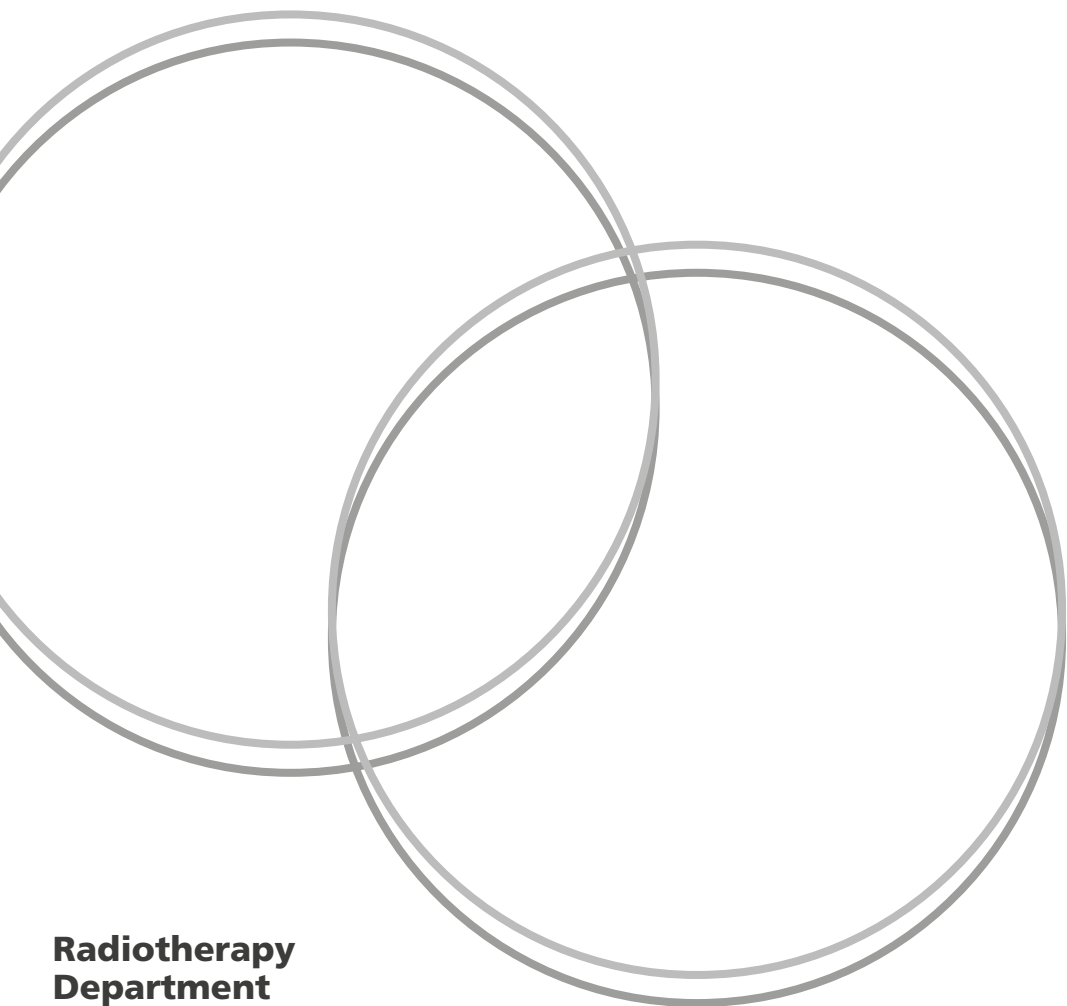




Oxford University Hospitals
NHS Foundation Trust

Fractionated Stereotactic Radiotherapy to the Brain and Skull Base

Information for patients



Radiotherapy
Department

You have been given this leaflet as your doctor has recommended that you have fractionated stereotactic radiotherapy, also known as fSRT, to your brain or the base of your skull. This leaflet will give you more detail about fractionated stereotactic radiotherapy, specifically about the type of treatment planned for you and how you can help yourself during and after treatment.

This leaflet has been written as a general guide, because the timing and effects of treatment may vary from one person to another. This leaflet will highlight the key points of the discussions you will have had with your doctor and treatment team. Your family members and friends may also find it helpful to read.

We will also give you our **general radiotherapy leaflet** which will explain what radiotherapy treatment involves, common side effects and some general information about the department.

What is fractionated stereotactic radiotherapy?

Radiotherapy is the use of high energy X-rays to treat tumours. It works by damaging tumour cells in a way that may stop them from growing or cause them to die.

Fractionated stereotactic radiotherapy (fSRT) is a very accurate way of giving radiotherapy treatment to areas of the brain or base of skull. It allows us to use very small beams of high energy X-rays to treat the tumour.

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 radiation dose to your healthy tissue. This minimises the chance of possible side effects from the treatment.

At Oxford University Hospitals, we use a radiotherapy machine called a Linear Accelerator with advanced technology to position you correctly for your treatment. This technology allows us to track the position of the area that we are treating to within a distance of 1 millimetre.

The radiotherapy treatment is given in small daily doses called 'fractions'. The number of fractions you receive will depend on which course of treatment you will be having. Your individual treatment will be based on the type, size and location of your tumour. You are likely to need between 25 to 33 treatments. Your clinical oncologist (the doctor who oversees your radiotherapy treatment) will discuss this with you in more detail.

Why do I need fractionated stereotactic radiotherapy?

Fractionated stereotactic radiotherapy is recommended for a number of reasons;

- where a tumour may be difficult to remove with surgery
- where surgery is associated with a high risk of side effects
- where a tumour has regrown following surgery
- where part of a tumour remains after surgery.

Your clinical oncologist will explain why fractionated stereotactic radiotherapy has been recommended for you.

After discussing your case, your multidisciplinary team (including neuro-surgeons, neuro-oncologists, neuro-radiologists, therapeutic radiographers and specialist nurses) have recommended fSRT as a suitable treatment option.

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

Preparing for your fractionated stereotactic radiotherapy

Before you come for your fractionated stereotactic radiotherapy, you will be asked to attend the radiotherapy department for your radiotherapy planning appointment so the team can begin to prepare your treatment.

You will need to wear a close-fitting plastic treatment mask, as shown in the photograph below. This mask is individually made to fit you and needs to be worn at each stage of your radiotherapy planning and treatment. It will keep your head still during the radiotherapy, to make sure the treatment is delivered accurately to the area your doctor has planned to treat.



Picture of patient wearing SRS mask.

Your first appointment will be a 'planning appointment'. You will be taken to the Mould Room where we will make the plastic mask for you. The therapeutic radiographer making your mask will talk you through the process and any concerns you may have.

The mask starts off as two plastic sheets. The therapeutic radiographer making your mask will warm them one by one in a specially-designed oven until they are soft and flexible. The first sheet is moulded around the back of your head, the second sheet is gently moulded around your face. The plastic will be warm but this process is not uncomfortable. A small plastic rectangle will be fitted to the front of the mask for you to gently rest your teeth on (as shown in the picture above). This also helps to keep you still.

There are lots of holes in the plastic so that you can still breathe comfortably whilst the moulding is being done. The two halves of the mask are secured together at the sides with plastic clips to keep everything in place. It is then allowed to set; this takes about ten minutes. The whole mask making process will take approximately half an hour.

The process of making the mask is not painful but if you have a beard or moustache we will ask you to shave it off before you come, as the hairs can interfere with making the mask.

The planning CT scanner



A photograph of the CT scanner used to plan your treatment.

After the mask is made, usually on the same day, you will need to have a planning CT scan and a MRI scan of your head. You will have to wear your mask for the planning CT scan but not for the MRI scan. These scans will provide accurate information for the doctor, so that they can plan your treatment.

During these scans, you may need to have an injection of contrast (a type of dye) to help show up the tumour more clearly. If you have ever had an allergic reaction to dye given during a scan before, please let the radiographer know when you come to this appointment.

How is the treatment prepared?

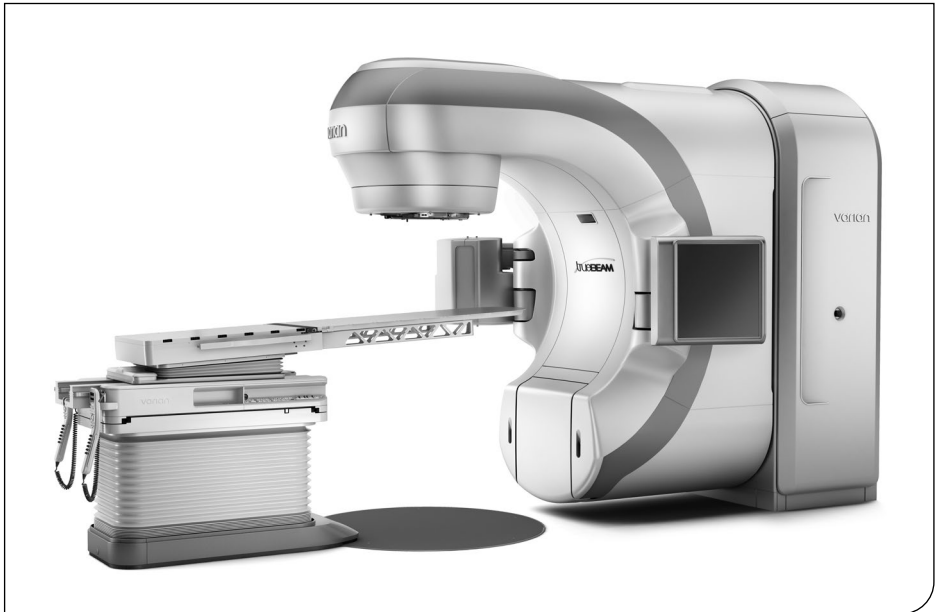
Before your radiotherapy can begin, we need to produce an individual treatment plan for you. This makes sure that all the areas needing treatment are included and that the other unaffected tissues are avoided as much as possible.

The neuro-surgeons and neuro-radiologists will look at your planning CT scan and MRI scan to define the exact area to be treated and areas to be avoided. Our medical physicists will then use this information to design your individual treatment plan.

Coming for your treatment

On the first day of your treatment, a therapeutic radiographer will collect you from the waiting room and have a discussion with you before the treatment starts. They will confirm the details of the treatment with you again and you will have the opportunity to ask any questions you may have. We would encourage you to let us know about any particular problems or worries you are experiencing so that we can best support you.

During the treatment you will need to lie on your back on a treatment couch, wearing your mask. The therapeutic radiographers will then move the couch and the treatment machine into position. They will use a localising frame (pictured above), lights, lasers and X-ray equipment to help to position you accurately. The treatment machine may come close to you but it will not touch you.



Picture of the linear accelerator (Radiotherapy treatment machine).

When you are in the correct position, the therapeutic radiographers will leave the room to start your treatment. You have to lie still but can breathe normally. The therapeutic radiographers will be watching you on cameras from outside the room. If you want them to come back in just raise your hand and they will come back immediately. You will not see or feel anything different during the treatment.

Treatment is likely to take around 15 minutes but your therapeutic radiographers will confirm exactly how long your treatment will take as treatment time may vary from patient to patient.

When your treatment is finished, you can go home straight away.

Possible short-term side effects

There are some side effects which are associated with radiotherapy and you may notice one or more of them gradually developing over the course of treatment. They may take a number of weeks to wear off.

Fractionated stereotactic radiotherapy has fewer side effects than conventional radiotherapy as less healthy tissue is exposed to high doses of radiation.

Tiredness and fatigue

You may feel a build-up of tiredness during your fractionated stereotactic radiotherapy. This can continue for a few weeks after your treatment course has finished.

Each person is affected by tiredness differently. You can help yourself by staying well hydrated and making sure you get enough rest. We encourage you to maintain a healthy, balanced diet and continue with your usual activities and light exercise if you feel able.

Skin reaction

Radiotherapy can cause the skin around the area being treated to become red, itchy and dry. Your doctor or therapeutic radiographer can advise you on where this is likely to happen as skin reaction can differ from patient to patient.

If you have had surgery to this area less than 6 weeks ago and your wound has not completely healed, we advise that you do not use any skincare products on this area at all.

If you have had surgery to this area more than 6 weeks ago and your wound is completely healed, you may wish to gently apply a moisturiser on this area to relieve the dryness or itching caused by your radiotherapy. We do not recommend you use any other skincare products on this area.

During your radiotherapy and until 3 months after your radiotherapy has finished:

Wash your hair with your normal shampoo and lukewarm water. Do not use hair dye or any styling products such as hairspray and avoid excessive heat from styling equipment such as hairdryers.

During your radiotherapy and in the future:

The skin in the area receiving radiotherapy will always be more sensitive to the sun, even many years after your treatment has finished. We recommend that you wear a hat or cover up in the sun and/or use a high factor sunscreen on the area. Do not apply sunscreen if you have had surgery in this area less than 6 months ago or if your surgical wound has not completely healed.

It is very important that if you notice any discharge, swelling or redness at the site of your surgical wound, you tell your treatment team as soon as possible.

Hair loss

Not all patients receiving fractionated stereotactic radiotherapy will lose hair as a result of the treatment. However, some patients may lose some hair close to the area that is receiving the radiotherapy treatment. This is more likely to occur if the area being treated is close to the skin surface.

Your doctor or therapeutic radiographer will explain if this is likely to happen and where to expect some hair loss. Hair loss occurs approximately halfway through your course of treatment. Any hair re-growth usually starts 4 to 5 months after you have finished treatment. It is unlikely you will have significant permanent hair loss, although hair regrowth after treatment may be patchy or a different colour or texture to the hair that was there before.

Your nurse or therapeutic radiographer can give you information on how to cope with hair loss after radiotherapy. You may wish to arrange to wear a wig and your team can help to organise this. Your team can also talk you through other options such as headscarves which you may like to consider.

Seizures

There is a slightly increased risk that you may have a seizure (also sometimes called a fit) after your treatment. However, this is usually more likely if you have had seizures in the past.

Your treatment team will discuss the likelihood of you having a seizure.

A seizure can take different forms. You might notice that one part of your body starts twitching or jerking or you may lose consciousness and start shaking.

Usually a seizure will only last a few minutes. However if:

- The fit last ore than 5 minutes and shows no sign of slowing down
- The fit is unusual in some way
- You have trouble breathing afterwards
- You have been injured or are in pain
- Recovery is different than usual

Then call for emergency help – dial 999

It may be helpful if you, or someone with you is able to tell the doctors what you were doing just before the seizure began, what happened during the seizure, how long it lasted and how quickly you recovered afterwards.

Nausea

You may experience nausea and dizziness during and after your treatment. This can last for a couple of weeks after you finish your treatment. 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.

Headaches

You may experience headaches during and after your treatment. They can occur for a number of weeks after you finish your treatment. The neuro-oncology team will give you advice on how to cope with them if they do occur.

Skull base side effects

Treatment to the base of your skull may cause irritation to the ears, nose, eyes, or mouth as a result of the X-ray beams passing through these sensitive tissues. Your clinical oncologist or specialist therapeutic radiographer will explain whether this is likely to happen and give you advice on managing these side effects.

Psychological wellbeing

The neuro-oncology team is here to support you with the psychological and emotional impact of your diagnosis and treatment.

A member of the team would be happy to chat to you about your emotional wellbeing at any time.

A list of resources to help support you and your family can be found at the end of this leaflet.

Possible long-term side effects

Long term side effects can occur many months or years after radiotherapy has finished. These late side effects are hard to predict and unfortunately, if they do occur, they can sometimes be permanent. We carefully plan your treatment to ensure the healthy tissue surrounding your tumour receive as little radiation as possible. This reduces the chance of these side effects developing, which are generally very rare.

A further brain tumour

There is a rare chance of developing a second tumour in or around the brain as a result of radiotherapy treatment. This occurs in less than 1% of people treated (less than 1 in every 100) and would usually develop at least 10 to 20 years after radiotherapy treatment has been completed.

Hormone changes

Sometimes, the radiotherapy treatment beam has to pass through the pituitary gland to reach the area being treated. The pituitary gland is at the front of the brain, between the eyes and controls several hormones which your body needs (thyroid, adrenal and ovarian or testicular hormones).

Your blood levels will be monitored yearly and you may be given medication to help with the production of these hormones.

Nerve function

If the small nerves passing from the brain to other areas of the head are within the treatment area, there is a small risk (less than 1 in every 100) that these nerves may not work as well in the future. Your clinical oncologist will explain whether this is possible in your case. For example, when treating a tumour that is close to your optic nerves, there is a less than 1 in 100 (1%) chance that your eye sight may be affected.

After treatment

You will catch up regularly with the neuro-oncology team during the course of your treatment to see how you are coping with the treatment and to monitor any side effects.

You will receive a follow up consultation with one of your neuro-oncology team 4 to 6 weeks after your radiotherapy has finished. After this appointment, you will be referred back to the neurosurgical team who are managing your care. They will arrange for follow up MRI scans of your head to be carried out on a regular basis after your treatment.

We ask that you speak with a member of the neuro-oncology team before booking any kind of holiday or trip following your radiotherapy treatment, so that you receive the appropriate advice.

Driving

If you have a brain, skull base or pituitary tumour, or have had surgery to remove a tumour and you drive any type of vehicle; you may have to contact the DVLA and inform them of your diagnosis, check with your team.. The DVLA also has strict guidelines if you have suffered from seizures (fits) either before, during or after your radiotherapy treatment.

Failure to comply with these regulations is illegal and potentially dangerous; your insurance will be invalid and you may be fined up to £1,000.

The DVLA can be contacted at: www.gov.uk/contact-the-dvla

DVLA Driver's Medical Enquiries Helpline

Telephone: **0300 790 6806**

By Post:

Driver's Medical Enquiries

DVLA

Swansea

SA99 1TU

Mobility:

Your SRS team can help you to access the following schemes to help you get around.

Access to work government programme

www.gov.uk/access-to-work

Disability bus pass - apply to your local council

Disabled persons railcard

www.disabledpersons-railcard.co.uk

Blue parking badge

www.gov.uk/apply-blue-badge

How to contact us

If you have any query during your radiotherapy treatment, please do not hesitate to contact us by telephone, or speak with us when you come for treatment.

Neuro-oncology Team – Radiotherapy Department

Telephone: 01865 235 465

Monday to Friday, 8.00am to 6.30pm

Alternatively, outside these hours, please contact:

Oxford Triage Assessment Team

Telephone: 01865 572 192

(24 hour helpline)

Helpful websites

The Brain Tumour Charity

Website: www.thebraintumourcharity.org

Support and Information Helpline: 0808 8000 004
Monday to Friday, 9am to 5pm

Email: support@thebraintumourcharity.org

Maggie's Centre at the Churchill Hospital

Located opposite the main entrance to the Cancer Centre.
No appointment needed.

Website: www.maggiescentre.org/our-centres/maggies-oxford

Telephone: 01865 751 882

Email: oxford@maggiescentres.org

Meningioma

Website: www.meningiomauk.org

Telephone: 01787 374 084

Vestibular Schwannoma

Website: www.bana-uk.com

Telephone: 01246 550 011

Pituitary Tumour

Website: www.pituitary.org.uk

Telephone: 0117 370 1320

Further information

If you would like an interpreter, please speak to the department where you are being seen.

Please also tell them if you would like this information in another format, such as:

- Easy Read
- large print
- braille
- audio
- electronic
- another language.

We have tried to make the information in this leaflet meet your needs. If it does not meet your individual needs or situation, please speak to your healthcare team. They are happy to help.

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Oxford University Hospitals NHS Foundation Trust
www.ouh.nhs.uk/information



Making a difference across our hospitals

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