies to kill them. Then, if your melanoma starts to spread, your body will remember that these cells are foreign and attack them. Doctors think this could slow down the growth of your melanoma.

Can they be harmful?

Some people who have vaccines get unpleasant side effects. But it's hard to say how common these are because the results of studies vary.

Your skin in the area of the injection might feel hot and swollen. It may also get red and sore.

Vaccines may make you feel like you have flu. You may have a fever or a headache and feel achy or have chills. Some people say they feel very tired and a bit sick. In one study, most people had mild symptoms. On top of this, 10 in 100 people felt very ill.^[57]

How good is the research on vaccines after surgery?

Research on vaccines is still in the early stages. We found four reasonably good studies (called [randomised controlled trials](#)).^[55] ^[56] ^[57] ^[58]

Surgery for melanomas that have spread to other organs

In this section

This information is for people who have a melanoma. It tells you about surgery for melanomas that have spread to other organs.

Skin cancer (melanoma)

We haven't looked at the research on this treatment in as much detail as we've looked at the research on most of the treatments we cover. (To read more, see Our method.) But we've included some information because you may have heard of this treatment or be interested in it.

If your melanoma has spread to other parts of your body, such as your lungs, surgery may not be able to cure you. But your doctor may advise you to have surgery on those organs to make you more comfortable. ^[33]

Doctors will recommend this type of surgery only if they are sure it will help you. This type of surgery is likely to help most when: ^[33]

- The melanoma has spread to just one or a few organs
- Your body is strong enough to cope with the surgery
- You're likely to live for a long time after the surgery
- The surgery is likely to make you feel much better.

In most cases, having surgery for cancer that has spread to other organs is serious. You'll probably have to stay in hospital for at least a few days.

Sunscreen to prevent melanomas

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on sunscreen to prevent melanomas?](#)

This information tells you about wearing sunscreen, a treatment used to prevent melanoma. It is based on the best and most up-to-date research.

Does it work?

Although we're not exactly sure what causes melanomas, we do know that the sun plays a big part. Wearing sunscreen may help protect you and your family against melanomas.

What is it?

It's impossible to avoid the sun all the time. So when you go out in the sun you need to cover up. You can do this by wearing clothes that cover you up or by using sunscreen.

The part of sunlight that has a role in skin cancers is ultraviolet (UV) light. There are two types of UV light: UV-A and UV-B. ^[5]

Here's what you can do to protect yourself against the sun. ^[59] ^[31]

Skin cancer (melanoma)

- Choose a sunscreen that protects against both UV-A and UV-B rays and has a sun protection factor (SPF) of at least 15. ^[60] Some groups, such as the Royal College of Physicians and British Association of Dermatologists, recommend using an SPF of 20 to 30 or more. ^[30] To find out more, see [What is SPF?](#)
- Spread the sunscreen evenly on any skin that will be in the sun.
- Put sunscreen on 15 minutes before you go out.
- Apply more sunscreen at least every two hours and after you've been swimming or sweating a lot.
- Use enough sunscreen. To get the right amount, use the 'two-finger rule'. Squeeze out sunscreen along the length of your first two fingers. Use this much sunscreen on each of these parts of your body: your head, neck and face; each arm; upper back; lower back; chest; stomach; each upper leg (back and front); and each lower leg (back and front). ^[61]
- Apply more sunscreen more often when you're in the snow or in water. The sun's rays reflect off these surfaces, which means you get more sun.
- Don't stay in the sun longer just because you're using sunscreen. You are still exposing yourself to dangerous rays and can still get burned.
- Stay out of the sun when it's at its hottest. This could be as long as between 10 a.m. and 4 p.m. if you're in a hot country.
- Wear a hat.
- Wear a long-sleeved top, and trousers or a long skirt or dress.
- Wear sunglasses. These will protect your eyes and the skin around your eyes.
- Don't use sunbeds. Sunlamps in sunbeds give off mostly UV-A rays, and these may play a part in causing skin cancer.

Make sure you take extra care with children's skin. Children and teenagers are more likely to spend a long time in the sun, so it's important to take special care of their skin. People who get sunburnt a lot as children are more likely to get a melanoma when they get older.

How can it help?

There's not much research showing that sunscreen prevents melanomas, but doctors agree that you should use sunscreen while in the sun, or cover up with clothing. We

Skin cancer (melanoma)

know for sure that wearing sunscreen cuts your chances of getting another type of skin cancer called [squamous cell cancer](#).^[62] Sunscreen can also help prevent scaly red spots called **solar keratosis** that can become cancerous.^[63]

And sunscreen may protect you against melanomas too. One study found that people who used sunscreen daily for four years were less likely to develop a melanoma over the next 10 years, compared with those who'd used sunscreen only on occasion.^[64]

How does it work?

Ultraviolet (UV) light from the sun may make skin cells (called melanocytes) grow out of control, causing a melanoma. Wearing sunscreen protects your skin from this light.

To find out more about the ingredients in sunscreens and what they do, see [What's in your sunscreen?](#)

Can it be harmful?

Sunscreen is unlikely to be harmful. But babies under 6 months old should be kept out of the sun because their skin is very sensitive, and sunscreen may give them a rash.

How good is the research on sunscreen to prevent melanomas?

There's little evidence from good studies to prove that wearing sunscreen helps prevent melanomas. But this doesn't mean that sunscreen doesn't work. It might just mean that the right types of studies haven't been done to prove whether it does.

It's unlikely that these studies will be done in the future, as they would need to compare people who wore sunscreen with people who didn't. And it wouldn't be fair to ask some people to go out in the sun without sunscreen and risk getting sunburnt, because doctors know this is dangerous.

However, we did find one study that compared people who applied sunscreen daily for four years with people who used sunscreen only on occasion. Ten years later, people who'd applied sunscreen every day were less likely to have developed a melanoma.^[64]

There is also good evidence that wearing sunscreen helps prevent another type of cancer, called [squamous cell carcinoma](#).^[62] So, it's good advice to wear sunscreen when you are out in the sun.

Further informations:

Types of skin cancer

There are three main types of skin cancer. Their main features are described below.^[7]
^[8] ^[9] ^[10]

Skin cancer (melanoma)

	Melanoma (skin cancer)	Squamous cell skin cancer	Basal cell skin cancer
How common is it?	Least common type	Second most common type	Most common type
How serious is it?	Most serious	Somewhat serious	Least serious
How do you get it?	Linked to bad sunburn	Linked to spending time in the sun over many years	Linked to being in the sun
Will it spread?	Most likely to spread	Can spread, but it's not likely to	Almost never spreads but will erode underlying tissues, such as bone, if it isn't treated
How does it start?	Usually starts in a mole. The mole may bleed, change shape or colour, itch, spread or turn into a scab	Usually shows up as a crusted lump on your skin	Usually shows up as small lumps on your head, neck and hands
How long does it take?	Can develop quickly	Takes many years to develop, but grows faster than basal cell skin cancer	Takes many years to develop
Who is at risk?	Younger people are most likely to get it	Older people are most likely to get it	Older people are most likely to get it

To read more about squamous cell skin cancer, see [Skin cancer \(squamous cell\)](#) .

Side effects after surgery to remove your lymph nodes

Like any type of surgery, having your lymph nodes taken out can cause problems. One study found that about 1 in 10 people who had surgery to remove their lymph nodes got problems.^[27] These problems are more likely to happen if you need to have more lymph nodes removed after a sentinel node biopsy.^[27] About 4 in 10 people who need to have more lymph nodes removed get at least one of the side effects listed below. (In a sentinel node biopsy, the first lymph node your melanoma drains to is removed and checked for cancer. If cancer cells are present, other lymph nodes nearby are taken out.)

Infection

You may get an infection in the area where you have surgery.

Fluid

It's possible for fluid to build up in the wound after surgery. You may need to have this fluid drained.

Permanent swelling

The area where your lymph nodes have been taken out can swell. This happens because one of the jobs of the lymph nodes is to drain extra fluid from your tissues. If the lymph nodes are taken out, the fluid has nowhere to go and causes swelling. Doctors call this swelling lymphoedema. It can be painful and cause stiffness, depending on where in

Skin cancer (melanoma)

your body the lymph nodes were removed. For example, if the lymph nodes were removed from your neck you may find it difficult to move your shoulder. Pain and stiffness are far less likely if you have just your sentinel node removed rather than all your lymph nodes.

What is SPF?

SPF stands for **sun protection factor**. It is given as a number.

- The SPF number tells you how much protection from sunburn a sunscreen will give you.
- The higher the SPF number, the longer you can stay out in the sun before you get burned.
- Everyone should use a sunscreen with an SPF of 15 or more whenever they are in the sun.^[30] Some groups, such as the Royal College of Physicians and British Association of Dermatologists, recommend using an SPF of 20 to 30 or more.^[30]

What's in your sunscreen?

Sunscreens protect you against light from the sun called ultraviolet (UV) light. This light may make skin cells called melanocytes grow out of control and cause a melanoma.

There are two kinds of UV light: UV-A and UV-B. Some sunscreen ingredients protect you against one kind and not the other. Some ingredients protect against both. And some are specialised, giving you protection against specific types of UV-A light, known as UV-A I and UV-A II. All of these types of light may cause melanomas.^[31]

How do sunscreens work?

Sunscreens protect your skin from UV light in two main ways:^[31]

- They soak up certain types of UV light before they can damage your skin (often the ingredients will soak up UV-A or UV-B but not both)
- They reflect UV light away from your skin.

You can use the list below to find out how well your sunscreen protects you.^[32]

For example, Coppertone Sunblock Lotion SPF 15 UVA/UVB Protection has octyl methoxycinnamate and oxybenzone. So it protects you against UV-B and UV-A II, but not UV-A I.

Skin cancer (melanoma)

Ingredient	Type(s) of UV light that it protects you against
Aminobenzoic acid (also called PABA)	UVB
Avobenzene (often called Parsol 1789)	UVA I
Cinoxate	UVB
Dioxybenzone	UVB, UVA II
Homosalate	UVB
Menthyl anthranilate	UVA II
Octocrylene	UVB
Octyl methoxycinnamate	UVB
Octisalate	UVB
Oxybenzone	UVB, UVA II
Padimate O	UVB
Phenylbenzimidazole sulfonic acid	UVB
Sulisobenzene	UVB, UVA II
Titanium dioxide	All UV light
Trolamine salicylate	UVB
Zinc oxide	All UV light

Glossary:

lymph fluid

Lymph is a clear or whitish liquid that flows throughout your body through the lymphatic vessels and lymph nodes (also called lymph glands). Lymph contains proteins and fats, some red blood cells and many white blood cells (especially lymphocytes). Lymphocytes help your body fight infection.

lymph nodes

Lymph nodes (also called lymph glands) are small, bean-shaped lumps that you can't usually see or feel easily. You have them in various parts of your body, such as your neck, armpits, and groin. Lymph nodes filter lymph and remove unwanted things from your body, such as bacteria and cancer cells.

immune system

Your immune system is made up of the parts of your body that fight infection. When bacteria or viruses get into your body, it's your immune system that kills them. Antibodies and white blood cells are part of your immune system. They travel in your blood and attack bacteria, viruses and other things that could damage your body.

HIV

HIV stands for human immunodeficiency virus. It's the virus that causes AIDS. It makes you ill by damaging cells called CD4 cells. Your body needs these cells to fight infections. You can get HIV by sharing needles for injecting drugs, or by having sex without a condom with someone who has the virus.

AIDS

AIDS stands for acquired immunodeficiency syndrome. People who are infected with the human immunodeficiency virus (HIV) get AIDS when the virus has destroyed most of their immune system. When people have AIDS, their body isn't able to fight infections. So even common infections, such as colds, can cause serious problems.

Sentinel node biopsy

A procedure whereby the first nodes in the draining lymphatic basin are removed and examined by a pathologist for cancer cells.

CT scan

A CT scan is a type of X-ray. It takes several detailed pictures of the inside of your body from different angles. CT stands for computed tomography. It is also called a CAT scan (computed axial tomography).

X-ray

Skin cancer (melanoma)

X-rays are pictures taken of the inside of your body. They are made by passing small amounts of radiation through your body and then onto film.

biopsy

Biopsy is when doctors remove some tissue from a part of your body, so that it can be examined under a microscope.

local anaesthetic

A local anaesthetic is a painkiller that's used to numb one part of your body. You usually get local anaesthetics as injections.

lymph

Lymph is a clear or whitish liquid that flows throughout your body through the lymphatic vessels and lymph nodes (also called lymph glands). Lymph contains proteins and fats, some red blood cells and many white blood cells (especially lymphocytes). Lymphocytes help your body fight infection.

lymph vessels

Lymph vessels are part of your body's lymphatic system. The lymphatic system moves lymph fluid through your body. This fluid carries proteins, white blood cells and other substances. Lymph vessels carry fluid between your lymph nodes.

allergic reaction

You have an allergic reaction when your immune system overreacts to a substance that is normally harmless. You can be allergic to particles in the air you are breathing, like pollen (which causes hay fever) or to chemicals on your skin, like detergents (which can cause a rash). People can also have an allergic reaction to drugs, like penicillin.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

squamous cell cancer

This is the second most common type of skin cancer (basal cell cancer is the most common). Squamous cell cancer starts as a small rash on your skin. If it's not caught early, it can spread and cause serious problems. Squamous cell cancer can be treated if it is found early. Doctors often call it squamous cell carcinoma.

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