

Patient information from the BMJ Group

Pressure sores

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Pressure sores

Anyone can get a pressure sore if they sit or lie still for too long without moving. People who are old or very ill are particularly likely to get pressure sores. Careful nursing, special beds, and foam mattresses can all help protect your skin, and stop a pressure sore from developing.

We've brought together the best research about pressure sores and weighed up the evidence about how to prevent and treat them. If you think that you might be at risk of getting pressure sores, you can use our information to talk to your doctor and decide which treatments are best.

What is a pressure sore?

Pressure sores are areas of damaged or broken skin. People who are ill who sit or lie in one position for too long can get them quite quickly. Without treatment, they can become deep wounds that take a long time to heal.



Pressure sores

People who sit or lie in one position for a long time can get pressure sores.

When you sit or lie down you naturally shift your position from time to time, even when you're asleep.

But if you can't move yourself because you are too ill or weak, or even unconscious, you could get a pressure sore.

Experts think pressure sores start when: ^[1] ^[2]

- The weight of your body presses down on the skin underneath. This pressure stops your blood from circulating properly through the skin, so the skin doesn't get enough oxygen or nutrients. If you don't shift your position, the skin cells die and the skin breaks down
- The layers of your skin slide over each other as you slip down or are pulled up in bed. This is called **shearing**
- Your skin is dragged across the mattress or seat as someone moves you. This is called **friction**.

Pressure, shearing, and friction all damage your skin and increase the chance of a pressure sore. Areas of skin over the bony parts of your body are most at risk. ^[1] ^[3]

Anyone who has difficulty moving can get a pressure sore. But you are more likely to get one if you: ^[1] ^[4] ^[5] ^[6]

- Are very old or very young
- Are seriously ill, drowsy, or unconscious
- Have had surgery
- Can't control urine or faeces
- Have a serious injury, such as a broken hip
- Are very overweight (obese)
- Don't eat or drink enough
- Have poor circulation, perhaps because you smoke
- Have had a pressure sore before
- Can't feel pain. This can happen if your spinal cord is injured, or if **diabetes** has damaged your nerves.

What are the symptoms of a pressure sore?

Pressure sores start as a patch of discoloured skin. The patch might be red if you have pale skin or bluish-purple if you have dark skin. Then the skin gets a graze or blister. If nothing is done to relieve the pressure, the skin dies off quickly and leaves a shallow wound.

Like other wounds, pressure sores may:

- Hurt
- Weep
- Bleed
- Get infected.

You are most likely to develop a pressure sore where your skin gets squashed between one of your bones and your bed or chair. This tends to happen: ^[7] ^[8] ^[9] ^[10]

- At the bottom of your back bone
- On the back of your heels
- On your buttocks, if you sit or lie down for most of the time
- Over your hip bone
- Over your elbows, if you are lying on your back
- On the back of your head where it touches the bed. ^[8]

If you are looking after someone who is likely to get a pressure sore, you need to know about the early warning signs. Get help from your doctor to make sure everything is being done to prevent pressure sores from happening.

You should tell someone immediately if you find any signs of skin damage: for example, a discoloured or bruised patch that won't go away. If you discover pressure sores early, there's a good chance you can stop them getting worse. Here are some other early warning signs to look out for: ^[1]

- Swelling
- Blisters
- Patches of skin that are shiny, too warm, too cold, or too dry

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- Hard skin
- Cracks in the skin.

Doctors and nurses give pressure sores a grade, according to how serious they are. Grade 1 is the least serious. A grade 4 sore is the most serious. ^[7]

How common are pressure sores?

We don't know exactly how many people get pressure sores.

Different studies say different things. Researchers estimate that between 5 in 100 and 30 in 100 people staying in hospital get a pressure sore. ^[11] The risks are about the same or slightly less for people living in nursing homes.

What treatments work for pressure sores?

Prevention is better than cure. But if you do get a pressure sore, there are lots of treatments you can try. Unfortunately very few of them have been tested properly in studies. ^[13]

- Experts agree that the best way to prevent a pressure sore is to change your position regularly. If you can't do it yourself, a health professional or a carer should do it for you.
- Inspecting your skin for early warning signs of pressure sores is also important.
- If you are at risk of getting a pressure sore, you should lie on an extra supporting foam mattress, not an ordinary hospital mattress.
- A medical sheepskin mat might also help.
- If you are having surgery, you can lie on a special mat called an overlay placed on top of the operating table. The overlay helps protect your skin during the operation.

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.

- [Preventing pressure sores](#)
- [Treating pressure sores](#)

Treatment Group 1

Preventing pressure sores

Treatments that work

- [Supporting foam mattresses](#)

Treatments that are likely to work

- [Inflatable intensive care beds](#)
- [Sheepskin](#)
- [Overlays for operating tables](#)

Treatments that need further study

- [Mattresses or overlays with inflatable compartments](#)
- [Seat cushions](#)
- [Remote control beds](#)
- [Regular turning](#)
- [Skin creams and lotions](#)
- [Nutritional supplements](#)
- [Foam heel supports](#)
- [Special beds for people with incontinence](#)

Treatments that are unlikely to work

- [Inflatable boots](#)

Treatment Group 2

Treating pressure sores

Treatments that are likely to work

- [High-tech beds](#)
- [Hydrocolloid dressings](#)

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Treatments that need further study

- [Treatments to remove dead tissue](#)
- [Dressings](#)
- [Surgery](#)
- [Changing what you eat](#)
- [Suction](#)
- [Electrical therapy](#)
- [Ultrasound](#)
- [Laser treatment](#)

Treatments that are unlikely to work

- [Special treatments to clean a wound](#)

What will happen to me?

Most pressure sores heal eventually, although it can take a long time. It's best to prevent them if at all possible.

If you get a pressure sore in hospital, it could delay your recovery and stop you from going home for a long time.

Pressure sores usually affect just your skin. But rarely, pressure also damages deeper tissues such as muscle. If these tissues die, a deep wound appears that may go down as far as the bone.

If you have to stay in a bed, chair, or wheelchair, a health care professional should visit you to assess your chances of getting a pressure sore.

The National Institute for Health and Care Excellence (NICE), which advises the government on health care in England and Wales, says you should be assessed within six hours if you go into hospital. ^[12]

If they think you are at risk of getting a pressure sore, your doctors and nurses should try hard to protect your skin by: ^[1]

- Checking it regularly, or showing you or your carer how to do it
- Shifting your position regularly, or showing you or a carer how to do it

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- Taking care not to rub or drag your skin when lifting you
- Drawing up a timetable to help you keep moving
- Using an extra supporting foam mattress, if you are in bed.

You can help yourself by:

- Shifting your position regularly, if you can
- Drinking plenty of liquids
- Eating a healthy diet
- Stopping smoking, if you smoke.

Big pressure sores can be hard to treat. They may heal slowly if your body is already fighting another serious medical condition, such as a **stroke**. But there are plenty of different mattresses, dressings, and other treatments you can try. It's important that you or your carer discuss all the options with the health professionals looking after you.

Treatments:

Supporting foam mattresses

In this section

A supporting foam mattress moulds around your body. This spreads your weight and protects the skin over bony areas, such as your heels and hips. It gives more support than a normal mattress.

There's good evidence that you're much less likely to get a pressure sore if you lie on a supporting foam mattress, compared with a normal hospital mattress. ^[14] ^[15]

Extra-supporting foam mattresses are available in hospitals, in nursing homes, and for use at home.

But we know much less about how different types of foam mattresses compare. You can get foam mattresses that are filled with gel, water, beads, or silicone. Some are specially moulded. But there hasn't been enough good-quality research to say if one type is better than another. ^[14]

Inflatable intensive care beds

In this section

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People in intensive care units are often too ill to move themselves. An inflatable bed helps keep their skin healthy by spreading the weight over weak points such as heels, hips, and the base of the spine.

In one high-quality study (called a **randomised controlled trial**), people nursed on inflatable beds were much less likely to get pressure sores than people nursed on ordinary intensive care beds. ^[14]

Sheepskin

In this section

A sheepskin laid over the top of your mattress may prevent pressure sores. Two randomised controlled trials showed that hospital patients who had a sheepskin on their bed were less likely to get a pressure sore than patients who didn't have one. ^[14] In one study, 1 in 10 people who used a sheepskin got a pressure sore. Among those who didn't use a sheepskin, 3 in 10 people got a pressure sore. ^[14]

Mattresses or overlays with inflatable compartments

In this section

Some mattresses and overlays are made of small bags or compartments that inflate (fill with air) and deflate (empty) in turn. As each compartment deflates, the skin underneath gets a break from bearing your weight. They are also called alternating pressure mattresses or overlays.

We don't know for certain how good they are at preventing pressure sores. We found 13 studies, but most of them were too small to be reliable. ^[14]

One randomised controlled trial found that patients who used an inflatable mattress were much less likely to get pressure sores than those who used a standard foam mattress. ^[14] But more studies are needed to know whether or not this treatment works.

Four studies found no difference between different types of inflatable mattresses and overlays. ^[14] ^[16] But in one study more people who had overlays asked for a change of mattress. ^[16] This suggests that overlays, which are thinner than mattresses, are less comfortable.

Not many studies looked at how comfortable people found inflatable mattresses.

Overlays for operating tables

In this section

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Lying still during a long operation can damage your skin and start a pressure sore. A type of mat called an overlay puts an extra layer of cushioning between you and the operating table, helping to protect your skin.

The overlay keeps the pressure off vulnerable parts of your body while you're unconscious during the operation.

A review of studies looked at five good-quality studies that each compared a different overlay with standard tables. One study found that when using a plastic pad as an operating table half as many pressure sores occurred during operations compared with when a standard table was used. People who did get pressure sores tended to get grade 1 pressure sores, the least serious kind of ulcer, within eight days of their operation. ^[14]

Seat cushions

In this section

Specially designed cushions can make it more comfortable to sit for long periods in a chair or wheelchair. There are several different designs, usually made from gel or foam. Some are shaped to fit snugly against your body. The research looking at different cushions isn't very good, so we can't say whether one design of cushion is better than another. ^[14] We don't know if specially designed cushions help prevent pressure sores.

Doctors recommend you avoid ring-shaped cushions. ^[17] ^[18]

Remote control beds

In this section

These beds are split into sections that move when you flick a switch. The moving sections make it easier for you to change your position. For example, the back rest moves up automatically when you want to sit up, and moves down when you want to lie down.

We don't know how good they are at preventing pressure sores. The only study we found was too small to be useful. ^[14]

Regular turning

In this section

The best way to prevent pressure sores is to keep shifting your position. Moving relieves the pressure on the skin underneath and gives it time to recover. If you can't move yourself, experts say that the health professionals looking after you should move you regularly. ^[1] Or they can teach your carer to do it.

Pressure sores

There hasn't been any good research showing that being moved regularly helps prevent pressure sores. But experts agree that it makes good sense, providing the person moving you is properly trained. ^[1] ^[18] ^[19]

One study found that turning people while they lay on supporting foam mattresses every two, three, or four hours made no difference to how likely they were to get pressure sores. ^[20] But we need more studies to confirm these results.

Your skin should be protected during moves, so it doesn't rub or drag along the mattress.

Skin creams and lotions

In this section

We don't know if using skin creams or lotions can help prevent pressure sores. There hasn't been enough good-quality research to say. ^[21] ^[22] One review looked at five studies of people with pressure sores. But none of the studies were reliable enough to say whether these treatments help prevent pressure sores. ^[23] Experts recommend that you don't use skin creams or lotions.

Nutritional supplements

In this section

If you are very ill and are not able to eat properly, you may be at more risk of getting a pressure sore. So doctors have tried to find out whether giving nutrition drinks to people in hospital helps to prevent pressure sores. There is some evidence that they might help a bit. ^[24] ^[25] But we don't know for certain if they help, because the studies looking at them aren't very good.

Foam heel supports

In this section

Some doctors and nurses suggest wearing a support under your heels. This cushions your heel and relieves the pressure when you're lying in bed. One study found that a heel support made out of foam works better to prevent pressure sores than a heel support made out of wool padding. ^[26]

Inflatable boots

In this section

Inflatable boots are designed to cradle your feet and spread the weight over your heels. Only one type has been tested in a high-quality study, and it didn't work. People who

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used the boot got a pressure sore faster than people who rested their heels on hospital pillows instead. ^[14]

Special beds for people with incontinence

In this section

Some inflatable beds have special features designed to keep your skin dry if you have trouble with incontinence. But they don't seem to prevent pressure sores. In the only study we found, people nursed on the special inflatable bed (called a low-air-loss hydrotherapy bed) were more likely to get a pressure sore than people nursed on other types of bed. ^[14]

High-tech beds

In this section

Although the evidence is limited, one type of bed called an air-fluidised bed may help heal pressure sores. ^{[27] [28]} When it's switched on, the bed behaves a bit like a water bed, cradling your body and helping spread the weight. When it's switched off, the bed becomes more solid, so nurses can move you around easily and safely. However, you can't easily get in and out of these beds without help, so they are not suitable for everyone.

There hasn't been enough good research to know for certain whether any other type of mattress or cushion can help heal pressure sores. Other types include: ^{[27] [29]}

- Inflatable beds or mattresses
- 'Rippling' beds and mattresses
- Water beds
- Different types of foam mattress or overlay
- Cushions with different fillings, including air.

A summary of the research (called a systematic review) found that there is no conclusive evidence about which support surfaces are most effective for the treatment of pressure sores, and concluded that further high-quality research is needed. ^[27] But experts agree that if you have a pressure sore, you need a bed, mattress, overlay, or cushion that spreads your weight and protects your skin better than a standard hospital mattress. ^[1]

The National Institute for Health and Care Excellence (NICE), which advises the government on health care in England and Wales, says: ^[1]

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- If you have early signs of a pressure sore (a red or bruised patch, a blister, or broken skin), you need an extra-supporting foam mattress or cushion at the very least
- If you have an open pressure sore that's broken through the skin, you need something more sophisticated such as an air-fluidised bed, or some kind of inflatable bed or mattress.

Hydrocolloid dressings

In this section

Hydrocolloid dressings are a type of dressing that goes directly on to your pressure sore, to help it heal. They're a gel that goes over the pressure sore and sticks to the skin around it. Hydrocolloid dressings are designed to soak up excess moisture from your pressure sore. Some research shows that hydrocolloid dressings help pressure sores to heal faster than standard dressings.^{[30] [31] [32] [28]} But not all studies show this. And we don't know if they work better than other types of dressing with added features to help the ulcer heal.^{[30] [31] [32] [33]}

Treatments to remove dead tissue

In this section

It's important to keep your pressure sore clean and clear of any dead tissue. A gentle wash with salt water is usually enough. Removing more stubborn dead tissue is called **debridement**.

We don't know if removing dead tissue helps pressure sores to heal.^[34] But most experts agree that it's better to remove it than leave it in the wound, where it might get **infected**.^[18] Dead tissue can be removed:

- With a blade or sharp knife (a scalpel)
- With special dressings
- With chemicals
- With biological agents called enzymes.

Despite lots of research, it's still unclear which method works best. The studies we found were too small or badly done to be useful.

Dressings

In this section

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Dressings are placed directly over your pressure sore to protect it and keep it clean and moist while it heals. There are many different types of dressing. There's some research to show that a type called hydrocolloid works better than standard simple dressings. ^[30]

^[32] But there's not enough good-quality research to show how well the other types work.

^[30] ^[35] Some dressings are simple, such as gauze covered in soft paraffin. Others have added features designed to:

- Help soak up excess moisture
- Clean up your pressure sore
- Promote healing
- Prevent infection.

A trained health professional should decide on the best dressing for your pressure sore. Whatever dressing they choose, it should: ^[1]

- Ease your pain
- Be easy to put on and take off
- Keep your sore moist and warm (these are the best conditions for healing)
- Protect your sore from germs
- Be unlikely to cause an allergic reaction .

You may have to try several different dressings. The National Institute for Health and Care Excellence (NICE), which advises the government on health care in England and Wales, recommends modern dressings such as: ^[1]

- Foam dressings
- Hydrogels, a simple gel dressing that helps keep your sore moist and clean
- Hydrocolloid dressings, designed to soak up excess moisture from your pressure sore. They form a gel over the wound, and stick only to the surrounding skin.

Other dressings include:

- Alginate dressings, made from seaweed
- Clear film dressings

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- Paraffin gauze, one of the simplest dressings.

You need to be careful when you use dressings that contain paraffin as these can catch fire easily.^[36] Don't smoke or use a naked flame when using these type of dressings. And change your clothes and bedding regularly as the paraffin can seep into these fabrics.

Surgery

In this section

If your pressure sore won't heal, you could have an operation to close the wound. There are various options, including a skin graft.^{[1] [18]} But none have been tested properly in high-quality studies. So we don't know the best way to close pressure sores that won't heal.^[1]

If you opt for surgery, it's important that you ask your surgeon to explain the risks as well as the possible benefits. All operations have risks. For example, you may have an allergic reaction to the anaesthetic. You should always tell your doctors about any allergies if you are going to have an operation.

Changing what you eat

In this section

Doctors think that not eating well could stop your pressure sore healing properly. So it makes sense to eat as well as you can. Supplements containing extra protein, zinc, the amino acid arginine, or vitamin C might help.^[28] But the research we found wasn't good enough to be a fair test of whether these treatments worked.^{[24] [37] [38]}

Suction

In this section

This treatment applies suction to your pressure sore using a tube, a pump, and an airtight dressing. The suction removes any excess moisture, and may help your pressure sore to heal.

We found six studies testing this treatment in people with pressure sores and other types of wounds. Suction improved healing in two of the six studies. But none of the studies were well done. So it's hard to say whether or not this treatment really works.^{[39] [40]}

In a review of five studies of suction to treat pressure sores, all five studies showed it was better than gauze dressings treated with salt water or other solutions. But the difference was only large enough to exclude chance in one study. In this small study of 24 people with pressure sores, using suction to treat pressure sores meant ulcers were

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more likely to have become smaller within six weeks than when using a salt water solution.
[41]

Electrical therapy

In this section

Electricity has been used in the past to help heal long-lasting wounds. An electric current is passed across the wound. But we don't know if it works for pressure sores because there have only been a few small studies of this treatment. [42]

There have been some studies of electrical therapy for pressure sores. [29] [28] Three studies suggested it might heal pressure sores faster than a dummy (placebo) treatment. But the studies weren't good enough to be certain.

Another study found it made no difference. [43] A more recent study found it helped reduce the surface area of the wound, compared with standard wound care. But the study was quite small so we can't rely on it. [44]

Ultrasound

In this section

Ultrasound massages your pressure sore with sound waves. [45]

If you have this treatment, a nurse or doctor will gently move an ultrasound wand over your wound. The wound will be covered in gel, so the wand moves more easily.

There hasn't been much research on ultrasound for pressure sores. In the three studies we found, ultrasound didn't help. [46] But the studies were too small to be reliable.

Laser treatment

In this section

Lasers are concentrated beams of light. Doctors think that low-power lasers may help your body to repair wounds more quickly. But despite a lot of research, we're still not sure whether lasers make any difference to pressure sores. [47]

Special treatments to clean a wound

In this section

It's important to keep your pressure sore clean and clear of any dead tissue. A gentle wash with salt water is usually enough. It's unlikely that washing pressure sores or wounds with anything else will help them heal. One review looked at three studies of wound

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cleaning. The studies used different cleaning techniques or solutions containing aloe vera, silver chloride, and a skin cleanser (decyl glucoside). But these didn't help any more than using salt water on its own. ^[48]

Further informations:

Glossary:

diabetes

Diabetes is a condition that causes too much sugar (glucose) to circulate in the blood. It happens when the body stops making a hormone called insulin (type 1 diabetes) or when insulin stops working (type 2 diabetes).

stroke

You have a stroke when the blood supply to a part of your brain is cut off. This damages your brain and can cause symptoms like weakness or numbness on one side of your body. You may also find it hard to speak if you've had a stroke.

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.

incontinence

If you have incontinence, you cannot control when you pass urine (this is called urinary incontinence) or have a bowel movement (faecal incontinence).

systematic reviews

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

infection

You get an infection when bacteria, a fungus, or a virus get into a part of your body where it shouldn't be. For example, an infection in your nose and airways causes the common cold. An infection in your skin can cause rashes such as athlete's foot. The organisms that cause infections are so tiny that you can't see them without a microscope.

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.

anaesthetic

An anaesthetic is a chemical that blocks the ability to feel sensations like pain or heat. A local anaesthetic blocks the feeling in a specific area of the body. For example, your dentist uses a local anaesthetic like lignocaine in your gums so that you don't feel the pain of having a cavity filled. A general anaesthetic makes you completely unconscious and is usually used only in a carefully controlled environment like an operating room.

placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

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