



Government of **Western Australia**  
North Metropolitan Health Service  
Sir Charles Gairdner Osborne Park Health Care Group



# CyberKnife® Brain treatment

Patient information



**NM**



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## What is the CyberKnife® System?

The CyberKnife® Robotic Radiosurgery System is a radiation therapy treatment machine mounted on a robotic arm similar to robots used in car manufacturing.

The CyberKnife® system can track tumour and patient movement to deliver radiation to tumours anywhere in the body, with a high degree of accuracy. Although the name implies scalpels and surgery, the CyberKnife® system does not cut the skin.

## CyberKnife® treatment for brain tumours

CyberKnife® works the same way as all other forms of radiation treatment in that it does not remove the tumour or lesion, but it interrupts the DNA of the tumour cells so they lose their ability to reproduce.

With lesions such as arteriovenous malformations (AVMs, a tangle of blood vessels in the brain), radiosurgery causes the blood vessels to thicken and close off. The shrinking of a tumour or closing of a vessel occurs over time. For benign tumours and vessels, this will usually be 18 months to 2 years. For malignant and metastatic cancers, results may be seen as soon as a couple of months, as these cells are faster growing.

The CyberKnife® system is an improvement on other radiosurgery techniques in that it is able to achieve a high level of accuracy without the need for stereotactic frames. To keep your head still for treatment, a mask will be made for you at your CT (computer tomography) planning appointment.

## Pre-treatment preparation

In preparation for CyberKnife® treatment you may be required to have CT (computer tomography) and MRI (magnetic resonance imaging) scans.

### CT planning appointment

The CT planning scan will enable a customised treatment plan to be formulated by a team that includes your doctor, CyberKnife® radiation therapist and medical physicist. This takes approximately 1-2 weeks.

A mask will be made at this appointment for you to wear for the scan and during treatment.

Contrast may be required for the planning scan; this involves the insertion of an intravenous cannula by our nursing team.

## During the treatment

Please wear comfortable clothes to this appointment.

The treatment will involve you lying on the treatment couch with your mask on. All you have to do is lie still and relax. Once you are in the correct position, checks will be completed and your treatment will begin.

When treatment is in progress, the team will be able to see you on the cameras and talk to you via intercom. During treatment, images will be taken to confirm the treatment location. The CyberKnife® will move around you and treat you from many different angles and positions. You will not feel anything, and the CyberKnife® will not touch you.

Treatment takes about 30 to 60 minutes and you will be required to lie still and breathe normally during that time. Due to the length of time you must lie flat on the couch, we advise that you refrain from eating a big meal before your treatment. You may bring your favourite music or audio book to listen to during treatment.

The treatment is usually delivered in 1 to 3 sessions on alternate days.

It is recommended someone drives you to and from your appointment and stays the night with you after your treatment. Please arrive 15 minutes before your appointment time and allow 2 hours for each visit.

## **Possible side effects**

There are usually very few acute side effects as the area treated is minimal. Reactions are very individual and may not occur the same in every patient.

Your doctor will have explained potential side effects at your initial appointment, but if you require further information about the side effects particular to your treatment, please clarify this with them.

**Headache/swelling:** Swelling may occur. If it does, it may cause unpleasant symptoms such as headaches, dizziness and, more rarely, nausea, vomiting or seizure. A course (or increased level) of steroids may be given with and after treatment to reduce the fluid within the brain and prevent symptoms.

**Hair loss:** It is unlikely that you will experience hair loss if you are having CyberKnife® treatment. Hair loss to a portion of the head is a possibility, depending on the dose you are receiving and the location of the treatment. Please ask your radiation oncologist for more information if you have concerns.

## **Emotional wellbeing**

It is completely normal for you to feel emotional for some time after the diagnosis of cancer. Sleeping, eating and mood disturbances are all quite common under these circumstances.

Try spending time with people that make you feel good. Relax and do things you enjoy. Try to exercise regularly and say no to those activities you don't feel like doing.

Tell the radiation therapists or nursing team if you feel you are having difficulty coping with your diagnosis, treatment, domestic and travel arrangements or finances. They will organise for you to see trained professionals as needed.

## Completion of treatment

Allow yourself time to recover once treatment is completed. Each patient responds differently to their treatment and recovery times may vary. It is best not to compare your progress with that of others.

If you are experiencing any side effects from the treatment, these may continue for the next few weeks and may even get worse before they begin to get better. Side effects should gradually subside within 1 month.

Tiredness and fatigue due to radiotherapy may affect you for some time. Here are some tips on how to manage this:

- Continue exercise such as walking, bowling, golf or swimming
- Consider scheduling your activities for the day according to your energy levels
- Ensure you have a healthy balanced diet
- Ensure you are adequately hydrated
- Accept help from friends or family and ask for help if you need it.

## Follow-up appointment

When radiation therapy is completed your radiation oncologist will organise a follow-up appointment.

If you experience any problems related to your treatment after completion and before your follow-up appointment, please contact Radiation Oncology on (08) 6383 3000, Monday to Friday from 8am to 4pm.

Outside these hours you can see your GP or, if the matter is urgent, go to the Emergency Department.



## Further support

There are many services offering support to people undergoing cancer treatments.

These include:

### Look Good Feel Better

Free call: 1800 650 960

Website: [www.lgfb.org.au](http://www.lgfb.org.au)

Look Good, Feel Better is a free workshop run by professionals from the cosmetics industry for women. The practical workshop covers skincare, make-up and headwear demonstrations and participants receive a complimentary Confidence Kit full of skincare and make-up products.

Experienced volunteers from the beauty industry help show how to manage the changes that may occur to the skin, hair and general appearance as a result of treatment.

Workshops are run frequently in the Radiation Oncology Department. Please speak to the radiation therapists or nursing staff if you are interested in attending.

### WA Psycho-Oncology Service

Phone: (08) 6457 1177

Email: [wapos@health.wa.gov.au](mailto:wapos@health.wa.gov.au)

This service is available to adult Western Australians diagnosed with cancer. Clinical psychologists apply psychological theory and evidenced-based assessment and treatment strategies to help people address their needs and meet their goals. You may self-refer or ask a health professional to refer you.

### Cancer Council WA

Phone: 131 120

Website: [www.cancerwa.asn.au](http://www.cancerwa.asn.au)

The charity works across every area of every cancer, from research to prevention and support, assisting people from diagnosis through treatment and beyond.



### Healthdirect

Phone: 1800 022 222

Website: [www.healthdirect.gov.au](http://www.healthdirect.gov.au)

This free 24-hour health service offers general guidance for patients, including symptoms, diagnosis and treatment options.

### Solaris Cancer Care

Phone: (08) 6383 3475

Website: <https://solariscancercare.org.au>

DD block,  
Ground floor,  
Sir Charles Gairdner Hospital,  
Hospital Avenue, Nedlands

Solaris Cancer Care provides up-to-date, practical, evidence-based information on complementary integrative approaches to cancer management, disease prevention, health and wellbeing activities and support services that are designed to help people feel and cope better with their cancer and treatment.

### Cancer Australia

Phone: 1800 624 973

Website: [www.canceraustralia.gov.au](http://www.canceraustralia.gov.au)

Established by the Australian Government to benefit Australians affected by cancer.

### WA Cancer & Palliative Care Network

Phone: 0400 021 538

Upper GI cancer nurse coordinator (for patients with cancer of the pancreas)

## What is the referral process?

The only public CyberKnife® treatment is available in Perth at Sir Charles Gairdner Hospital. Western Australian patients will need a referral from their doctor addressed to one of these consultants:

- Dr Nicholas Bucknell
- Dr Sean Bydder
- Dr Jeremy Croker
- Dr Joshua Dass
- Dr Suki Gill
- Dr Chris Harper
- Dr Colin Tang
- Dr Mandy Taylor
- Dr Rohen White

As of 1 July 2024, we are unable to accept patients from outside WA. Patients from other areas, including overseas, should instead discuss similar available treatment options closer to home.

## Radiation oncology referrals

Email [scgh.cancercentrereferrals@health.wa.gov.au](mailto:scgh.cancercentrereferrals@health.wa.gov.au)

Fax number: (08) 6457 1053

## What is the cost for treatment?

There are no out-of-pocket expenses to Medicare card holders.

## CyberKnife® contact details:

### Radiation Oncology

Cancer Centre  
Sir Charles Gairdner Hospital  
Gairdner Drive  
Nedlands WA 6009  
Phone: (08) 6383 3000  
Monday to Friday, 8am to 4pm

### For general CyberKnife® enquiries

Contact the chief radiation therapist  
Phone: (08) 6383 3404



The information provided is for information purposes only. If you are a patient using this publication, you should seek assistance from a healthcare professional when interpreting these materials and applying them to your individual circumstances.

