CyberKnife® Robotic Radiosurgery
A guide for patients
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CyberKnife® Robotic Radiosurgery is a non-invasive alternative to surgery that delivers high doses of radiation to tumours, with pinpoint accuracy.

It is the only robotic radiosurgery system in the world that can treat tumours throughout the body.

Using sophisticated image-guidance and computer-controlled robotics, it delivers multiple beams of radiation to the tumour from virtually any direction. It can also track the position of the tumour while the patient moves and breathes.

Because it can deliver radiation so accurately, CyberKnife treatment can often help patients who have inoperable or surgically complex tumours.

What is the CyberKnife?

What is CyberKnife treatment like?

CyberKnife treatment is painless. It is a bit like having an X-ray: you will not see or feel anything while you are having the treatment. And you will not become radioactive, so it is safe for people to be near you, including children and pregnant women.*

- You will not feel any pain
- It is not invasive
- You will not need an anaesthetic
- You will be treated as an outpatient
- You will not need any recovery time
- Side effects are minimal
- You will not be treated in an invasive head or body frame
- You do not need to hold your breath during treatment.

*However CyberKnife is not suitable for pregnant women. Please speak to someone in the cyberknife team if you think you may be pregnant.
CyberKnife is highly advanced robotic treatment that provides a specialist type of radiotherapy called radiosurgery. We use it to treat both malignant and benign tumours in all areas of the body including the brain, spine, lung, prostate, pancreas and kidney.

**Making sure you get the best treatment**

We take a variety of steps to make sure you always get the best possible treatment:

- our therapy radiographers work according to standards set by The College of Radiographers to give patients safe and effective care
- our therapy radiographers are registered with the Health Professions Council
- we maintain and run the CyberKnife treatment unit according to current legislation
- we are audited and accredited by an external company and measured against international standards
- we study the latest evidence-based research to help us continually improve our service.

**Taking care of you**

Our radiotherapy team will look after you throughout your treatment. You will find us very efficient, but also very caring. We will treat you in a safe, comfortable and friendly environment where we respect your confidentiality and your dignity.
Who will be looking after you?

Our experienced radiotherapy team will take good care of you.

**The clinical oncologist/neurosurgeon – your consultant:** decides the best way to treat you and oversees your care.

**CyberKnife radiographers:** work closely with your consultant, medical physicists and dosimetrists to plan your treatment. They are specially trained in CyberKnife and will be giving you your day-to-day treatment and providing support, information and advice when you need it.

**Information and Support Superintendent:** will see you at your CT scan and will answer any questions you may have about your treatment and its side effects. They will inform you about support services within the Clinic and you can request to see them at any time during your treatment.

**Radiotherapy nurses:** specialise in radiotherapy side effects. The radiographers will refer you to the nurse if you develop any problems or have any questions for them.

**CT radiographers:** ensure patients are in the correct position for their treatment (this involves the use of immobilisation equipment which enables patients to remain still) and perform the CT scan which is used for treatment planning purposes. Your consultant, medical physicists and dosimetrists will use this to plan your treatment.

**Medical physicists (radiation scientists):** work closely with your consultant, dosimetrists and CyberKnife radiographers to plan your treatment.

**Dosimetrists:** produce and calculate your treatment plan, working closely with the physicists, your consultant and radiographers.

**Radiotherapy clinical assistant (doctor who works with the radiotherapy department):** sees you if you need further assessment.
Before your CyberKnife treatment

Each course of CyberKnife treatment is designed specifically for you. When planning your treatment, your consultant considers many factors including the size and position of the area to be treated and your general health.

**We cannot treat you if you are pregnant:** CyberKnife treatment could harm your baby. If you think you may be pregnant at any time during your treatment, it is extremely important to tell someone in the CyberKnife team immediately.

**You need to give us your consent:** once you have had a full discussion with your consultant, you must sign a consent form if you would like to go ahead with CyberKnife treatment. This is a legal requirement. It is important that you understand what the proposed treatment involves before you sign the consent form, so please ask your consultant as many questions as you need to.

**What happens next**

There are several steps we may have to take before your treatment:

**Fiducials:** for some patients, we need to place fiducial markers (tiny gold seeds) into, or near, the treatment area. We need these to help us accurately deliver your treatment. This is usually a ‘day case’ procedure which we will carry out one week before the planning scan. We will give you more information about this if you need to have it done.

**Immobilisation device:** before the scan, we may need to make a mask or shell to fit the part of your body being treated. This is a painless process, which is simple and quick. The device simply enables you stay in a comfortable position that you can reproduce for us at any time during your treatment. We will tell you if we need to do this.
Each course of CyberKnife treatment is designed specifically for you. When planning your treatment, your consultant considers many factors including the size and position of the area to be treated and your general health.

Scans: a week or so before your treatment, you will have one or more scans to verify the size, shape and position of the area to be treated. These scans are in addition to scans you may have had already. We will give you a CT scan, with or without an MRI scan and some patients may also need to undergo angiography to assist in treatment planning. You will be advised as to which scans you will require.

Planning: the doctor and physicist produce a treatment plan so we can deliver the desired radiation dose to the desired area and minimise the dose to your healthy tissue. We need about a week to plan your treatment, but you won’t need to be present for this.

Fasting: if you are having treatment in close proximity to your stomach we may ask you to fast in advance of your treatment. We will inform you in advance if you need to do this.
What happens on your first day of treatment

On your first day, please report to The London Clinic Cancer Centre reception at 22 Devonshire Place. The receptionist will tell you how to get to the radiotherapy department, which is located on basement level 3. Please report to the reception desk where you will be booked in and asked to take a seat. At your appointment time the radiographers will collect you and take you to the CyberKnife treatment room.

You can bring a family member or a friend with you, if you would like to. With your permission, they can come into the treatment room on your first visit, but they will have to leave before we start your treatment.

Appointment times

We give everyone appointments and try to keep to a precise timetable, but this is not always possible. During your visit you may also have to see other members of the team. So we would suggest you allow three hours for treatment unless one of the radiographers tells you otherwise.

If patients arriving after you are called in before you, this is because they are having treatment in another part of the radiotherapy department.

The CyberKnife machine is serviced regularly. We plan your treatment schedule to accommodate this. However, if there are delays for any reason, we will tell you as soon as possible. We appreciate your patience and understanding.

Who you will see

During your treatment, you will be seen every day by the CyberKnife radiographers. You may also need to see the nurse or doctor in the radiotherapy department. At the completion of your treatment you will be seen by either the radiotherapy nurse or the information and support superintendent.
In the treatment room

Once we have called you into the treatment room the radiographers will help you on to the treatment couch. They will adjust both the bed and the machine to give us the exact position we need to give you your treatment.

The radiographers use lasers to align you correctly on the couch. When they have completed their checks and are satisfied that everything is correct, they will ask you to keep as still as possible. You will need to remain still throughout the treatment, but you do not have to hold your breath.

The treatment may take anything between 30 minutes and two hours. You should try to relax as much as possible. The radiographers have to leave the room, so you will be on your own in the room during your treatment. The radiographers will be able to see and hear you at all times. We will monitor you via CCTV cameras and the room is equipped with a two way intercom. If you need to move, or have any problems, you can call out or wave your hand and the radiographers can pause the treatment and enter the room. We are able to play music via MP3 players inside the treatment room. If you would like to hear music during your treatment and you own an MP3 player then feel free to bring this with you.

What happens if you miss a CyberKnife treatment

We calculate the individual CyberKnife treatment and duration carefully, so it is important you do not miss any treatments. However, if you really cannot avoid it, we can make up for a missed treatment. If you think this might happen, talk to your consultant or your CyberKnife radiographers as soon as you can.
Most patients experience minimal or no side effects and often recover quickly.

What to expect from your treatment

It is quite normal to feel anxious or fearful of the unknown but we can do lots of things to help. As you get to know us and the treatment routine, we hope you will feel more relaxed.

Some patients may find it helpful to find out as much as they can about their treatment so please feel free to talk to us about your concerns. We offer complementary therapies, including counselling, so let us know if you would like further details.

Are there any side effects?

Most patients experience minimal or no side effects and often recover quickly. CyberKnife is a localised treatment and any side effects you may experience will depend on the part of your body being treated and the dose given.

Some patients may experience mild fatigue, but even people having similar treatments can have different side effects. Your consultant will explain what to expect from your treatment before you give us your consent to go ahead.

You will also be able to talk to your CyberKnife radiographer about potential side effects and how to minimise them.

Skin reactions: the skin in the treatment area can become red, dry, itchy and/or inflamed, usually after the end of your course of treatment. Any redness may continue to increase for a week or two after your treatment has finished. The CyberKnife radiographers will advise you on skin care. It is important to follow the advice they give you.

Tiredness: you may feel tired or have less energy during and/or after your course of treatment. This is normal and varies from person to person. It is important to take time to relax and rest whenever you need to.
Paying for your treatment

You must tell us how you plan to pay, before your first appointment.

If your insurance company is paying: you will need to obtain pre-authorisation from your insurer – The London Clinic has agreements with most UK insurance companies.

If your sponsor, company or embassy is paying: they will need to send a letter of guarantee to our credit control department, before your first appointment.

If you are paying for your own treatment: you will need to pay in advance. Please contact us if you require a quote.

- How to pay: you can pay by direct bank transfer, banker’s draft, credit or debit card, or cash, but we cannot accept personal cheques.
- How to arrange payment: the patient liaison office will contact you before your first visit. You will need to tell us how you would like to pay so we can authorise your payment.

Please call in at the patient liaison office on your first visit, so you can register with us. We can only plan and deliver your treatment once we have all the payment details in place.

Professional fees: the fees for your consultant(s) are included in the package price for patients receiving treatment to the head only. You will need to speak to the consultants’ secretary to check the cost if you having a different area treated.

Other fees: if you need any tests outside the CyberKnife package, such as MRSA screening or a blood test, you will need to pay a separate fee.
We will do our best to help you find out all you need to know about your condition and your treatment. Here are some useful resources:

**Radiotherapy waiting rooms:** take a look at the information and support services materials.

**Radiotherapy information and support team:** ask one of the CyberKnife team if you would like to speak to someone.

**The Richard Hambro Macmillan Cancer Information Centre:** Located on the ground floor of The London Clinic Cancer Centre and staffed by a Macmillan cancer information nurse specialist.

- T: 020 7616 7628
- E: macmillan@thelondonclinic.co.uk

**Macmillan Cancer Support**

- T: 0808 808 00 00
- Monday to Friday 9.00am to 8.00pm
- W: www.macmillan.org.uk

**CyberKnife information**

- [www.therss.org](http://www.therss.org) – extensive information on CyberKnife and what it can treat.
- [www.cyberknife.com](http://www.cyberknife.com) – information from the people who developed CyberKnife, including patients’ stories.

The London Clinic cannot be held responsible for the content of these websites.

**Benefits advice**

If you are losing income because you have to take time off work, or you have extra expenses travelling to and from hospital or for prescriptions, you can ask for advice here:

- Macmillan Benefits Advice Line: Freephone 0800 500 800

- Your local Citizens Advice Bureau: see Yellow Pages or [www.citizensadvice.org.uk](http://www.citizensadvice.org.uk)

- Your local Social Services office: see Yellow Pages

- The Richard Hambro Macmillan Cancer Information Centre, on the ground floor of The London Clinic Cancer Centre.
- T: 020 7616 7628
- E: macmillan@thelondonclinic.co.uk
Getting here

The London Clinic Cancer Centre is at 22 Devonshire Place, London W1G 6JA

Public transport

Taxi: if you need a taxi, please ask the receptionist.

Tube: our nearest London Underground stations are:

Regent’s Park – Bakerloo line

Great Portland Street – Hammersmith and City, Circle and Metropolitan lines

Baker Street – Circle, Jubilee, Metropolitan, Hammersmith and City, and Bakerloo lines

Bus: these buses stop on the Marylebone Road next to The London Clinic:

18, 27, 30, 205 and 453

By car

Parking: it may be difficult to find a parking space on Devonshire Place as it is in a metered zone but there are car parks nearby:

NCP, 6-7 Weymouth Mews, London W1B 1QE
T: 0845 050 7080

CPG, Cavendish Square, London W1G OPR
T: 0800 243 348

Masterpark, Cramer Street Car Park, Moxon Street, London W1U 4EZ
T: 0800 243348

Congestion charge: You have to pay a congestion charge if you drive in to the centre of London and, at present, there is no exemption for patients attending private hospitals.

W: www.tlf.gov.uk/roadusers/congestioncharging/

Disabled badges: if you are already registered as ‘disabled’ in your local authority and have a ‘blue badge’, you can ask for a disabled parking permit (white badge) from Westminster Council. You will need to call them on 020 7641 5123/4 and ask for an application form.

They will want to know how many hours a week you will be in the hospital for treatment – contact Radiotherapy bookings for this information.

You will not be able to use a disabled badge from a borough outside the London Borough of Westminster. So if you are coming in from a different area, you will need to apply for a Westminster parking permit.
Local services

Accommodation: call us on 020 3219 3555 if you would like a list of hotels and bed and breakfast accommodation.

Cafés: there is a café on the ground floor of the London Clinic Cancer Centre and also many cafés and restaurants in Marylebone High Street and in the department stores along Oxford Street.

Refreshments: you are welcome to tea, coffee, water and biscuits (free of charge) in The London Clinic Cancer Centre radiotherapy waiting room. There are also some newspapers and magazines.

Banks and building societies

Arab National Bank, 35 Curzon Street, London W1J 7TT T: 020 7297 4600
Barclays, 5A Marylebone High Street, London W1U 4AB T: 0845 755 5555
HSBC, 19 Marylebone High Street, London W1U 4BD T: 0845 740 4404
Jordan International Bank, 103 Mount Street, London W1K 2AP T: 020 7493 7528
NatWest, 10 Marylebone High Street, London W1U 4BT T: 0870 001 1226
Santander, 27 Marylebone, London W1U 4AD T: 0845 765 4321

How to contact us

The London Clinic switchboard: T: 020 7935 4444
Radiotherapy bookings: T: 020 7616 7759
Radiotherapy information and support: T: 020 3219 3531
CyberKnife treatment unit: T: 020 7935 4444 Extn 8540
Frequently asked questions

Q What is the CyberKnife?

A The CyberKnife® Robotic Radiosurgery System is a non-invasive alternative to surgery for treating both malignant (cancerous) and benign (non-cancerous) tumours and other conditions such as trigeminal neuralgia.

Q What can the CyberKnife treat?

A It can treat all areas of the body, including the head, spine, lung, prostate, liver and pancreas.

It is used to treat intracranial (head and brain) lesions and tumours such as:

- Acoustic neuroma
- Anaplastic astrocytoma
- Arteriovenous malformation (AVM)
- Craniopharyngioma
- Ependymoma
- Epidural haematoma
- Gangliocytoma
- Germinoma
• Glioblastoma multiforme
• Glioma
• Glomus jugulare tumour
• Haemangioblastoma
• Meningioma
• Neurocytoma
• Neurofibroma
• Neurofibromatosis
• Oligodendroglioma
• Pituitary adenoma
• Schwannoma
• Trigeminal neuralgia
• Vestibular schwannoma

It can treat extracranial (outside the head and brain) lesions and tumours such as:
• Arteriovenous malformation (AVM)
• Colon cancer
• Hepatocellular carcinoma
• Lung cancer – non small-cell
• Lung cancer – small cell
• Nasopharyngeal carcinoma
• Osteosarcoma
• Ovarian cancer
• Pancreatic cancer
• Prostate cancer
• Renal cell carcinoma
• Squamous cell carcinoma
• Uterine cancer
Q How many people has the CyberKnife treated?
A More than 90,000 patients have been treated by 140 CyberKnife systems around the world.

Q How is CyberKnife radiosurgery given to patients?
A CyberKnife treatment is delivered using a linear accelerator or LINAC. This device uses an extremely high voltage power supply to produce high energy radiation.

Q How is CyberKnife radiosurgery different from conventional radiotherapy treatment?
A CyberKnife delivers treatment over one to five days whereas traditional radiotherapy can take up to seven weeks. CyberKnife is mainly used for small, isolated tumours. Conventional radiotherapy is used to treat larger and more widespread cancers.

CyberKnife targets the tumour with pinpoint accuracy, so it inflicts minimal damage to the surrounding healthy tissue. Because the size of the radiation field is smaller, clinicians can deliver very high doses of radiation safely.

Tumours often move during treatment, even when the patient is immobilised. The CyberKnife uses advanced robotic technology to automatically detect, track and correct for even the slightest movement as it occurs, throughout treatment.
Conventional radiotherapy systems have less flexibility in the direction that treatment is given. The CyberKnife is much more flexible. The robotic controls enable it to deliver beams from hundreds of different directions, so it can administer the precise dose to the unique contours of the tumour.

**Q What will be the effect of my CyberKnife treatment?**

**A** The effects of radiosurgery vary and may take place gradually over days, months or years, depending on the medical condition targeted. Some tumours may disappear more slowly than others or may simply stop growing. You will have a follow-up appointment with your consultant after treatment, who may ask you to go for a scan to see how effective the treatment has been.

**Q Is CyberKnife treatment right for me?**

**A** If you would like to find out if the CyberKnife system is right for you, talk to your doctor or call us and ask to speak to the information and support team on 020 3219 3531.

**Q I’ve had chemotherapy. Can I have CyberKnife treatment?**

**A** You will need to talk to your consultant about this.