Radiotherapy

This fact sheet is about radiotherapy. Radiotherapy is used to treat some cancers. It can also be used to control the symptoms of cancer. Many people with cancer will have radiotherapy as part of their treatment.

It may not be the only treatment you need. Sometimes you will also need chemotherapy or surgery. The doctors at the hospital will decide about this. We also have fact sheets in your language about these treatments.

If you have any questions, you can ask your doctor or nurse at the hospital where you are having your treatment.

We've listed other information from Macmillan below, and most of this is only in English. If you'd like to talk about this information with our cancer support specialists, we have interpreters for non-English speakers.

You can call the Macmillan Support Line free on 0808 808 00 00, Monday–Friday, 9am–8pm. If you have problems hearing you can use textphone 0808 808 0121, or Text Relay. Or you can visit macmillan.org.uk

On this page

What is cancer?

The organs and tissues of the body are made up of tiny building blocks called cells. Cancer is a disease of these cells.

Cells in each part of the body may look and work differently but most repair and reproduce themselves in the same way. Normally, cells divide in an orderly and controlled way. But if for some reason this becomes out of control, the cells carry on dividing and grow into a lump called a tumour.

In a **benign tumour**, the cells do not spread to other parts of the body and it is not called cancer. However, the cells may carry on growing at the original site, and may cause a problem by pressing on other parts of the body.

In a **malignant tumour**, the cells are able to spread to other parts of the body. The cancer will begin to grow in one part of the body. This is called primary cancer. If the cancer is not treated it may spread. If it spreads and grows in another part of the body, it is called secondary or metastatic cancer

What is radiotherapy?

Radiotherapy uses high energy x-rays to destroy cancer cells. Some of the normal cells can also be damaged but they are better at repairing themselves than cancer cells.

Many people with cancer will have radiotherapy as part of their treatment. It can be given in different ways:

External radiotherapy – from outside the body using x-ray machines.

Internal radiotherapy – when wires, tubes or seeds are put into your body, known as brachytherapy.

Radioisotope therapy – when you are given an injection, drink or capsule.

Why is radiotherapy given?

Curative treatment

Radiotherapy is often given to help cure the cancer. This is known as curative or radical radiotherapy. It may be given before or after surgery. When given before surgery, it may make the tumour smaller. When given after surgery, it will help kill any cancer cells that might be left behind. Sometimes chemotherapy is given at the same time as radiotherapy.

Most treatments last 2–7 weeks. Treatment is usually given once a day with a rest at the weekend. Each treatment is called a fraction.

Giving the treatment in fractions means that less damage is done to normal cells than to cancer cells. The damage to normal cells may not last long, but this is what causes the side effects of radiotherapy.

Palliative treatment

Radiotherapy may be given to relieve symptoms when a cancer cannot be cured. This is called palliative treatment. Lower doses are given than for curative treatment, usually over a shorter period of time or sometimes for just a single treatment.

Radiotherapy staff

There are different staff at the hospital who may help with your treatment:

Clinical oncologist

A clinical oncologist is a doctor who specialises in radiotherapy treatment. They are sometimes called a cancer specialist. They will plan your treatment. You may see them during and after your treatment so they can check its effects on you. You can ask to see them in between appointments if you have any problems you would like to talk about.

Radiographers

Diagnostic radiographers use x-rays and scans to diagnose illness. You may have x-rays or scans during and after your treatment to check how it is working.

Therapy radiographers work closely with clinical oncologists. They plan radiotherapy treatments and also operate the machines that give you your treatment.

Where possible you'll see the same therapy radiographers during your treatment, so you may get to know them well. They can help and advise you about any part of your treatment, including any side effects you have. You can also talk to them about any worries you have.

You can ask to be treated by a radiographer of the same sex, if you prefer.

Clinical nurse specialists

Many cancer centres have specialist cancer nurses, sometimes called clinical nurse specialists. They are experts in your type of cancer and can give you support and information during your treatment. They can also help with dressings and medicines.

Giving consent for treatment

Before you have any treatment, your doctor or specialist nurse will explain how it may help you and how it may make you feel. They will ask you to sign a form to show that you agree and understand this. You can ask questions about any worries you might have.

It's a good idea to take someone with you who speaks both your language and English. Interpreters may be available if you need one, but try to let the hospital know in advance if you would like one to be there. No treatment will be given without your consent.

Where is treatment given?

You will have your treatment in a radiotherapy department at a specialist cancer hospital. You will usually have your treatment as an outpatient. If you are unwell or having chemotherapy at the same time, you may need to stay in hospital. In this case, staff will take you to the radiotherapy department each day from the ward. If you're having internal radiotherapy or radioisotope therapy, you may have to stay in hospital for a few days.

Planning your treatment

Planning your treatment is very important. It may take a few visits to hospital. Careful planning makes sure that the treatment is as effective as possible. It makes sure the rays are aimed directly at the cancer so that they cause as little damage as possible to surrounding healthy tissue.

When you have a planning session it's a good idea to take someone with you who speaks both your language and English. Interpreters may be available if you need one, but try to tell the hospital before your appointment if you would like one.

You will usually need a scan at one of your planning sessions. There are different types of scan and your team will decide which is best for you. You will be asked to remove some clothing from the area to be treated and to put on a gown for the scan. You may also be given a drink or injection of dye which allows particular areas to be seen more clearly. You will need to lie on a couch which is quite hard. The pictures from the scan help plan the treatment and the position you'll be in. They will be used to make sure that you're lying in the correct position each time you have your treatment.

You may need a device called a **mould or shell** to help you stay still during your treatment. These are often used for treatment to the head and neck area. They are also used for children having treatment. If you need one of these, it will be made before your planning starts.

Once the doctors have worked out where you need your treatment, the radiographer will make tiny ink marks on your skin called tattoos or permanent marks. The staff at the hospital will explain how to look after these marks. Sometimes two or more permanent marks are made on the skin. These will never go away but they are very small. It's a little uncomfortable while they are being done, but they help to make sure the treatment is given in the right area.

You may have to wait a few days after your planning appointment until your treatment starts.

External radiotherapy

Most people will have treatment every day from Monday–Friday. You can ask for your appointment to be at the same time every day. The number of treatments will depend on the type and size of the cancer. Treatments normally take 2–7 weeks although some will last longer.

Before your first treatment, the radiographer or doctor will explain how it is given. It's normal to feel worried about having treatment, but as you get to know the staff and understand what's going on it should become easier.

Radiotherapy does not hurt. Each session may take anything from a few seconds to several minutes. The way you lay on the couch is important, so the radiographers may take a little while to get you ready. They will help you to lie on the couch and adjust its height and position.

Once you are in the correct position, the staff will ask you to lie still. The lights in the room may be dimmed and the staff will leave the room while the treatment takes place. Don't worry if they seem to rush out of the room once they have put you in the right position. This is just to keep your treatment time as short as possible.

The staff will watch you from the next room, either through a window or on a television screen. No one else will be able to see you. If you have any problems, you can raise your hand or ring an alarm to let them know you need some help.

Most radiotherapy machines can move around your body to give the treatment from several different directions. Once the treatment is over, the radiographers will come back into the room and help you off the couch.

Your treatment session only takes a few minutes, but you may need to wait for a while in the department if it's very busy. It's a good idea to take a book or magazine to help pass the time.

External radiotherapy treatment will not make you radioactive. It's safe for you to be with other people, including children, after your treatment.

Internal radiotherapy

Internal radiotherapy (brachytherapy) gives radiation treatment by putting a radioactive substance (the source) into or near the part of the body where the cancer is growing.

In women, it's used for treating cancers of the cervix, womb or vagina. It can be used on its own or with external radiotherapy. The source is put close to the area of the cancer. This gives a high dose of radiotherapy directly to the tumour, but only a low dose to normal tissues.

The source is placed inside hollow plastic or metal tubes, and put at the top of the vagina. The tubes are placed inside the vagina while you are under a general anaesthetic. They keep the source in the right place. Once the tubes are in place, you may have to stay in hospital for a short time. After the treatment, they are removed.

Sometimes doctors give brachytherapy by putting caesium or iridium wires into the tumour. This is used for many types of tumours including those in the mouth, lip, cervix and breast. You will need a small operation to place the wires. Once they are in place, you will need to be in a room on your own until the wires are removed. This is usually after 3–8 days.

Doctors and nurses may only spend a limited time with you, and pregnant women and children will not be allowed to visit.

These safety measures might make you feel alone, frightened and fed up. Let the staff know if you have any of these feelings. Once the treatment is over, it's safe to be with other people.

In men, brachytherapy may be used to treat small tumours in the prostate gland. Small radioactive metal seeds are placed into the tumour. The seeds give out small doses of radiation very slowly over a period of time. They are not removed but stay in the prostate. The radioactivity gradually fades away over about a year. The radiation affects only a small area around the seeds, so there's no danger of it affecting other people.

Radioisotopes

These are given as a drink or tablets that are swallowed, or by an injection into a vein.

The most common type of radioisotope treatment is radioactive iodine. It's used to treat tumours of the thyroid gland and is given as tablets. With this treatment, any iodine that is not taken up by the thyroid gland is passed out of the body in sweat and urine. This means that you will need to stay in a room on your own until the radioactivity has fallen to a safe level. This usually takes about 4–7 days. After this you can go home.

Side effects

Radiotherapy affects people in different ways. Some people have very few side effects while others may have more. The side effects we describe here won't affect everyone who has treatment. Most side effects are mild, and feeling very ill is rare. Before you start your treatment the staff will talk to you about which side effects you may get. Remember to talk to them about any symptoms that worry you.

Tiredness

You may feel very tired during treatment and for some time afterwards. This can often be made worse by having to travel to hospital each day. If you are tired, allow yourself time to rest and plan your day so that you don't overdo things.

It is also important to get a little exercise each day if you can. A short walk may give you more energy.

Feeling sick

Some people find that their treatment makes them feel sick, and sometimes they are sick. This is more common if you have treatment near the tummy. The hospital staff can prescribe anti-sickness drugs if this happens. These will usually help to stop you feeling sick.

Eating and drinking

At times you may not feel like eating. If this happens, try having small snacks throughout the day rather than large meals. If you're having any problems with eating it's important to tell the staff. They can give you some high energy drinks and also tips to improve your appetite.

Skincare

Radiotherapy can affect your skin. This usually begins after about 10 days. You may find that the skin in the treatment area becomes red and sore or itchy. People with dark skin may find that their skin becomes darker and looks blue-black. If you notice any soreness or change in skin colour while you're having treatment, let the staff know.

They can tell you how to look after your skin in the area being treated. You may be asked to use only lukewarm water and soaps that have no perfume. You should not lie in the bath for long. You can dry your skin by patting it gently with a soft towel. Try not to rub the area as this may make it sore. Talcum powder, deodorants and perfumes may also make your skin sore and should not be used. This only applies to the treatment area and you can treat the rest of your skin normally.

If your skin does get sore, the hospital staff may give you cream to apply to the sore area. It's important to follow the instructions when using the cream.

You will need to cover the area that has been treated when you go out in the sun, or if it is very windy outside. Try to wear loose-fitting clothes made of natural fibres during your treatment. These are more comfortable and less likely to irritate your skin. Use a high-protection sun cream and be careful to protect the area for a year after your treatment has finished.

Hair loss

You will only lose hair if your treatment is in an area where hair grows. So if you are having treatment to your tummy or breast, you will not lose your hair. If you are having treatment to your head, you may lose some hair.

Changes in your blood

Sometimes, your level of red blood cells may become low. This can make you feel tired and you may need a blood transfusion. If your white blood cell level is low, you may feel unwell. If your temperature goes above 38°C (100.4°F), or you feel hot and cold and shaky, you must tell your doctor or the staff at the hospital straight away.

Diarrhoea

Having diarrhoea, or loose bowel motions, is common if you have treatment to your tummy. You may find you have to visit the toilet more often than normal. It can make you feel tired and weak and your tummy may hurt. It's important to drink plenty of fluids. Tell the staff at the hospital if you have diarrhoea. They can give you tablets to help.

Problems with passing urine

You may find you have to pass urine more often. This can happen if you are having treatment near the bladder. Drinking more fluids may help. Some people find it helpful to drink cranberry juice or lemon barley water.

If it hurts when you pass urine, or if you can see blood in it, let the staff know.

Some men who have had brachytherapy treatment for prostate cancer may have difficulty passing urine. They may need to have a catheter put in. This is a plastic tube placed into the bladder. It drains the urine into a bag. If this is needed, you will be shown how to look after the catheter by the nurses at the hospital. They can also arrange for a district nurse to visit you at home to help you care for your catheter.

Sore mouth

If you have treatment to your head and neck, your mouth may become sore. It's very important to look after your mouth during treatment. The staff will show you how to do this. Regular mouthwashes and painkillers will be prescribed for you if you need them. Try not to smoke and try to avoid alcoholic drinks. Avoid spicy or very hot food as this may make your mouth feel sore. It is very important to tell the staff if your mouth feels sore or you have mouth ulcers.

Long-term side effects

Most side effects last for a short time. Some may last for a few weeks after your treatment has finished. Sometimes, some side effects last longer and occasionally for the rest of your life. Your doctor will talk to you about this before you have your treatment. It is important that you understand about long time side effects.

Additional information

If women are having treatment to their tummy (pelvis), the ovaries may be affected. They may find that their periods become irregular and then stop. This is called the menopause.

If the ovaries are damaged, a woman may not be able to have a baby after their treatment finishes. In some cases, it may be possible to collect and store eggs before radiotherapy starts. This means you may be able to have a baby in the future. Some women may be able to have a small operation to move the ovaries out of the way of the treatment so that they are protected. It is very important that all women discuss this with their doctors and understand what this might mean to them.

In men, the sperm count may lower during and after treatment. This means a man may not be able to father a child in the future. It may be possible to keep some sperm in a place called a sperm bank. Then it can be used to help make a baby when needed. It's important to discuss this with your doctor before starting treatment.

Radiotherapy to the pelvic area in men may also leave you unable to have an erection. This is called impotence. It may develop some months or years after the treatment finishes. There are medicines and other practical ways to help with impotence.

It can be very upsetting to find that the treatment you need for your cancer may also mean you can no longer have children. You may want to discuss the risks and all your options with your doctor before your treatment starts. You may also find it helpful to talk about your feelings and concerns with a trained counsellor or a religious leader.

Contraception

Although it's possible to have a normal sex life during treatment, some people may find that their interest in sex decreases.

Radiotherapy will harm an unborn baby, so it's important not to become pregnant while having treatment. It's a good idea to use effective contraception during treatment so you don't get pregnant. Men are advised not to father children while having treatment or for a few months afterwards. It can help to discuss these issues with your doctor or nurse.

Related Macmillan information

- The building-up diet
- Dry mouth
- How are you feeling? The emotional effects of cancer
- Pelvic radiotherapy in men – possible late effects
- Pelvic radiotherapy in women – possible late effects
- Understanding radiotherapy

For copies of this related information call free on 0808 808 00 00, or see it online at macmillan.org.uk

This fact sheet has been written, revised and edited by Macmillan Cancer Support's Cancer Information Development team. It has been approved by our medical editor, Dr Tim Iveson, Consultant Clinical Oncologist.

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- Cox J, Kian Ang K. *Radiation Oncology*. 9th edition. 2010. Mosby Elsevier.
- Tobias, Hochauser. *Cancer and its Management*. 6th edition. 2010. Oxford Blackwell Scientific Publications.
- Up to date. www.uptodate.com (accessed August 2013).

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