



CyberKnife Robotic Radiosurgery System Patient Information Sheet



What is the CyberKnife System?

The CyberKnife System is a radiation treatment machine, that includes a linear accelerator (or Linac) mounted on a robotic arm (similar to the robots used in car manufacturing).

The flexibility of the robotic arm means the CyberKnife System can deliver radiation to tumours anywhere in the body. The CyberKnife System can also track tumour and patient movement and adjust the Linac to ensure treatment is delivered with a high degree of accuracy.

Although its name may make you think of scalpels and surgery, the CyberKnife Robotic Radiosurgery System does not involve cutting.

What makes the CyberKnife different?

Despite the best attempts, it is almost impossible to prevent patients and their internal organs from moving during radiation treatments.

Instead of restricting patient movement, the CyberKnife System can move with the tumour. This unique capability results in the delivery of more accurate and higher doses of radiation to the tumour, while avoiding the surrounding healthy tissue and reducing the side effects commonly associated with conventional radiation therapy treatments.

Who can get CyberKnife treatment?

The medical team determines whether the CyberKnife treatment is right for you. Radiation oncologists trained to use the CyberKnife will make the decision about whether you would benefit from this treatment. They base their decision on factors including the type, location, size of the tumour and the overall extent of disease.

This is the only public CyberKnife System in Australia. Therefore, we prioritise patients and ensure we provide it to those where there is evidence that CyberKnife treatment is better than standard radiation therapy.

Remember, not all patients are suitable for CyberKnife treatment and standard treatments may be just as good. At this point in time we are limiting CyberKnife treatment to patients with tumours in the brain, lung, prostate, upper abdomen and spine.

How do I get referred?

The only public CyberKnife System in Australia is located in Perth, Western Australia (WA) at the Sir Charles Gairdner Hospital. Western Australian patients will need a referral from your doctor addressed to either:

Dr Colin Tang/ Dr Joshua Dass/ Dr Suki Gill/ Dr Chris Harper/ Dr Mandy Taylor/ Dr Rohen White/ Dr Sean Bydder/Dr Jeremy Croker at:

Radiation Oncology
Sir Charles Gairdner Hospital
Gairdner Drive
Nedlands WA 6009

The referral can be emailed or faxed to Radiation Oncology at SCGH at this email address [scgh.cancercentreferrals@health.wa.gov.au](mailto:cancercentreferrals@health.wa.gov.au) or this **fax number (08) 6457 1053**.

What if I am from interstate?

We don't want you to travel to Perth only to find out you are unsuitable for CyberKnife treatment. There may be treatment available in your home state that is just as good.

The best person to help answer this question is your local Radiation Oncologist. We recommend you discuss CyberKnife treatment with them first and then get them to write a referral to us. We will only consider interstate referrals from a Radiation Oncologist.

If you are deemed suitable for CyberKnife treatment you may require marker seeds to be implanted and this will need to be done before you come to Perth. This is generally done in hospital under general anaesthetic. Your local radiation oncologist will be able to assist with this.

What if I am from overseas?

Unfortunately we do not provide elective treatment for people from overseas.

What is the cost for treatment?

There will be no out of pocket expense for the CyberKnife treatment for Medicare card holders.

The CyberKnife treatment process at SCGH

If the radiation oncologist decides that you are suitable, you can expect that your CyberKnife treatment(s) will involve a team approach. The team will include several health professionals who will collaborate to develop a treatment plan designed just for you.

You will likely work with a team including a radiation oncologist, medical physicist, radiation therapist and nurse coordinator.

The CyberKnife treatment process generally requires five steps from start to finish:

- 1. Marker Seed Placement** – Depending on the type and location of your tumour, your team may recommend placement of small gold markers inserted near or in the tumour. These help identify the

exact location of your tumour during treatment. Not all treatments require marker seeds. If you do require marker seeds, you will need to visit a surgeon or a radiologist to have them inserted.

2. **Imaging** – Prior to treatment, an MRI, CT or PET scan may be taken to determine the size, shape and location of your tumour(s).
3. **Treatment Planning**
 - a. **Mask Making** – Patients who are having CyberKnife treatment to their head or neck will wear a mask to help them keep still. This mask is made out of plastic mesh which softens in warm water and is then moulded to fit your face. The mask is made in Radiation Oncology at SCGH just before you CT planning scan.
 - b. **Planning CT Scan** - You will come to Radiation Oncology at SCGH for your planning CT scan. The information from this CT scan is sent to the CyberKnife System's treatment planning workstation, where your radiation oncologist, medical physicist and radiation therapist will identify the tumour(s) to be treated and the surrounding healthy tissue to be avoided. They will come up with a treatment plan that matches the desired radiation dose to the tumour location and limits radiation exposure to the surrounding healthy tissue.
 - c. **Simulation** – Patients having treatment for lung cancer only, who don't have a marker seed implanted, will also have a simulation session after the planning CT scan. This will allow your radiation oncologist to confirm your suitability for CyberKnife treatment.
4. **Treatment** – Once the treatment plan is developed, you can begin your CyberKnife treatment(s). You will be comfortably positioned on the treatment couch, and then the CyberKnife System's computer-controlled robot will carefully move around you to deliver the radiation as prescribed by your treatment plan.

At the same time, the CyberKnife System is taking X-ray images that provide information about the location of your tumour. Depending on the type and location of your tumour, you can expect to undergo between one and eight treatment sessions.

5. **Recovery** – Most CyberKnife patients do not experience significant side effects, however side effects can vary. Patients should speak to their radiation oncologist and discuss what side effects may occur and learn about potential risks.

Opening hours

7.30am – 5pm, Monday – Friday. Closed public holidays.

Contact numbers

After Hours Emergency Contact

(08) 6457 3333

Radiation Oncology Referrals

Phone (08) 6383 3404

Fax (08) 6457 10 53

Email scglh.cancercentrereferrals@health.wa.gov



This document can be made available in alternative formats on request.

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