

Cancer services

Gamma knife

Information for patients, relatives and carers

Introduction

This leaflet explains what gamma knife treatment involves how to prepare for it. This leaflet is not meant to replace the discussion between you and your clinical team but aims to help you understand more about what you discussed. We hope it answers any questions you or those who care for you may have. If you have further questions please speak to your clinical team.

What is gamma knife treatment?

Gamma knife treatment gives you a high dose of radiotherapy to a small, precisely targeted area. Targeting the treatment to reach a very small area of your brain means it does not damage surrounding, healthy tissues. The area to be treated usually has to be less than about 3 centimetres (cm).

Gamma knife can treat various health conditions, including brain tumours, both non-cancerous (benign) and cancerous.

You will usually have just one gamma knife treatment, although you can have more. Both adults and children can have the treatment.

Your treatment may differ from what's described here as it will be designed to meet your individual needs.

Preparing for gamma knife

You will usually have gamma knife treatment and go home the same day, but it is possible that you might need to stay overnight – your healthcare team will let you know.

Your healthcare team might give you a special type of shampoo to use before you come in to have gamma knife. This will make sure your head is clean for the procedure. If you are taking any medicines, let your hospital know and bring them with you.

Usually you'll need to have an MRI scan before gamma knife treatment. This will help to find the exact position of the tumour and where to deliver the therapy. You should be able to have something to eat and drink after the MRI. Your healthcare team will advise you.

You'll need to remove any make-up (including nail polish), hairpieces, contact lenses, glasses and dentures before you have gamma knife treatment.

Your doctor will discuss with you what will happen before your procedure and what to expect during and after the procedure, including any pain you might have.

If you're unsure about anything please ask. No question is too small. Being fully informed will help you feel more at ease and will allow you to give your consent for gamma knife to go ahead. We will ask you to do this by signing a consent form.

What happens during gamma knife?

Before the treatment starts, there are some steps to prepare:

Frame fitting

Your consultant will need to fit a lightweight box-shaped frame to your head. This will keep your head still during treatment. You might feel worried about this but it is really important as it ensures the therapy is delivered to exactly the right place. We will inject a local anaesthetic into four places on your head – two in your forehead and two in the back of your head. We will then fix the frame with pins, which usually takes about 15 minutes. This can feel uncomfortable and tight but you shouldn't have any pain.

As you are having a local anaesthetic, you will be awake during the procedure but will not feel any pain.

Treatment planning

The images from your MRI scan will be fed into a computer. This will help your healthcare team to calculate the exact treatment you need. They will plan your treatment and decide the exact area to be treated. This may take an hour or two.

The treatment

You will lie on a treatment bed. Your radiographer will then position your head into a headrest on the couch.

Once they have positioned your head and completed some checks, they will leave the treatment room. You can speak to your radiographer at any time via a microphone. There are cameras in the treatment room so they can see you from the control room.

Your radiographer will then remotely operate the bed to move you into the gamma knife unit. They then deliver the radiation treatment. You will not feel the treatment and the machine is silent.

The door of the gamma knife machine will open and the bed will move inside it. The treatment is made up of exposures (shots), with gamma rays focusing on a slightly different target area each time. When the treatment in one area is finished, you will automatically reposition for the next exposure. Each exposure only lasts a few minutes. The whole procedure can take several hours.

When your treatment is finished, you will be taken through to the preparation room and we will remove your head frame. You may bleed slightly from the places where the screws were attached. These areas may be sensitive for a few days. The nurses can give you medication if you have a headache or feel nauseous.

Risks and side effects of gamma knife

As with every procedure, there are some risks associated with gamma knife. We haven't included the chance of these happening as they are specific to you and differ for every person. Ask your doctor to explain how these risks apply to you.

Gamma knife surgery is very safe in terms of the risk of damage to tissue around the target area. However, if the target area is large or the abnormal tissue requires intense irradiation, there is a risk of temporary swelling of the surrounding area. Patients may experience abnormal feelings, sensations or fits. They are very rare, temporary and treatable with drugs.

Possible side effects of gamma knife treatment include:

- feeling tired
- a headache
- feeling sick and dizzy
- losing some hair if your tumour is close to the surface of your skull
- bleeding from where the head frame was fixed / tenderness at the pin sites

You will probably feel tired with some discomfort from where the head frame was held in place. You may have a tension headache for a day or two. Occasionally, people may experience nausea for 48 hours after treatment.

Frequently asked questions

Q: Will the procedure hurt?

A: When the head frame is being fitted, you will have injections of local anaesthetic and may feel some pain from these. The actual gamma knife treatment is totally painless.

Q: How long does the treatment last?

A: Scanning and gamma knife treatment will take up most of the day. The time you actually spend in the gamma knife machine will depend on the size of the target area and how many 'shots' are needed. Time can range from 30 minutes to several hours.

Q: Will I be radioactive?

A: No.

Q: Will I see or feel anything?

A: The only sensation you will have is pressure from the frame pressing on your scalp. You may also be aware of a flashing red light in the room which indicates treatment is taking place.

Q: Will I lose my hair?

A: This is unlikely to happen. However, if the area being treated is close to the skin surface then hair loss may occur in that place.

Q: When will I know if my treatment has worked?

A: Generally, changes in the targeted cells take place over many months. You will need regular follow-ups and MRI scans to monitor any change. You will be seen by your consultant four weeks after treatment and have an MRI scan six weeks after treatment if you are being treated for cancer.

Those with benign tumours will be seen six months after treatment and an MRI scan will be booked accordingly.

Q: After the treatment is there anything I should or shouldn't do?

A: Do:

- take mild painkillers if your head is still sore after leaving hospital
- if you notice pain, swelling or an increase in redness at the pin sites please go to your GP

Do not:

- scratch the scabs over the pin sites as they act as a barrier to infection and should fall off on their own after a few days. You shouldn't wash your hair for the same reason
- use creams or lotions on the pin sites

Q: When can I get back to my normal routine?

A: As soon as you feel fit enough to do so. This may be the day after treatment or it may take a few days.

Q: When can I go back to work?

A: As soon as you feel well enough to do so. The treatment is non-invasive and there is no reason why you shouldn't go back to work the next day.

Q: When will it be safe to fly?

A: In most cases you will be able to fly straight after treatment. However, if you have any swelling in the treated area the doctor may suggest that you don't fly for two or three days.

Q: How will my GP/referring doctor know that I have had my treatment?

A: Your consultant will write to your GP/referring doctor giving details of your treatment, how it went and instructions for your after care.

Q: Who should I contact if I have any problems after the treatment?

A: you should contact:

- your clinical nurse specialist (020 3313 0303)
- your GP or other referring consultant
- the gamma knife centre - The Bupa Cromwell Hospital

How do I make a comment about my visit?

We aim to provide the best possible service and staff will be happy to answer any of the questions you may have. If you have any **suggestions** or **comments** about your visit, please either speak to a member of staff or contact the patient advice and liaison service (**PALS**) on **020 3313 0088** (Charing Cross, Hammersmith and Queen Charlotte's & Chelsea hospitals), or **020 3312 7777** (St Mary's and Western Eye hospitals). You can also email PALS at imperial.pals@nhs.net The PALS team will listen to your concerns, suggestions or queries and is often able to help solve problems on your behalf.

Alternatively, you may wish to complain by contacting our complaints department:
Complaints department, fourth floor, Salton House, St Mary's Hospital, Praed Street
London W2 1NY

Email: ICHC-tr.Complaints@nhs.net

Telephone: **020 3312 1337 / 1349**

Alternative formats

This leaflet can be provided on request in large print or easy read, as a sound recording, in Braille or in alternative languages. Please email the communications team:
imperial.communications@nhs.net

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