

# A Patient Education Guide for Gamma Knife Stereotactic Radiosurgery



UHN



Patient Education  
Improving Health Through Education

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University Health Network  
Toronto General Hospital Toronto Western Hospital Princess Margaret Hospital

**You are scheduled for Gamma Knife treatment:**

On \_\_\_\_\_ at \_\_\_\_\_ AM

**Please come to the:** Toronto Western Hospital  
Medical Imaging Reception  
East Elevators  
3rd Floor, East Wing, Rm 448

**How should I prepare for my treatment?**

**The day before your treatment:**

- DO NOT eat or drink after midnight.

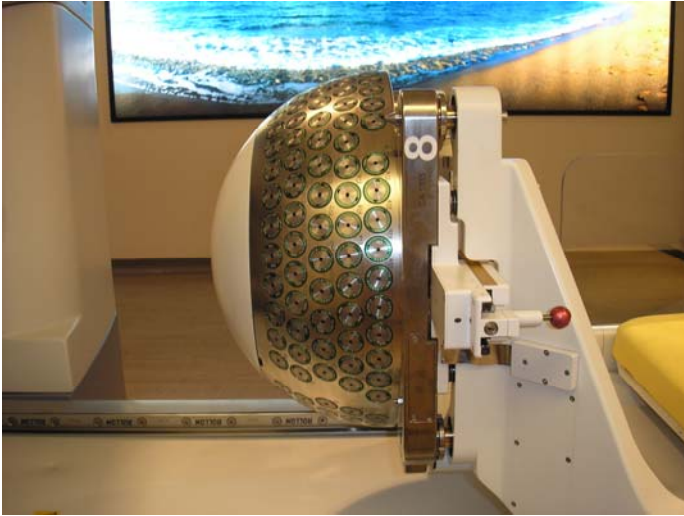
**The day of your treatment:**

- Bring your blue hospital card.
- Bring your Ontario Health card.
- Do not wear any make-up.
- Leave your jewelry, hair clips, cards with magnetic strips, watches or accessories with metal at home. These items interfere with the MRI.
- If you normally take medication in the morning for sugar problems, do not take these on the morning of treatment. Instead, bring these with you and ask the nurse when to take them.
- Otherwise, take your regular morning medications with sips of water on the morning of your treatment.
- Bring medications you need to take during the day in their original containers, and a list of ALL the medications you are taking.
- Be prepared to spend the whole day in the hospital. The planning and treatment times vary for each patient.
- Have a family member or friend come with you and stay at the hospital during your treatment. Someone must drive you home after your treatment.
- Bring something to read, crafts, DVDs or other items to help pass the time. (Remember, you will not be able to wear glasses while the frame is on.)
- Bring your iPod or a CD to listen to during your treatment.

**If you need a wheelchair and use a lift at home:**

- Come in pajamas.
- Leave the lift sling underneath you for easy transfers.

## What is the Gamma Knife®?



The Gamma Knife® is a treatment for certain diseases in the brain. The Gamma Knife® is not a knife at all and there are no incisions made to reach your brain. Very precise beams of radiation are used to treat the affected area of your brain (this is called **the target**). Because the beams are precisely pinpointed on the target, damage from radiation to surrounding normal brain tissue is small.

There are 4 steps to Gamma Knife® treatment.

1. Applying the Head Frame
2. Imaging – CT, MRI or Angiography
3. Treatment planning
4. Treatment

### 1. Putting on the headframe

The stereotactic head frame is an important part of Gamma Knife® Surgery. The head frame lets us accurately pinpoint the target in your brain and keeps your head very still during imaging and treatment. This frame stays on your head for the entire procedure.

A Neurosurgeon will attach the lightweight titanium frame to your head using adjustable posts and pins the morning of your treatment. We will give you a local anesthetic injection, which stings and burns for about 30 seconds. It numbs the areas on your head where the pins will be attached. You will feel some pressure when the pins are placed. This feeling goes away in about 5 to 10 minutes.



## 2. Imaging

After your frame is in place, we will take images of your head and brain to determine the exact size, shape and position of the target in your brain. MRI and CT are used to do this.

For the CT scan and MRI scan, a contrast medicine (dye) may be injected into your veins during the scan to better see your tumor(s) in your brain. For the MRI, please tell us if you have any implanted devices in your body, or if you have ever worked with metal products or may have any metallic objects in your body. The staff will complete a questionnaire with you before the scan can go ahead.

If you have Arteriovenous Malformations (AVMs), angiography is used, and a contrast medicine will also be injected.

A transparent box will be placed on your head over the frame during imaging to get exact measurement points for planning your treatment. When the imaging is done, we will take the box off and you will go back to the Medical Imaging Day Unit.

Because you are not allowed to walk on your own for safety reasons, we will take you to the CT and MRI by wheelchair.

### 3. Planning Your Treatment

To develop the treatment plan, we use the images from your MRI, CT and/or angiography. Your treatment planning team includes a:

- Neurosurgeon
- Radiation Oncologist
- Radiologist
- Neurologist
- Medical Physicist

Your images are transferred to a specially designed computer. Using the computer software, your health care team will decide which area to treat, how much radiation to give, and how they will target the radiation to treat the area. The treatment-planning step can take one to several hours depending on the size and shape of the area you need to have treated.

During the planning process you:

- will stay in the Medical Imaging Day Unit.
- can eat, drink and rest - cheese and crackers are provided.
- can use the washroom.
- **may not** walk around the Unit.

#### **Remember:**

On the day that you come for Gamma Knife® treatment, there may be other patients having the same treatment. For example, you may have your imaging before another patient but you may go for treatment after that same patient. Your cooperation with this process is appreciated.

### 4. Treatment – what can I expect?

When your treatment plan is complete, the team checks it for precision and safety. Then we will take you to the Gamma Knife® Centre for your treatment.

During your treatment, the radiation therapists will monitor you at all times. They will help you lie down on your back on the treatment bed, and attach your frame to the helmet. The Radiation Therapists will leave the treatment room while you receive your treatment but are in contact with you by intercom and video cameras. The bed will move into the Gamma Knife machine, and your head will be inside the machine.

During treatment, you will not feel the radiation, and there is no noise from the machine. The treatment step can take several hours to complete. You may move in and out of the machine several times during the treatment, and the therapists may have to adjust the position of your head frame. During the treatment you can listen to music and you can bring your Ipod or your own CD.



## What can I expect after my treatment?

- The Neurosurgeon or Radiation Oncologist will remove your head frame.
- The pin sites on your forehead will be covered with small bandages. Do not get the pin areas wet for the next 24 hours.
- You may have some bleeding or discharge of fluid in the areas where the pins were placed.
- We will monitor you for 1 hour after we remove your head frame. Then you may go home.
- You may get a headache or minor swelling where the frame was attached.
- **Please note:** If you had an angiogram, you will need to lay flat for 4 hours after the angiogram.

When you go home, you can go back to doing your usual activities, as you feel able.

## What are the Possible Side Effects?

Possible Side Effects You May Have	What You Can Do
<b>Fatigue:</b> Tiredness is a common side effect of radiation therapy. The day of your treatment will be a long day and can be very tiring.	Pace your activities and rest as needed. A well balanced diet and plenty of fluids may help.
<b>Headaches:</b> Many patients get headaches from wearing the frame.	You may take Tylenol/Advil or a prescription pain reliever from your doctor as needed.
<b>Swelling:</b> you may notice swelling around your eyes. The local anesthetic can cause this.	You can apply a cool compress to your eyes to ease the swelling.
<b>Bleeding or discharge of fluid from the pin sites:</b> There maybe some blood or fluid leaking from the pin sites for 2 or 3 days after treatment.	<b>This is not a sign of anything serious.</b> For bleeding, apply pressure with gauze for 5 minutes and it should stop. If pin sites are leaking, clean the area with alcohol and cover with band-aids or steri-strips.
<b>Nausea and vomiting:</b> Some nausea and vomiting may occur, but it is uncommon.	Tell your healthcare provider if you have an upset stomach. Medication is available to relieve nausea and vomiting.
<b>Hair Loss:</b> Some patients experience hair loss in a small area of the scalp, but this is not common.	You can expect your hair to grow back within the next few months.

You will receive detailed discharge instructions from the nurse before you go home.

Watch the Gamma Knife Radiosurgery process video at:  
[www.elekta.com/patient\\_us\\_gamma\\_knife\\_surgery.php](http://www.elekta.com/patient_us_gamma_knife_surgery.php)



