



Stereotactic radiotherapy to the brain



This guide is for people who have been recommended to have stereotactic radiotherapy to the brain. It is intended to give you an overview of what is involved and answer some of the questions you may have about this treatment.

Your doctor or a member of your team will talk to you in more detail about your treatment and will be happy to answer any questions that you may have. If you would like more advice, please ask a member of your treatment team. The team consists of radiographers, doctors and nurses who will help and support you throughout your treatment.

Before starting treatment your scans and history will have been discussed in a meeting attended by your surgeon, radiologist and specialist nurse. All treatment options will have been discussed, including stereotactic radiotherapy. This booklet is a general guide because the timing and effects of treatment may vary from one person to another.

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Patient pathway

Once you have consented (agreed) to radiotherapy, you will be referred for a CT scan and radiotherapy



Radiotherapy appointments are booked by the radiotherapy bookings team available on 020 7188 3160



You will attend the Cancer Centre at Guy's for an MRI scan and planning CT scan. You will also have an appointment to have your mask made. You will be at the Cancer Centre for approximately three hours.



Approximately two weeks later, you will attend for your trial set-up session. You will start your treatment one to two days later.

You will be told how many treatments you need. Appointments for your radiotherapy take approximately 30-45 minutes

What is stereotactic radiotherapy?

Radiotherapy is the use of high energy x-rays to treat tumours. It works by damaging the DNA of tumour cells causing them to die or stop growing. Side effects are generally isolated to the area you are having treated.

Stereotactic radiotherapy is a very accurate way of giving radiotherapy treatment to small areas of the brain. It allows us to use very small beams of high energy x-rays to treat the tumour. The radiotherapy treatment is given in small doses called 'fractions'. The number of fractions you receive (between one and five) will depend on which course of treatment is best for you. Your individual treatment will be based on your condition and tumour type. Your consultant will discuss this with you in more detail.

As we can direct the radiotherapy very accurately, this increases the chances of controlling your tumour whilst at the same time minimising the amount of x-rays that pass through your healthy tissue. This reduces the chance of possible side effects from the treatment.

We use a piece of equipment called AlignRT which works with the radiotherapy machine (linear accelerator) to help us to position you before the treatment. It also allows us to track your position throughout your radiotherapy treatment to within a distance of less than one millimetre.

Why do I need stereotactic radiotherapy?

Stereotactic radiotherapy is suitable for small, clearly defined tumours which may be difficult to remove surgically or where surgery is likely to be associated with a high risk of side effects.

After discussing your case, your team of doctors (neuro-surgeons, neuro-oncologists and neuro-radiologists) have recommended stereotactic radiotherapy as a suitable treatment option.

You can discuss with your consultant whether alternative options for treatment are available and suitable for you.

Before radiotherapy starts

Pacemakers – If you have a pacemaker, please tell your doctor as soon as possible. You will need to have a pacemaker check before your radiotherapy treatment.

Shunts – If you already have a ventriculoperitoneal shunt (V-P) fitted, we will need to know if it is a programmable type of shunt, prior to scanning and treatment. If you have been provided with an information card please bring this with you.

Pregnancy – All female patients under the age of 60 will be asked to confirm their pregnancy status before the first planning session starts. **It is very important that you are not and do not become pregnant while undergoing radiotherapy planning and treatment.** If you think you may be pregnant at any time during your course of treatment, please tell your clinical oncologist or radiographer immediately. If necessary, please speak to your GP about contraception methods suitable for use during radiotherapy.

Who will look after me during treatment?

A number of healthcare professionals will be involved in your treatment and care and are detailed below.

Clinical oncologists are doctors who are trained in the use of radiotherapy and chemotherapy. The consultant clinical oncologist will be in charge of your care. Clinical oncologists are supported by a team of specialist registrars, therapy radiographers, nurses and administrative staff.

Therapy radiographers are specifically trained to plan and deliver the radiotherapy. They provide support and advice on radiotherapy side effects and their management. The radiographers will have day-to-day responsibility for you while you are receiving radiotherapy.

Your **advanced practitioner radiographer** will provide support and advice on all aspects of your treatment.

Oncology nurses provide support and advice on the side effects of radiotherapy and chemotherapy and their management.

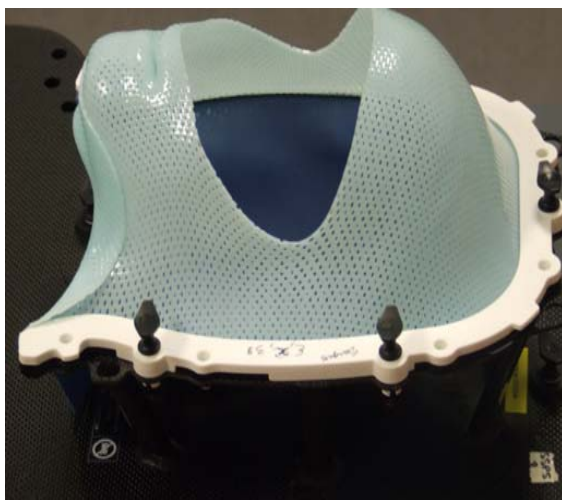
Preparation

Before you come for your stereotactic radiotherapy we will need to prepare you for the treatment. You will need to wear a close fitting plastic treatment mask. You will be wearing this mask during each radiotherapy treatment to make sure that your head is kept still so that the treatment can be given accurately.

You will be asked to remove your shoes and clothes from the waist upwards and we will provide you with a gown to wear. You will lie on a treatment table and be positioned so that you are straight. This is the position that you will be in for the CT scan and for all of your

treatments. Making the mask is painless and you are able to breathe normally throughout.

A thin sheet of plastic will be warmed in water to soften it. This is then placed over your face and moulded to your forehead and chin (see pic 1). The mask will become rigid as it dries and may get slightly tighter. This is normal and will help to keep your head still.



Pic 1

The mask-making process takes around 10 minutes but your appointment may last 30 minutes in total. The mask needs to be a very snug fit. We therefore require that all men with facial hair (beards and moustaches) remove them completely and are clean shaven before attending the mould room appointment. If you are planning a haircut, this must be done before attending the mould room.

Your mask will be removed once it is set. After having your mask made, you will have a computerised tomography CT scan with your mask on.

Computerised tomography (CT) scan

A CT scanner is a special x-ray machine that produces a series of detailed pictures showing the structures in your head. This scan is for planning your treatment only. The images are sent to a planning computer and used to reconstruct a three-dimensional image of your head. The clinical oncologist will then use this image along with your MRI (magnetic resonance imaging) scan data to accurately plan your radiotherapy.

You may eat and drink normally on the day of your scan and throughout your treatment appointments, and there is no harm in you being around other people.

During the CT scan

You will lie on the CT table in the same position as when you had the mask made. Your mask will be placed over your face and secured to the couch.

You do not need to hold your breath – you will be able to breathe freely with the mask on. A digital photograph may be taken of you in the mask. This is only used by the radiographers to set you up for treatment.

The table will be raised to go through the scanner and the radiographers will then leave the room. They will be watching you at all times on closed circuit television (CCTV).

The radiographers will start the scan from outside the room. You will feel the bed slowly move in and out of the scanner and hear the machine buzzing. The scan should only take a few minutes.

After the CT scan

Once the scan is completed, the radiographers will come back into the room and remove the mask.

The radiographers will help you down from the scanning table and you may then get dressed. The radiographers will then give you instructions about your MRI scan.

MRI (magnetic resonance imaging) scan

An MRI scan is also required in order to plan your treatment. Your MRI scan will be on the same day as your CT scan. You do not need to wear your mask for this scan.

Before the MRI scan

Your doctor will request that a contrast agent (a fluid that shows up on MRI images) is used during the scan. This allows some areas in your head to show up more clearly on the images.

Information about the scan and contrast can be found in the leaflets **Having an MRI scan** and **Gadolinium (Dotarem®) contrast injection** which will be given to you at your clinic appointment.

What is a radiotherapy plan?

Your radiotherapy plan is the personalised design of your radiotherapy treatment. It is tailor-made for you and is based on the MRI scan and the CT scan that you had with your mask on. A team of doctors, radiographers and physicists will work together to decide where the treatment needs to be directed.

What will happen when I start my treatment?

One or two days before your treatment starts you be asked to attend a **trial set-up** session. This is to ensure that the treatment we have planned for you can be delivered accurately and no significant changes have occurred since your treatment was planned.

When you arrive for your appointment, please book in at reception in the Radiotherapy Village on Level R. One of the treatment radiographers will discuss your treatment with you and you will be able to ask any questions that you may have.

You will be asked to change in a cubicle, and then taken into the treatment room where the staff will introduce themselves.

You will be asked to lie on the treatment table, which will be set up with the same equipment as when you had your CT scan. Your mask will be placed over your face and the lights will be dimmed so that the radiographers can see the room lasers that will help them to position you correctly (see pic 2).



Pic 2

You should relax, stay still and breathe normally. Radiotherapy treatment is given by a machine called a linear accelerator, often referred to as a linac. You will hear the machine move around you. It will come close to you but will not touch you. You will hear radiographers taking various measurements and feel the bed moving. Once you are in the right position, the radiographers will leave the room.

Once the radiographers have left the room you will hear a buzzing sound. This is the door safety interlock. You will be alone in the room during your treatment but the radiographers will be watching you all the time on closed circuit television (CCTV).

X-ray images are taken regularly during your treatment to ensure that the treatment is being delivered accurately. There will be a short delay while these images are assessed and you may feel the bed move as the radiographers adjust its position from outside of the room. Treatment will then be delivered and the machine will move around you to treat you from different angles. This whole process will take approximately 20 minutes.

Afterwards, the radiographers will return to the room, remove the mask and help you down from the treatment table. When you are positioned correctly, the treatment table will be quite high up, so it is very important that you do not move or attempt to get off the table without assistance. The radiographers will tell you when it is safe to sit up and get off the table.

The radiographer will talk to you about what to expect and how to look after yourself following stereotactic radiotherapy. They will make sure you have the correct medication to take home with you. You can go home after they have spoken to you. It is advisable to have a family member or friend to accompany you to and from your appointment although you shouldn't feel unwell.

Steroid medication

When you have stereotactic radiotherapy there is a risk of swelling developing around the area that is being treated. To reduce this risk we may recommend that you take a course of a steroid medication called dexamethasone which we will prescribe for you. If you are already taking this steroid medication, we may advise that the dose you are taking is temporarily increased. You will be given a blue card providing information about this prescription and you should show this blue card to any healthcare professional involved in your care.

The doctor, clinical nurse specialist or advanced practice radiographer will explain how to take your steroid medication. You may also be given medication to protect your stomach from irritation caused by the steroid.

Follow up

Two weeks after your treatment you may be contacted by telephone to ask how you are.

A few weeks later you will be asked to return to the outpatient clinic to be reviewed by your oncology consultant or a member of the team.

Radiotherapy takes time to work so it is important that your doctor will assess you and discuss your progress and any continuing side effects with you.

Possible side effects

Tiredness

You may feel tired for a few weeks after your treatment. This is usually temporary.

Skin reaction

Stereotactic radiotherapy to tumours close to the skin surface may cause a skin reaction over the area being treated. The area may become red, dry, sensitive or begin to peel. Moisturising in the treatment area will help your skin to cope better. You may continue to use your usual moisturiser or if you need to buy one, we recommend one without the additive, sodium lauryl sulphate (SLS). After treatment, apply the moisturiser sparingly twice a day or more often if your skin is very itchy.

Washing

It is important to keep the treatment area clean. Shower/bath using lukewarm water and use your usual shampoo. Use a soft towel to gently pat the skin dry – do not rub.

Swimming

Reduce the number of times you swim in chlorinated water as this can have a drying effect on the skin. After swimming, shower to remove excess chlorine and discontinue swimming if the skin becomes sore.

Hair loss

Loss of hair is a problem which happens with nearly all radiotherapy treatments to the head. How much hair you may lose varies from person to person but will only occur in small patches where the x-rays have been directed. Hair loss is less of a problem with stereotactic radiotherapy.

Your doctor or advanced practice radiographer will explain if this is likely to happen and where to expect some hair loss. Any re-growth usually starts four to five months after you've had stereotactic radiotherapy. It is unlikely that you will have significant permanent hair loss.

If you feel conscious about your hair loss, we can arrange for you to be fitted with a wig on prescription. The specialist nurse or advanced practice radiographer can help you to arrange this.

Seizures or fits

There is a slight increased risk that you may have a seizure (fit) after your treatment. However, this is usually more likely if you have had seizures in the past. Your neuro-oncology team will discuss the likelihood of having a seizure with you and what to do if this happens.

Nausea

You may experience nausea and dizziness after your treatment. This can last for a couple of weeks. The neuro-oncology team will give you advice on how to cope with this. You may be prescribed some anti-sickness medication to take for a short while.

Possible longer term side effects

Long term side effects can occur many months to years after radiotherapy has finished. These later side effects are hard to predict and unfortunately if they do occur, they can sometimes be permanent. We carefully plan our treatment to avoid the surrounding areas of the tumour as much as possible. This reduces the chance of these side effects developing which are generally very rare. If the tumour lies close to the pituitary gland, then hormonal changes may occur. This will be closely monitored. As the treatment kills the tumour (causes necrosis) in a few patients this may require surgery or additional medication.

All treatments will leave some scarring in the brain (gliosis) and this may have an impact depending on which part of the brain was treated.

A further brain tumour

There is a rare chance of developing a second tumour as a result of radiotherapy treatment. This is exceptionally rare and occurs in fewer than one in every 1000 people treated and would usually develop about 10-20 years after radiotherapy treatment has been completed.

Vestibular schwannoma treatment only

If you having treatment for a vestibular schwannoma you may develop facial numbness. This is usually short-lived and occurs in one in 30 patients (3%).

Some weakness in your face following treatment may occur. This usually improves but in less than one in 50 (2%) people treated longer term weakness in the face may persist.

If your vestibular schwannoma is very large, there is a risk of swelling affecting the flow of fluid through your brain. One in 20 people (5%) may need to have a shunt inserted by a neurosurgeon to help drain away CSF (cerebro-spinal fluid). Your doctor can explain this procedure to you.

One in 20 people (5%) treated may find that their balance is not as good after treatment but physiotherapy-rehabilitation may help.

There is a chance that your vestibular schwannoma may increase in size during the first four years after treatment before reducing in size again. We will check and monitor the size of your vestibular schwannoma on follow-up scans after your treatment has finished.

If your hearing has been affected by the vestibular schwannoma you may experience a further decline in your hearing after treatment. However this should be slower than if we left the tumour untreated.

How do I get further supplies of my medicines?

After being prescribed medicines at the hospital, take the white copy of your prescription to your GP, who can continue to prescribe these for you only if required.

Anyone with a cancer diagnosis is entitled to free prescriptions. If you do not already have a medical exemption card, you can get an application form from your GP, the oncology outpatient department, or from the Dimbleby Cancer Centre. Please ask us if you need any further information

What happens when treatment ends?

On the last day of treatment, you will be given a Treatment Completion Form summarising your treatment. We will send one copy to your GP and give you one for your own records.

Follow-up after treatment

Two weeks following the end of your treatment, you will be booked into a telephone follow up clinic. This appointment is to check that you are recovering well.

In the long term, you will be followed up by your oncology team or referring surgeon. This is to assess both your recovery and your response to treatment.

Additional information

In order to improve treatments and services, audits are regularly carried out in the department. This can involve using patient notes. Any data collected will have all personal and identifiable details removed to ensure patient confidentiality. However, if this is unacceptable to you, and you would prefer that your notes are not seen, please let your consultants know and your wishes will be respected.

Clinical trials are undertaken within the department, which you may be eligible to take part in. If necessary and appropriate, your doctor will discuss this with you.

Notes

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Contact us

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| Radiotherapy reception | 020 7188 7188 (ext 57542 or 57569) |
| Radiotherapy bookings | 020 7188 3160 |
| Radiotherapy treatment support team (8.30am to 5.30pm, Monday to Friday) | 020 7188 4220 |
| Acute oncology assessment unit (9am to 6pm, Monday to Friday) | 020 7188 3754 |

Out of hours oncology doctor on call

If you require assistance out of hours, please phone the hospital on **020 7188 7188** and ask them to contact the oncology doctor on call. Please have your hospital number ready. The switchboard operator will take your details and ask the emergency oncology doctor to phone you back.

If you are concerned, please go to your local emergency department (A&E).

Images supplied courtesy of Varian

Dimbleby Cancer Care provides cancer support services for Guy's and St Thomas'. We have a drop-in information area staffed by specialist nurses and offer complementary therapies, psychological support and benefits advice for patients and carers.

Dimbleby Cancer Care is located in the Welcome Village of the Cancer Centre at Guy's. **t:** 020 7188 5918
e: DimblebyCancerCare@gstt.nhs.uk

Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the staff caring for you or call our helpline.

t: 020 7188 8748 9am to 5pm, Monday to Friday

Your comments and concerns

For advice, support or to raise a concern, contact our Patient Advice and Liaison Service (PALS). To make a complaint, contact the complaints department.

t: 020 7188 8801 (PALS) **e:** pals@gstt.nhs.uk

t: 020 7188 3514 (complaints) **e:** complaints2@gstt.nhs.uk

Language and accessible support services

If you need an interpreter or information about your care in a different language or format, please get in touch:

t: 020 7188 8815 **e:** languagesupport@gstt.nhs.uk

NHS Choices

Provides online information and guidance on all aspects of health and healthcare, to help you make choices about your health.

w: www.nhs.uk

Leaflet number: 4459/VER1

Date published: August 2017

Review date: August 2020

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A list of sources is available on request