

Stereotactic radiotherapy to the lung

You have been offered a course of stereotactic radiotherapy for the treatment of a tumour in the lung. This factsheet explains what this means and describes the possible side effects during and after treatment.

What is stereotactic radiotherapy?

Stereotactic radiotherapy is an effective way of giving more accurate radiotherapy to the lung, over fewer treatment sessions, to increase the chances of controlling the tumour. Numerous x-ray beams of high energy are used to deliver a high dose of radiation from outside the body to the tumour, while sparing the surrounding normal tissues as much as possible.

What are the benefits of stereotactic radiotherapy?

Treatment is given to control the lung cancer and hopefully cure it. Stereotactic radiotherapy provides an increased chance of tumour control compared to a course of standard radiotherapy alone. In some people the lung cancer stays the same size and becomes dormant (inactive) and in others it may shrink. The higher dose of radiation delivered with each stereotactic treatment compared to standard radiotherapy, results in fewer visits to the hospital for treatment (3 to 10 visits compared with 20 to 32 visits). Smoking during radiotherapy has been shown to reduce the effectiveness of treatment and increase side effects. If you still smoke, please discuss this with your doctor.

What will I have to do?

Once the decision has been made to give you stereotactic radiotherapy, you will be given appointments to attend for planning of treatment and then for the treatment itself.

What preparation do I need before my treatment?

A radiotherapy planning CT (computerised tomography) scan is arranged for you as part of the preparation for treatment. This is a scan which is done with you in the position you will be in for the treatment. This scan specifically helps your doctor plan the treatment accurately. Depending on your individual case, your radiotherapy may be delivered using one of two different radiotherapy machines (Linear Accelerator or CyberKnife).

You may be given an intravenous injection of contrast (iodine-based dye) during the scan. Please tell the doctor before your CT planning appointment if you think you are allergic to contrast or if you are diabetic. You **must not** have anything to eat or drink for two hours before the scan. Your doctor may discuss inserting fiducial markers around the treatment area before your planning CT scan with you. If this is proposed, you will be given a separate information sheet about this.



Your doctor may discuss using an Active Breathing Control (ABC) device for planning and delivery of your treatment. If this is proposed, you will be given a separate information sheet about using this. After your planning CT scan, your doctor and medical physicist will then plan your treatment on a planning computer. This is to identify the specific areas which need treatment, how many beams of radiation are needed and from which directions.

What happens during my treatment sessions?

Treatment sessions are usually alternate working days, delivered on an outpatient basis, Monday to Friday, for a period of one to three weeks. For each treatment, you will be asked to lie in the same position as you did during the CT planning session. Care is taken to make sure you lie in the same position for each treatment. After positioning, the radiotherapy staff will leave the room. Although you will be on your own, they can see and hear you through TV monitors and intercoms. Scans or x-ray images are taken just before treatment to check positioning and may be repeated. The machine is then moved to direct the treatment onto the tumour. The treatment session usually lasts 10-20 minutes for treatment on the Linear Accelerator and 30-90 minutes for treatment on the CyberKnife.

What are the side effects of the treatment?

During the treatment session you will not feel anything when the machine is turned on, just like when having an x-ray. Side effects may develop as the course of treatment goes on but they vary from person to person. Many people will experience few or no side effects. You will be seen in the clinic weekly (or more often if necessary), to monitor these side effects and to help if you have problems.

Short-term side effects

A list of possible early side effects that can occur during or up to 12 weeks after treatment and how to deal with them, is shown below.

Possible side effects	Advice
Reddish skin (soreness, dryness and itch) in treated area	<p>Some patients experience a skin reaction in the area being treated. This reaches a peak after the end of the course and the severity of the reaction varies from person to person. Skin breakdown can occur in areas of friction, such as under the arms.</p> <p>During your treatment you can continue to wash the area being treated using tepid water and mild, unperfumed soap. You should dab yourself dry with a soft towel and avoid rubbing. Skin dryness is common. You can moisturise the skin in the treatment area using either cream or E45 (if you are not sensitive to lanolin). You can buy these from any chemist.</p> <p>If you enjoy swimming, you can continue. Your costume or the chlorinated water may cause further irritation to your skin, so shower thoroughly afterwards.</p> <p>It is important to protect the treated area from exposure to the sun during and after treatment.</p>



Tiredness	This often starts during treatment and continues for 6 to 8 weeks after the end of treatment. You need to rest when you feel tired.
Soreness when swallowing / heartburn	This occurs if some of the treatment beams pass through the oesophagus (food pipe or gullet). The food pipe may then become sore and narrowed. You can take any indigestion or heartburn remedy, such as Gaviscon. Your doctor can prescribe soothing liquid medicine to help and nutritional drinks if eating is a problem. Try eating soft foods if you develop soreness and avoid spicy or hot food, smoking and alcohol during treatment. This usually gets better within a few weeks of stopping treatment.
Increased cough, breathlessness and / or raised temperature	Occasionally these symptoms can worsen due to inflammation of the lung tissue. This inflammation or 'pneumonitis' can cause symptoms of increased breathlessness, dry cough or fever usually 6 to 12 weeks after the treatment has finished. It is less common with stereotactic radiotherapy compared to standard radiotherapy. Tell your doctor if this happens. Sometimes oral steroid tablets are given to improve symptoms and reduce the inflammation.
Pain in the chest wall	If your tumour is close to the chest wall, you may have some pain after your radiotherapy treatment. This is usually mild and relieved by simple painkillers such as paracetamol. Tell your doctor if this happens. Sometimes stronger painkillers are given.

If you feel the side effects you are experiencing are more than anticipated, please contact your medical team for advice.

Long-term side effects

A list of possible late side effects that can occur more than three months after treatment and how to deal with them, is shown below.

Possible side effects	Advice
Lung scarring/collapse	A possible effect of this treatment can be scarring (hardening and stiffening) or collapse of part of the treated lung. This can lead to long term increased breathlessness and reduced exercise tolerance. Every effort will be made to reduce this risk. Rarely, a few patients may need oxygen therapy permanently as a result of stereotactic lung treatment.
Pain in the chest wall/rib fractures	For tumours close to the ribs, there is a small risk that the radiotherapy may weaken the ribs and cause a rib fracture. For most patients this does not cause any symptoms, but a small number of patients who develop a rib fracture as a result of stereotactic radiotherapy can experience pain and need to take painkillers, sometimes for a long period of time.



Nerve damage	For tumours close to the top of the lungs, there is a very small risk of damage caused by the radiotherapy to the nerve bundles going to the arm. This may cause long term weakness or numbness in part of the arm. The chances of this happening are very small and great care is taken to avoid or minimise the dose of radiation to these nerves.
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Who do I contact if I have problems or want to ask a question?

The team will see you once a week in clinic during treatment and you will have a chance to discuss any problems that may arise. When you attend the hospital for treatment, please mention any problems that worry you to the radiographers giving you radiotherapy. They can call the doctor looking after you, if you (or they) are concerned. At weekends and in the evenings there is an on call doctor who will also be able to advise you, although they may not be from the same team that is looking after you (see contact details below).

How will I know if the treatment has worked?

The doctors will not be able to tell you how successful the treatment has been immediately after the stereotactic radiotherapy has been completed. After the radiotherapy reactions have settled down (usually 4 to 6 weeks after treatment) you will be seen in the outpatient clinic to check how you are. You may also have a chest x-ray at this appointment. The doctor will then usually request a CT scan to then be carried out two to four months after completion of treatment to assess for response to treatment. Your follow up clinic appointments may be here at The Royal Marsden or at the hospital where you were initially diagnosed. If you do not have an appointment, please ask.

Are there any alternatives to stereotactic radiotherapy?

A typical alternative to stereotactic radiotherapy is standard radiotherapy with 20 treatments over 4 weeks. Other alternatives are palliative radiotherapy over 1 to 12 treatments or no radiotherapy, both of which are associated with poorer tumour control.

What other things should I be aware of?

Support

Other members of the team such as clinical nurse specialists, dietitians, occupational therapists or district nurses may also contact you to give help and advice. This is to make sure that all available support is there for you. We will discuss this with you first and nobody will be involved in your care without your agreement. Please ask if you need any extra help or support.

Finance and working

If you are having financial problems, please discuss this with your clinic nurse or nurse specialist, who can refer you to the Welfare Rights Advisor. As a person with a diagnosis of cancer you are entitled to free NHS prescriptions. Ask at the chemist or pharmacy for an exemption certificate form FP92A and get your doctor to sign this.



