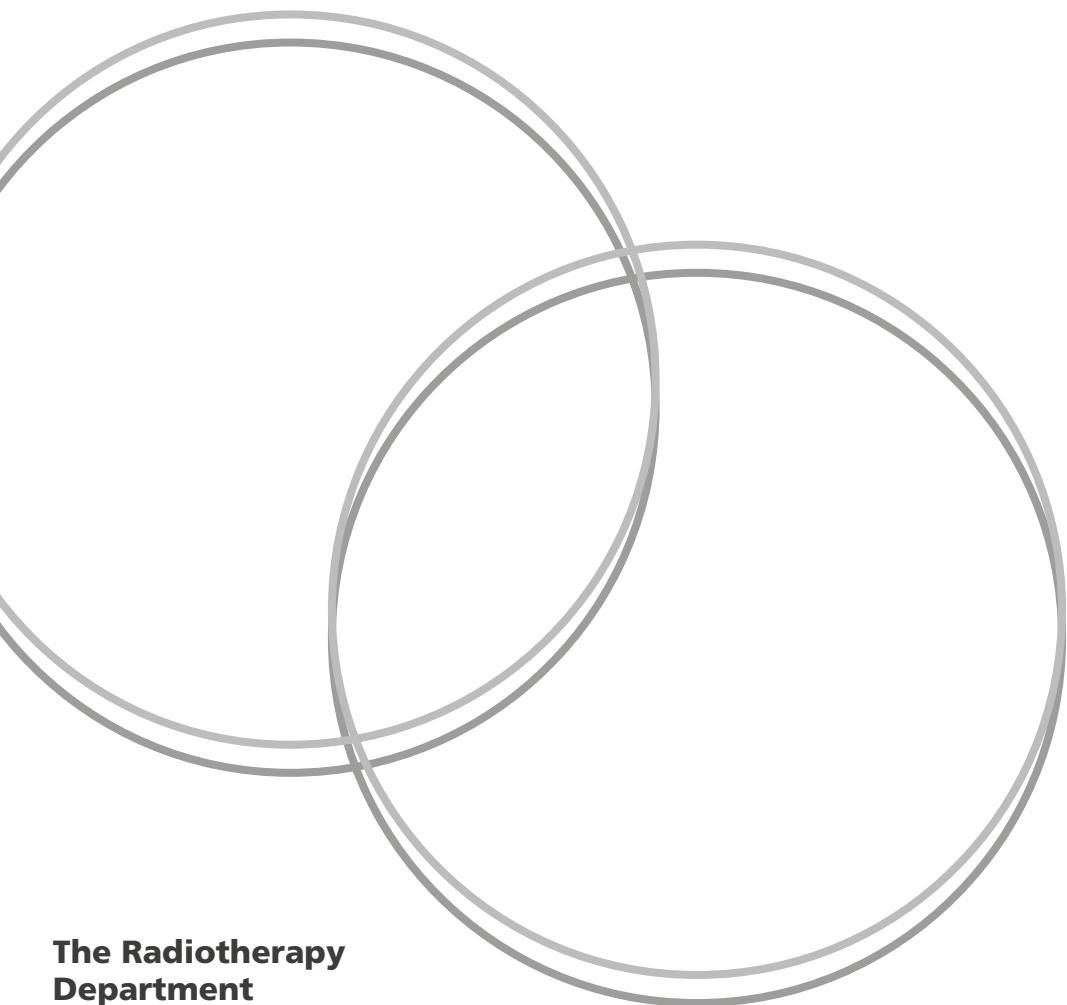




Oxford University Hospitals  
NHS Foundation Trust

# Stereotactic Radiosurgery for Brain Metastases

Information for patients



The Radiotherapy  
Department

You have been given this leaflet as your doctor has recommended that you have stereotactic radiosurgery (also known as SRS) to your brain metastasis/metastases. Metastases are one or more secondary tumours that have spread to your brain from a cancer which has originated elsewhere in your body. This leaflet will give you more detail about stereotactic radiosurgery, 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. The timing and effects of treatment may vary from one person to another. The highlights 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 stereotactic radiosurgery?**

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.

Stereotactic radiosurgery 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 brain metastases. You may have the stereotactic radiosurgery as a single treatment or as a short course of 3 or 5 treatments. Each treatment is called a 'fraction' of radiotherapy. It is not traditional surgery in an operating theatre.

As we can direct the radiotherapy very accurately, this increases the chances of controlling your brain metastases, while at the same time minimising the amount of radiation dose to healthy tissue. This reduces the chance of possible side effects from the treatment.

There are three different ways patients can be treated with stereotactic radiosurgery in the UK; using a radiotherapy machine called a Linear Accelerator, using a GammaKnife machine or a CyberKnife machine. Studies have shown that each method gives the same results and outcomes when treating brain metastases.

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 we are treating to within a distance of half a millimetre.

## **Why do I need stereotactic radiosurgery?**

Stereotactic radiosurgery is suitable for small, clearly defined brain metastases which may be difficult to remove surgically, or where surgery is likely to be associated with a high risk of side effects. If you have had surgery to remove a brain metastasis your clinical oncologist will discuss with you whether SRS is needed.

After discussing your case, your multi-disciplinary team (including neuro-surgeons, neuro-oncologists, neuro-radiologists, therapeutic radiographers and specialist nurses) have recommended SRS 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 stereotactic radiosurgery**

Before you come for your stereotactic radiosurgery, 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 stereotactic radiosurgery. This makes sure the treatment is delivered accurately to the area your doctor has planned to be treated.

## Image of a patient wearing SRS mask



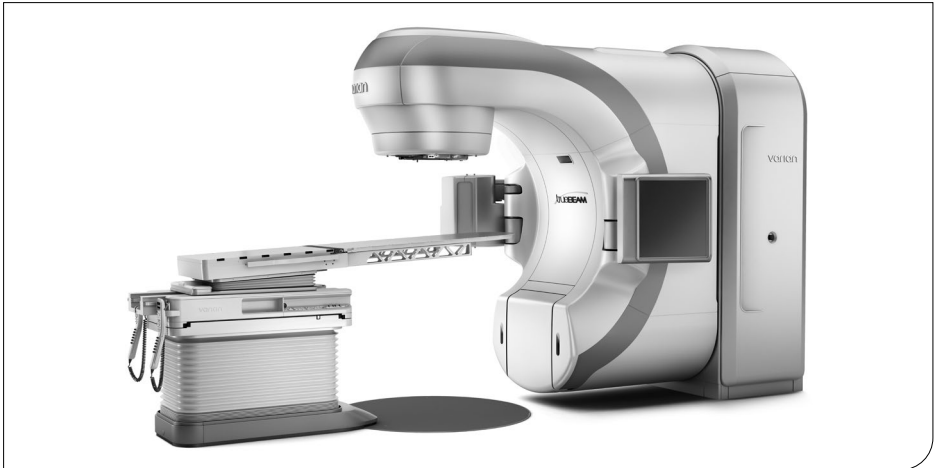
Your first appointment will be a 'planning appointment'. You will be taken to the Mould Room where we will make the plastic mask for you. The therapeutic radiographer making your mask will talk you through the process and any concerns you may have.

The mask starts off as two plastic sheets. The therapeutic radiographer making your mask will warm them one by one in a specially-designed heater until they are soft and flexible. The first sheet is moulded around the back of your head, the second and third 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 while 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.

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.

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 your 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 stereotactic radiosurgery 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 other unaffected tissues are avoided as much as possible.

The neuro-oncologists, 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.

## Your treatment

On the day of your stereotactic radiosurgery treatment, you will be collected from the waiting room by a nurse or therapeutic radiographer and taken to a clinic room. Here you will be given any medication that has been prescribed for you. There will be an opportunity for discussion before your treatment starts. 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 lie on your back on the treatment couch, wearing your mask. The therapeutic radiographers will then move the couch and the treatment machine into position. They will use lights, lasers and X-ray equipment to help position you accurately. The treatment machine may come close to you but it will not touch you.

When you are in the correct position, the therapeutic radiographers will leave the room to start your treatment. You will 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. You will not see or feel anything different during the treatment. Treatment time varies depending on how many metastases you are having treated. Your therapeutic radiographer will be able to tell you how long your treatment is likely to be. When your treatment is finished you can go home straight away.

It is advisable to have a family member or friend accompany you to and from your appointment, as you may feel tired after the treatment, although you shouldn't feel unwell.

## **Steroid medication**

Stereotactic radiosurgery can cause swelling around the area being treated. This can lead to headaches and nausea. You will usually be prescribed a short course of steroid medication and anti-sickness medication to reduce these side effects. If you are already taking steroids your dose may be temporarily increased. You will also be given medication to protect your stomach from irritation caused by the steroids. The nurse or therapeutic radiographer will explain how to take your medication.

## **Side effects of stereotactic radiosurgery**

There are some side effects which are associated with radiotherapy. Stereotactic radiosurgery has fewer side effects than conventional radiotherapy, as healthy tissue is not generally exposed to high doses of radiation. Side effects may build up gradually for a couple of weeks after you have had your SRS treatment and can take a number of weeks to wear off.

### **Tiredness (fatigue)**

Tiredness is the most common side effect of SRS and each person will be affected differently. You can help yourself by keeping well hydrated and taking frequent rest. We encourage you to maintain a healthy, balanced diet and continue with your usual activities and light exercise if you feel able. Please do tell us if you are experiencing tiredness or any other side effects. It will help us to provide you with the correct advice and support.

### **Caring for your skin during and after radiotherapy**

Radiotherapy may 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 months ago or your surgical wound has not completely healed, we advise that you do not use any skincare products on this area at all.



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

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

Wash 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 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 radiotherapy team or specialist nurse as soon as possible.

**Hair loss**

There is a possibility that you may lose a small patch of hair close to the area that is receiving the SRS 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 3 weeks after SRS treatment. Any hair regrowth usually starts four to five months after you have had SRS. It is unlikely that you will have significant permanent hair loss, although hair regrowth after SRS may be patchy or a different colour or texture to the hair that was there before.

## Seizures

Depending on the position of the metastasis/es, there maybe 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 clinical oncologist, nurse or therapeutic radiographer will discuss the likelihood of you having a seizure. They may prescribe you some medication to reduce the risk of seizures.

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 seizure lasts more than 5 minutes and shows no sign of slowing down
- the seizure is unusual in some way or if its your first seizure
- 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.

You may wish to make family and friends aware that you may experience a seizure and let them know when they should call for emergency help.

## **Nausea**

You may experience nausea and dizziness after your treatment. This can last for a couple of weeks. The SRS team will give you advice on how to cope with this and may prescribe you medication.

## **Headaches**

You may experience headaches after your treatment. They can occur for a number of weeks after you finish your treatment. Your SRS team will give you advice on how to cope with them if they do occur and may prescribe you medication.

## **Psychological Wellbeing**

This booklet deals with the physical aspects of your treatment but your emotional wellbeing is just as important to us. The SRS 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 longer term side effects**

Long term side effects can occur many months or 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 your treatment to ensure the healthy tissues surrounding your tumour receive as little radiation as possible. This reduces the chance of these side effects developing, which are generally very rare.

### **Radionecrosis**

The rim of normal brain surrounding the area being treated may become inflamed 6-30 months after SRS treatment. This may cause headaches or similar symptoms to those originally caused by the brain metastasis. This may occur in up to 1 out of 10 patients and may require further treatment with a course of steroids or in rare cases, surgery.

### **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. Side effects specific to the location of the tumour.

Your clinical oncologist will discuss with you the likelihood of other side effects occurring depending on the position of your tumour, for example, visual or hearing changes.

### **Driving**

If you have one or more brain metastases, or have had surgery to remove one or more brain metastases and you drive any type of vehicle, you must not drive and must contact the DVLA. The DVLA also has strict guidelines if you have suffered from seizures (fits) either before, during, or after your 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:**

Website: [www.gov.uk/contact-the-dvla](http://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](http://www.gov.uk/access-to-work)

- **Disability bus pass**

Apply to your local council

- **Disabled persons railcard**

[www.disabledpersons-railcard.co.uk](http://www.disabledpersons-railcard.co.uk)

- **Blue parking badge**

[www.gov.uk/apply-blue-badge](http://www.gov.uk/apply-blue-badge)

**An electronic version of this leaflet can be found at:**

[www.ouh.nhs.uk/patient-guide/leaflets/default.aspx](http://www.ouh.nhs.uk/patient-guide/leaflets/default.aspx)

## **Follow-up**

You will have a follow-up consultation with one of the SRS team by telephone or video call around 4 weeks after your treatment finishes to hear how you are feeling and answer any further questions you may have. Please get in touch before this using the phone numbers on the next page if you have any questions or are feeling unwell following your treatment.

After this appointment, you will be referred back to the consultant oncologist managing your care. We will provide them with a summary of your treatment and inform them that they will be responsible for booking a routine 3 monthly MRI head scan.

We ask that you speak with a member of the SRS team before booking any kind of holiday or trip following your stereotactic radiosurgery treatment so that you receive the appropriate advice.

## How to contact us

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

### **SRS 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**

Support and Information Helpline: 0808 8000 004

Website: [www.thebraintumourcharity.org](http://www.thebraintumourcharity.org)

Email: [support@thebraintumourcharity.org](mailto:support@thebraintumourcharity.org)

### **Macmillan Cancer Support**

Support and Information Helpline: 0808 808 0000

Website: [www.macmillan.org.uk](http://www.macmillan.org.uk)

### **Maggie’s Centre at the Churchill Hospital**

Located opposite the main entrance to the Cancer Centre.

(No appointment needed.)

Telephone: 01865 751 882

Website: [www.maggies.org/our-centres/maggies-oxford](http://www.maggies.org/our-centres/maggies-oxford)

Email: [oxford@maggiescentres.org](mailto:oxford@maggiescentres.org)

## 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](http://www.ouh.nhs.uk/information)



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OXFORD HOSPITALS CHARITY (REGISTERED CHARITY NUMBER 1175809)

