The CyberKnife Robotic Radiosurgery System uses ultra-high dose radiation to treat tumours in the brain. The treatment is specific to the area of the brain where the cancer is located. In patients who have had surgery, radiation is often given to decrease the risk of cancer returning to the area.

**Before Treatment**

**First appointment:** You will meet with your radiation oncologist, who will explain the benefits and risks of radiation treatments. You will also meet with your patient designated nurse (PDN), who will provide you with the information needed to contact your treatment team.

**Treatment planning appointments:**
You will have a planning CT scan (computed tomography scan). You may be asked to have an intravenous line placed temporarily in your arm/hand so that dye (contrast) can be given during the scan. This will help improve the quality of the scan. The planning CT scan appointment will last between 30 to 40 minutes. During this appointment, you will be fitted with a custom immobilization mask. This mask will be used to keep you still for the scan and treatment. The CT scan is painless and only takes a couple of minutes to complete. Most of the appointment time is used to explain the procedure and making sure you are well positioned for the scan.

While preparing you for your scan, the radiation therapist will need to touch you in order to adjust your body position. In addition, the area to be treated will need to be visible to the therapist.

You will also need a MRI scan before you start your treatments. This scan will help in the planning of your treatment.

Once your planning CT and MRI scans are done, it usually takes 1 to 2 weeks to prepare your radiation therapy treatment plan. These planning processes, along with many quality and safety checks, are needed to make sure you receive the best treatment available.

**Treatment**
Once your treatment plan is ready you will start your treatments. On your first day a radiation therapist or nurse will meet with you. He or she will review possible side effects and answer any questions you may have about the treatment. Plan to be at the Cancer Centre for up to 2 hours every day; sometimes delays occur.

**Radiation treatments:**
- You can expect to receive very few treatments (usually no more than 5)
- Treatments are given five days a week (Monday to Friday)
- They usually take from 30 to 90 minutes each day.

**Side effects from radiation treatment**
Even though the CyberKnife System has pin-point accuracy, you can still experience some side effects. There are two types of side effects: early side effects and late side effects. **Early side effects** happen sometime during your radiation treatment. Most early side effects are mild. They typically start to get better two weeks after your last treatment but they can continue for a few weeks or months after the last treatment.
**Late side effects** usually happen a few months after your last treatment; sometimes they develop years after the treatment. Late side effects of CyberKnife treatment to the brain are possible but very unlikely. The side effects that you may experience will depend mainly on the dose given. But you should be aware that even patients who receive the same dose of radiation to the same area of the body may have different side effects.

**Possible early side effects of radiation therapy to the brain:**
- fatigue
- Symptoms associated with swelling in the brain. Your radiation oncologist will give you a prescription for a short course of steroids in order to prevent swelling in the brain. If you experience any of the following symptoms, please notify your treatment team immediately or present yourself to the nearest emergency department:
  - headaches
  - nausea and vomiting
  - earaches
  - change in vision, hearing or speech
  - change in feeling in your face, arms or legs
  - sudden change in your bowel or bladder function
  - weakness in your legs or arms
  - unsteady feeling when walking
  - seizures or blackouts

**Possible late side effects of radiation therapy to the brain:**
- Symptoms are mainly associated with radionecrosis (dead tissues from radiation) of a small section of the brain. Only about 5% of patients develop symptoms of radionecrosis:
  - headaches
  - seizures
  - change in vision
  - difficulty speaking
  - weakness along one side of the body
  - trouble remembering
  - difficulty learning new things
  - confusion
  - personality changes
  - development of a new cancer in the treated area many years after treatment (rare)

Your Radiation Oncologist will explain these side effects and the risks for your particular situation.

**For more information please ask a member of your radiation treatment team.**

The Ottawa Hospital
Radiation Medicine Program

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