

## **Introduction**

Radiotherapy uses carefully measured doses of radiation to treat cancer. The most common type of radiotherapy uses beams of high-energy rays, usually x-rays. The radiotherapy machine aims specific amounts of the radiation only to the area of the body that it is pointed at and nowhere else.

Radiotherapy works because the high dose of radiation damages cells and stops them from growing and dividing. Normal cells that are affected usually recover or repair themselves quite quickly. Cancer cells, which are abnormal cells, do not recover. Any side effects, which occur during treatment, are usually temporary.

## **Benefits of radiotherapy**

The purpose of radiotherapy is to destroy the cancer cells while causing as little damage as possible to normal cells. It can be used to treat many kinds of cancer in almost any part of the body. Curative treatment, which is sometimes called radical treatment, aims to give long-term benefits to people. Sometimes radiotherapy is given on its own or it may be given alongside other treatment.

Radiotherapy may be given before surgery to shrink a tumour or after surgery to stop the growth of cancer cells that may remain. It can also be given before, during, or after chemotherapy (anti-cancer drugs) to improve treatment results.

Palliative treatment aims to shrink tumours and reduce pain or relieve other cancer symptoms. While a cure is not likely, palliative radiotherapy may also prolong life.

## **Risks of radiotherapy**

Radiotherapy can damage or destroy normal cells as well as destroying cancer cells and cause treatment side effects. Most side effects are temporary and your doctor will not advise you to have any treatment unless the benefits – control of disease and relief from symptoms – are greater than the known risks.

You should not become pregnant before or during radiotherapy because radiotherapy may injure the foetus, especially in the first three months of a pregnancy. Please discuss with your doctor if you think you may be pregnant. Your doctor will also be able to advise you on how long you should wait before becoming pregnant.

Some doctors advise men against fathering a child during radiotherapy and for a few months afterwards. Again, your doctor will be able to discuss this with you.

## **How is treatment given?**

Radiotherapy is given in specialist treatment centres. The specialist doctor who is in overall charge of your radiotherapy is called a consultant clinical oncologist or radiotherapist. Most clinical oncologists also prescribe chemotherapy. Therapy radiographers work in radiotherapy departments and are the main people you will come into contact with when you have radiotherapy treatment. They work closely with the clinical oncologist and help plan and give your treatment. They will be able to answer many of your questions.

Radiation therapy can be given in one of two ways: external or internal. External radiotherapy is usually given as a course of several treatments over days or weeks while internal treatment may only happen once or a small number of times.

## **External radiotherapy**

External radiotherapy is usually given during outpatient visits to a hospital cancer centre. A machine directs the high-energy rays, usually x-rays, at the cancer site and a small area of normal tissue surrounding it. You will be positioned carefully on a treatment couch and then the machine will be directed exactly at the area to be treated, often from different angles. Treatment takes several minutes and is painless. Before you start your course of radiotherapy you will usually need to attend the hospital for treatment planning. External radiotherapy doesn't make you radioactive and you can safely mix with other people, including children, at anytime.

## **Internal radiotherapy**

Internal radiotherapy can be given in several ways either as an outpatient or inpatient. Brachytherapy is a treatment, in which solid radioactive sources are placed inside a body cavity or needles are placed in the tumour. This usually involves staying in hospital for a few days until the radioactive source has been removed.

Another type of internal radiotherapy involves using a liquid source of radiation and is called radionuclide (or radioisotope or unsealed source therapy). It can either be taken by mouth or given as an injection into a vein. For this type of treatment you will need to stay in hospital for a few days until most of the radioactivity has disappeared from your body. If you are going to have internal radiotherapy, your doctor will discuss this with you and give you further information.

Occasionally, with radioactive treatment or with treatment with radioactive 'seeds', you will be made radioactive for a few days. You may then have some temporary restrictions on your social life. This will be carefully explained to you.

## **What will happen during treatment?**

When you have radiotherapy, your treatment needs to be planned carefully. This is to make sure that the treatment area or treatment field includes all of the cancer and avoids healthy tissues.

Planning usually takes place in a simulator, which is a special x-ray machine. This provides an exact "mock-up" of treatment positions. Radiographers operate the simulator and run the planning suite. They will explain what will happen during planning and carry out any preparation you may need. The radiographers and physicists (who are specialists in the subject of radiation) calculate the dose of radiation you will be given. This is usually carried out with the help of computers.

The doctors will use your previous x-rays or scans to help them plan your treatment. Sometimes you may be asked to have more tests, for example a CT scan lying in the treatment position. Any extra preparation or procedures will be explained to you.

You may have a single treatment or a course of treatments, called fractions, over several weeks. This will depend on why radiotherapy is recommended for you. Lower doses are given for palliative treatment than for curative treatment and usually over a shorter period of time. If you want more information about this or your treatment machine, ask your doctor or radiographer.

Most patients attend the hospital for treatment daily, Monday to Friday. However, radiotherapy is sometimes given only once or twice a week. Treatment may also be given more than once a day. A course of radiotherapy may last for about six weeks. Ask your doctor or radiographer how long your course of treatment will be. Most people receive radiotherapy as outpatients, travelling to the department each day. You might like to ask a friend or relative to come with you. You will usually be able to book all your appointments at the same time to allow you to plan ahead.

When you arrive for your treatment, the radiographers, who carry out your treatment, will explain things to you. If there is anything you don't understand or you have questions, ask them. You may be asked to change into a gown before treatment, and then the radiographers will position you on the couch. Using the temporary tattoos or marks which were put on your skin during treatment planning, they will line up the radiotherapy machine. It won't usually touch you. The preparation may take some time, often longer than the treatment itself. It will probably take even longer on the first day. When the radiographers are satisfied that you and the treatment machine are both in the correct position, they will leave the room and switch on the radiation beam. You won't feel anything during the treatment.

The radiographers will watch you using closed-circuit television or through a window. You can speak to them, or vice versa, by an intercom. You should keep very still during the few minutes it takes to give your treatment but you can breathe and swallow normally.

## **After treatment**

As your course of treatment progresses you may find you become more tired than usual. You may need to reduce the hours you work or cut back on social or sports activities. Make sure you get enough rest and accept offers of help with everyday tasks or jobs around the home. You may also have 'up' days and 'down' days, which is quite usual. If you are worried about anything, or would just like to talk, your hospital doctor, radiographer or nurse will be happy to listen or advise.

Everyone reacts to radiotherapy differently and many people have hardly any side effects. But because radiotherapy affects normal tissues within the treatment field, the side effects will vary depending on which part of your body is being treated and the number of treatments you have. You will be given additional information about the side effects relevant to your treatment. Most side effects are temporary and they are rarely severe. They start at varying times during treatment and disappear in the weeks after the end of it. Your doctor will discuss any possible temporary or permanent side effects with you before the start of your treatment and before you sign your form.

Tiredness is quite common, particularly towards the end of treatment and this may last for sometime afterwards. Tell your radiographer or doctor if tiredness is a problem. They may be able to offer advice on ways to save your energy and cope with everyday activities. During your course of radiotherapy you may have regular blood tests to check the effects on your general health. If the radiotherapy causes anaemia, it may be necessary for you to have a blood transfusion. Very few people feel sick during radiotherapy – it depends on which part of the body is being treated. Some people feel sick at the beginning of a course of treatment but find that nausea often disappears within a day or two. Others start to feel sick later on. Do tell the radiographers or your doctor if you suffer from nausea. You can be given drugs to control it and it's very unlikely that your radiotherapy will need to be suspended.

There is currently no general agreement based on research on caring for skin during radiotherapy. Advice on skin care varies from one hospital to another. The staff at your radiotherapy department will give you advice about how to care for your skin in the treatment area at the beginning of your course of radiotherapy. During treatment the skin may become

red and sore and it's important not to irritate it. Avoid shaving within the treatment area. You may wash the area gently using a mild unperfumed soap, such as baby soap, and pat it dry. Don't use any deodorants, perfumes or lotions on your skin other than those recommended by the team caring for you. You should protect your skin from extremes of temperature and continue using sunscreen (factor 15 or above) after your treatment has finished. There has been little research into the effects of radiotherapy on different ethnic skin types. However, anecdotal evidence suggests that people with darker skin (for example, Asian or Afro-Caribbean) may develop greater skin reactions during treatment than people with lighter skin. If you have any discomfort, the radiographers or nurses will advise you on skin care.

## **Late side effects**

Any side effects which may develop in the longer term and which may be permanent depend on the part of your body which has been treated, the dose of radiotherapy you have received and many other things, such as why you are having radiotherapy. Your doctor will be able to explain these side effects and also the likelihood of them occurring. Do ask your doctor if you have any concerns.

## **After treatment**

When treatment finishes many people look forward to life returning to normal. It can seem confusing then, if you find yourself feeling a bit low. This is normal. You will have become used to a new routine of hospital visits during radiotherapy treatment. Ending treatment will also bring about changes that you will need to adjust to. Most side effects only last a few days or weeks but some of the effects of radiotherapy, such as tiredness, may last for a couple of months after the end of your treatment. However, you should gradually start to feel like yourself again, although you must still make sure you get enough rest and eat well. You will be given a clinic appointment so that the doctor can check your progress. These appointments will probably become less frequent as time passes. If you are worried about anything at all, you should phone for an earlier appointment. Your family doctor will be sent a complete report about your treatment.