

*If you have
any questions
or concerns,
ask your
neurosurgeon
or nurse.*

Frameless Gamma Knife Radiosurgery

Welcome to the Northwestern Memorial Hospital Gamma Knife® Center. Please take a few minutes to review this brochure. It will help you prepare for your Gamma Knife surgery.

The Gamma Knife is not actually a knife at all. Rather, it is an instrument that uses targeted radiation to perform brain surgery. The Gamma Knife allows the neurosurgeon to focus 192 beams of radiation just on the area being treated. Alone, each beam is too weak to cause any damage to the normal brain tissue. The Gamma Knife is extremely precise. It uses 3-D planning to shape the radiation dose to the size and shape of the affected area. Gamma Knife surgery is only used to treat conditions of the brain such as:

Brain tumors

- Acoustic neuroma/schwannoma
- Glial tumors/primary brain tumors
- Meningioma
- Metastatic brain tumors
- Pituitary tumors
- Skull-based tumors

Functional disorders

- Trigeminal neuralgia
- Parkinson's disease
- Epilepsy

Vascular disorders

- Arteriovenous malformation (AVM)

About the procedure

Most people only need 1 Gamma Knife treatment session. However, in some cases, it may be divided into 3 or 5 treatments.

The treatment involves 4 phases.

- Imaging
- Simulation
- Planning
- Treatment

The Gamma Knife team consists of a neurosurgeon, radiation oncologist, radiation physicist, radiation therapist and registered nurse. Together, the team provides care tailored to your specific needs.

Before surgery

The Gamma Knife nurse will meet with you or call you. They will review what to expect on the day of treatment, including:

- Imaging studies, as needed (a new magnetic resonance imaging (MRI) scan should be done a few days before the day of treatment.)
- Simulation
- Treatment planning
- Gamma Knife treatment
- Follow-up and discharge information

Day of surgery

Plan to arrive at _____ on _____.

Follow these instructions:

- Eat a light breakfast and take your routine medications before treatment.
- Wear comfortable clothing. Do not wear a shirt with a collar because this may affect the fit of the mask.
- Have a form of transportation to and from the hospital if you would like relaxing medication before the radiation treatment.

You may bring a laptop or iPad, phone/phone charger, book or other forms of entertainment. You may use these while you wait during the planning phase of the treatment.

Please come to Galter Pavilion, 201 East Huron Street, 4th floor. Parking is available for patients and visitors in the garage at 222 East Huron Street, across from Feinberg and Galter pavilions. For a discounted rate, bring your parking ticket with you. You can validate your ticket at the Customer Services Desks on the 1st and 2nd floors of Feinberg and Galter pavilions, and the 1st floor of Prentice Women's Hospital.

- Check in at the reception desk on the lower concourse of Galter Pavilion.
- Tell the receptionist that you are having Gamma Knife simulation for surgery.

The nurse or radiation therapist from the Gamma Knife team will take you to the Radiology Department. Only 2 family members may accompany you because of limited space.

Simulation

The radiation therapist and nurse will review the procedure with you and answer any questions. They will show you the Gamma Knife mask and headrest. They will put the mask and headrest in a heater to soften them. They will ask you to sign consent forms at this time.

The radiation therapist will ask you to lie down on the Gamma Knife treatment table. They will put the warm headrest underneath your head. The radiation therapist will mold it to form the back of your head. The radiation therapist will place the warm mask over your face. They will secure it to the treatment table. This mask will be on your face for about 15 minutes until the mask is hardened. The Gamma Knife team will step out of the room while a CT scan is done. They will take the mask off after the scan.

Planning phase

After the imaging phase, the nurse will take you and your family to the Gamma Knife Center in the Radiation Oncology Department. This is where the planning phase will begin. The Gamma Knife team will use a computer to plan your specific radiation treatment. The planning phase may take 1 hour or more, depending on the size and shape of the area being treated. During this time, the care team will make sure you are as comfortable as possible. Your family is welcome to wait with you.

Surgery

After the planning phase, the treatment or surgery phase starts. The radiation therapist and nurse will help you lie on the Gamma Knife treatment table. The team will position your head to direct the radiation to the targeted area of your brain. When your head is in the correct position, the team will place the mask over your face and snap it securely in place. The hardened mask will feel tighter than when it was originally made. The team will make you as comfortable as possible.

Then, the team must leave the room to avoid exposure to the radiation. During the entire Gamma Knife treatment, the physician and nurse will monitor you through a camera. You will be able to talk to the staff through a 2-way intercom. You may listen to music if you like. The staff will check your blood pressure and heart rate. The length of surgery will depend on your specific treatment plan.

After surgery

When your treatment is over, your radiation therapist and Gamma Knife nurse will remove the mask and you will be able to sit up. There are no diet or activity restrictions when the treatment is over. You may go back to your usual activities. There are no expected side effects from the frameless Gamma Knife treatment.

The nurse will go over follow-up instructions including when to come back for a follow-up MRI and follow-up appointment with your physician or neurosurgeon.

Please arrange for someone to drive you home after the surgery.

Follow-up care

Before you leave the hospital, your neurosurgeon will give you your discharge instructions. The full effects of Gamma Knife surgery do not happen right away, which makes follow-up care very important. This care includes neurosurgeon visits and imaging studies, such as MRI or CT scans. Please call your Gamma Knife neurosurgeon's office at 312.695.8143 (TTY: 711) to make your follow-up appointments as instructed.

When to call the neurosurgeon

A small number of people may have side effects from Gamma Knife surgery. Call your neurosurgeon if you have:

- New onset of severe headaches
- Weakness in your arms or legs
- Numbness
- New seizures
- Vision changes

There is some risk with every surgery. The risk varies with each person and the problem being treated. The risks of Gamma Knife surgery are low compared with traditional brain surgery. Most side-effects go away over time. Your neurosurgeon will talk with you about the benefits and risks involved in your surgery. Please talk with your neurosurgeon if you have any questions or concerns.

We welcome your questions

We are happy to talk with you and answer your questions about Gamma Knife surgery. The Gamma Knife nurses are on hand to talk with you on weekdays between 8:30 am and 4:30 pm. Please call us at 312.926.5070 (TTY: 711).