



ARTEMIS
HOSPITALS
OUR SPECIALITY IS YOU

M6 CyberKnife

Brain & Full Body Robotic Stereotactic Radiosurgery,
Stereotactic Radiotherapy & Stereotactic Body Radiotherapy



Unrivaled Capabilities, Unmatched Possibilities!

INDEX

Introduction - M6 CyberKnife

Unmatched Clinical Excellence

Clinical Versatility

CyberKnife & Traditional Radiotherapy

Our Approach - From Modalities to Care

CyberKnife Treatment - Step-by-Step

What Patients Say About CyberKnife

Why M6 CyberKnife ?

Benefits of CyberKnife



CyberKnife® M6™

Unmatched Precision and Patient comfort

CyberKnife Radiosurgery is a precise, painless, non-invasive radiation treatment that can be an alternative to open surgery in certain cases. Multiple beams of high energy radiation are delivered from multiple points outside of the body and converge precisely at the tumor or lesion inside the body. Each individual beam is not sufficient to cause harm, but the convergence of all the beams at the tumor results in the lesion receiving a very high dose of radiation while sparing nearby normal tissue.

Unmatched Clinical Excellence

- Unmatched Precision and Patient comfort
- Extremely efficient for small Inoperable Tumors
- No Mortality, Minimal side effects
- No Anesthesia, No Incision & No Pain
- Risk free surgical equivalent treatment
- Predominantly OPD based treatment
- Very limited Hospital Stay, when required

How CyberKnife Works?

CyberKnife does not require surgery and there is no cutting or anaesthesia required. Comprised of a compact linear accelerator - a machine that generates a radiation beam - attached to a highly maneuverable robotic arm.

- The machine's robotic arms move around you, aiming & firing targeted radiation beams from numerous angles.
- The imaging and tracking system continually updates the tumour location throughout the treatment procedure compensating for patient movements like breathing.
- Treatment sessions typically last 30-90 minutes
- During CyberKnife procedures, patients will lie on a treatment table while the machine's robotic arm moves around their body delivering high doses of radiation directly to their tumor with pinpoint precision minimizing exposure to surrounding healthy tissue.



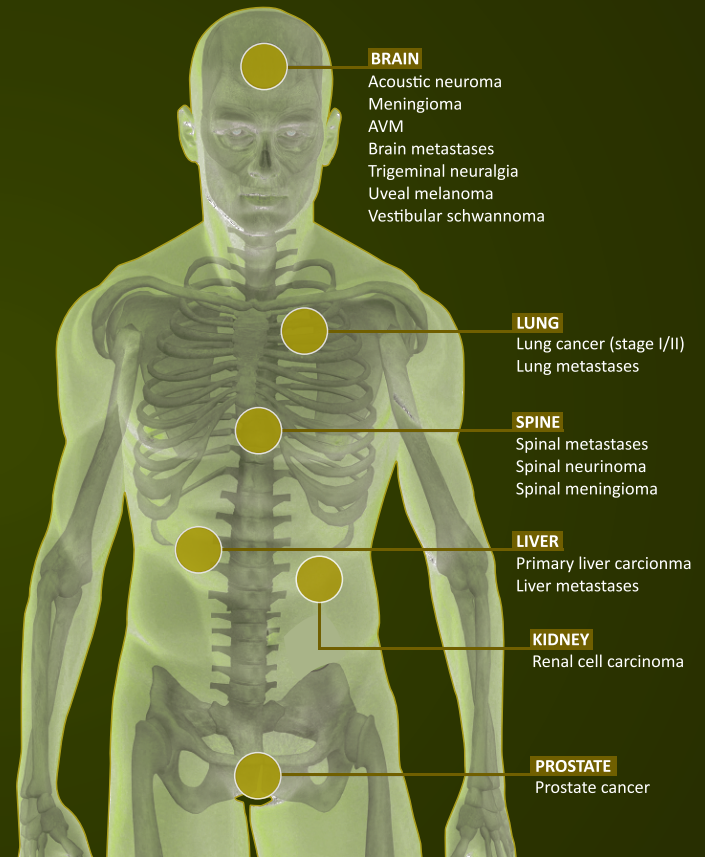
What is the CyberKnife® System?

The CyberKnife System delivers non-invasive treatment for cancerous and non-cancerous tumors anywhere in the body, including the prostate, lung, brain, spine, head and neck, liver, pancreas and kidney, where radiation is indicated. Using the CyberKnife System, your physician precisely targets the tumor, safely delivering radiation with sub-millimeter accuracy, while greatly minimizing radiation exposure to healthy organs and tissues.

What types of cancers or areas of the body can the CyberKnife® System treat?

The CyberKnife System has been successfully used to treat conditions - non cancerous conditions and cancers -throughout the body, including prostate, lung, brain, spine, head and neck, liver, pancreas and kidney as follows :

Clinical Versatility



CyberKnife & Traditional Radiotherapy

CyberKnife is the most contemporary Robotic (Robot-assisted) Radiosurgery system of delivering precision ablative radiotherapy for performing accurate and painless cancer treatments without inflicting surgery cuts on the body.

Traditional Radiotherapy as its name suggests is a form of Radiation Therapy being used since ages that is used to shrink and kill tumours. The therapy involves the use of X-rays, Gamma rays and charged particles for cancer treatment. There are various techniques of delivering radiation therapy, major ones being 3D Conformal Radiation, IMRT, IGRT, VMAT and SBRT depending on the complexity of planning techniques. The therapy may also be used in combination with Chemotherapy or surgery or as a standalone treatment depending on the patient condition.

Can Cyberknife be used wherever radiotherapy is required?

When a patient requires radiotherapy, he/she is evaluated by a team of clinicians, comprising of radiation oncologist with neurosurgeon, urologist, spine surgeon or gastroenterologist depending on the area to be treated. The technique to be used - Traditional Radiotherapy, or CyberKnife or rarely even a combination – is decided based on many factors.

Traditional Radiotherapy as its name suggests is a form of Radiation Therapy being used since ages to shrink and kill tumours. The therapy involves the use of X-rays, Gamma rays and charged particles for cancer treatment. There are various techniques of delivering external radiation therapy, the major ones being 3D Conformal Radiation, IMRT, IGRT and VMAT depending on the area to be treated, and the complexity of planning techniques to be used. The therapy may also be used in combination with chemotherapy or surgery or as a standalone treatment depending on the patient's condition.

Traditional Radiotherapy usually takes about 25-35 treatment sessions spanning over a number of days, depending on what the patient may need. It is an effective treatment in cases where the target area to treat is bigger and critical structures can be well spared.

Thus, when the area to treat is big, with inclusion of many adjacent structures, linear accelerator based radiotherapy with IMRT, IGRT, or VMAT is generally decided upon.

However, there are situations where the patient will benefit from specific technological advances in Cyberknife. For example, in areas with close proximity to very critical structures, where there is a need for retreatments, where there is a total need for submillimeter accuracy, where the treating area is extremely small as in AVM, and where we need to treat moving targets.

A boost dose by Cyberknife can also be used in conjunction with (generally after) traditional radiotherapy by IMRT, IGRT, or VMAT – for example – in cancer prostate.

Thus, although both Cyberknife and traditional radiotherapy use electromagnetic radiation, predominantly X rays, the utility of each is in specific situations.

What makes cyberknife treatment accurate?

Levels of accuracy of Cyberknife are sub millimetric, and added with the benefits of real time image guidance and tumour motion tracking, CyberKnife can aim targets with pinpoint accuracy.

CyberKnife has capabilities of automatic error correction. It continuously corrects for any changes in patient position during the treatment, thus allowing patient to lie comfortably during the treatment.

The availability of real time image guidance and tumour motion tracking helps us to treat tumours in moving areas with the greatest accuracy – by treating in synchrony.

The use of robotic arm in treatment helps in treatment from angles not easily accessible by conventional radiotherapy machines.

The name of the treatment is Cyberknife – Will I have any incision or cut on my body?

No. Cyberknife treatment is not treated through any incision or cut on the body. It is called so because of the precision like a knife. The treatment is delivered from a distance, and no form of incision or cut is necessary.

Is any form of preparation required before Cyberknife treatment?

Your clinician may ask for additional investigations like MRI, CT scan depending on the area to be treated. Moreover, in certain situations, your clinician may suggest the implantation of markers called fiducials which can help identify and track the tumour during treatment, adding to the precision of treatment.

Do I need to wear any restrictive devices during Cyberknife treatment?

Except a few select situations, Cyberknife does not require immobilization devices. The Radiotherapy technician may however use positioning devices like knee rest etc for convenience and immobilization of the treating area.

How many treatments are administered in Cyberknife?

The number of treatments offered is decided on the diagnosis, area to be treated, and the presence of critical normal structures nearby. It is decided and discussed by the treating clinician with you at the time of first consultation. In case of treatment offered by stereotactic radiosurgery (SRS), it is a single treatment. If it is stereotactic radiotherapy (SRT), it may be multiple treatments, given one treatment per day. Even in the case of multiple treatments, the total number of treatments ranges from 3 to 6.

Will I feel any pain, or shock or heat during treatment?

No, Cyberknife treatment is a painless treatment. You will not feel any pain, or shock or heat during treatment.

Will I be able to go home on the same day after treatment in Cyberknife?

Cyberknife treatment, both SRS, and SRT are painless treatments, and are generally OPD based. Hence, you will be able to go back home on the same day after treatment.

Who Can Get CyberKnife® Treatments?

The CyberKnife System is versatile and can treat cancers from early stages to advanced disease and, in some cases, the treatment can be partnered with surgery, chemotherapy, and conventional radiation therapy.

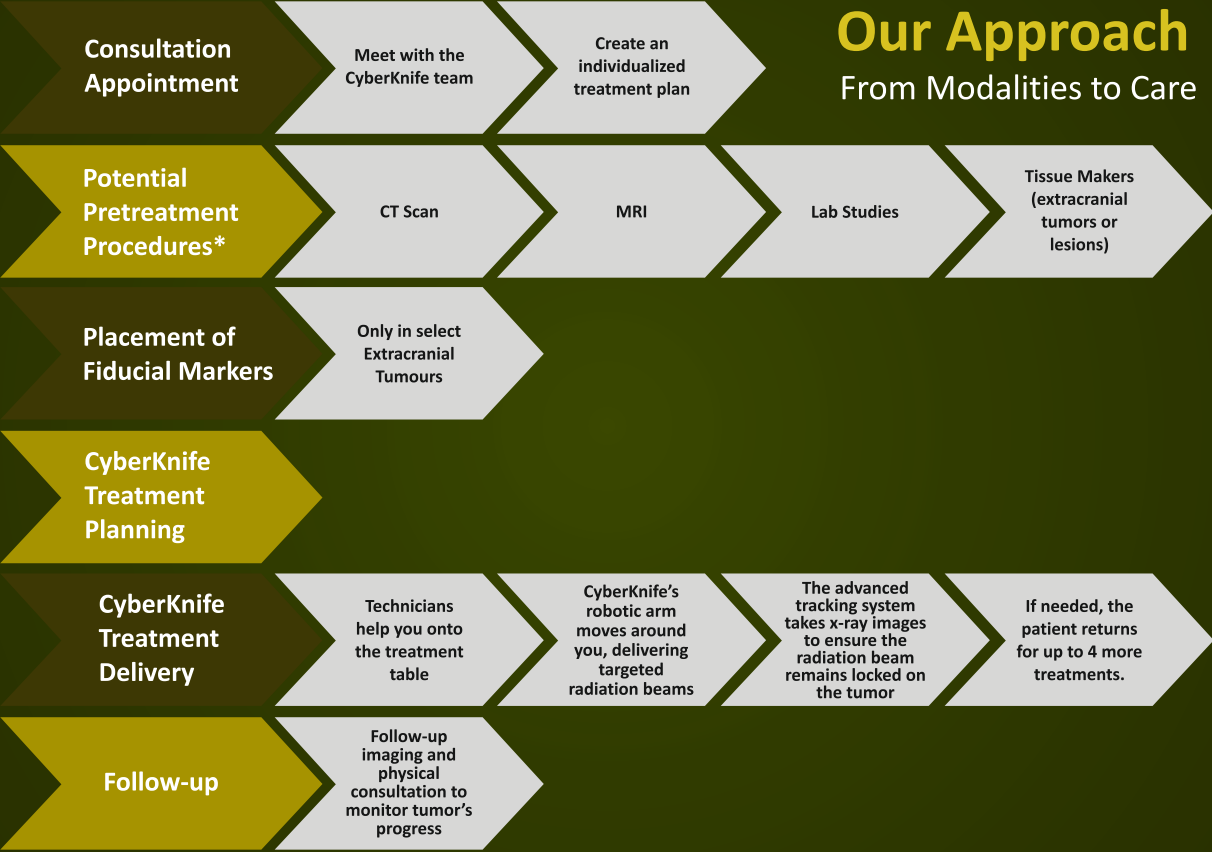
Will I have any side effects because of the treatment?

Cyberknife is used to treat cancers and non cancerous conditions from head to toe. Due to the very small area treated and high precision of treatment, the side effects are minimal. Depending on the site and area treated, the side effects will vary. Side effects, if any, when experienced, are typically mild. Your doctor will discuss the possible side effects with you during the initial consultation.



Our Approach

From Modalities to Care





CyberKnife Treatment : Step-by-Step

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

1. Evaluation – Though it may vary based on your specific treatment, in Artemis each case is evaluated by a team of clinicians, including a radiation oncologist, surgeon, medical physicist, radiation technician and nurse coordinator.

2. Fiducial Placement – Depending on the type and location of the tumor, in certain situations, the team may recommend placement of fiducials – which are small gold markers inserted near the tumor – to

help identify the exact location of the tumor during treatment. Not all treatments require fiducial markers eg – Intracranial targets do not require fiducial markers. The determination will be made based on the density, size and location of the tumor.

3. Imaging – Prior to treatment, an MRI and a CT or CT/PET scan is taken to determine the size, shape and location of the tumor(s).

4. Treatment Planning – Using images from a CT scan, the data is digitally transferred to the CyberKnife® System's treatment planning workstation, where our qualified physicians identify the tumor(s) to be targeted and the surrounding vital structures to be avoided. This plan is

designed to match the desired radiation dose to the tumor location and limit radiation exposure to the surrounding healthy tissue.

5. Treatment – Once the treatment plan is developed, the patient can begin their CyberKnife treatments. The patient will be comfortably positioned on the treatment table. Then the CyberKnife System's computer-controlled robot will carefully move around to deliver radiation at various locations as prescribed by the treatment plan. At the same time, the CyberKnife System is taking continual X-ray images that will provide real-time information about the location of the tumor and enable the system to dynamically track and correct for any movement of your tumor. Depending on the type and location of your tumor, you can expect to undergo between one and five treatment sessions.

6. Recovery – Most CyberKnife patients do not experience side effects. Depending on the type of treatment they receive, the side effects will vary. Patients that do experience side effects are typically mild and considered acute and do not require intervention. Patients should speak to their doctor and discuss what side effects may occur and learn about potential risks.

How Better A Technology Innovation which gives a new hope



Gamma Knife

200 angles
of treatment
limited to **1**
treatment session.
*Limited to Intracranial Lesions,
Cancerous & Non-Cancerous*

VS

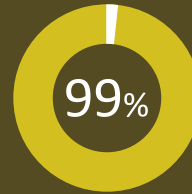


Cyber Knife

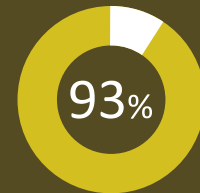
1400 angles
of treatment
1 or 2-5
treatment session.
*Ability to treat
anywhere in the body*

Patients have great things to say about CyberKnife

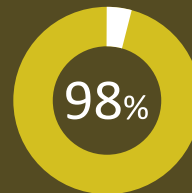
Here's what patients said



would choose CyberKnife treatment again



indicated CyberKnife did not interrupt their normal life routine



would recommend CyberKnife to others



M6 Cyberknife Suite

WHEN BEST OF THE MINDS & MACHINES ARE DEDICATED TO THE FIGHT

Why Cyberknife M6?

The CyberKnife M6™ Series offers a comprehensive set of clinical features. Indication-specific tumor tracking with automatic correction throughout treatment, a wide range of robotic motion, and advanced collimation integrate seamlessly into the only system to automatically stay on target despite patient and tumor movement

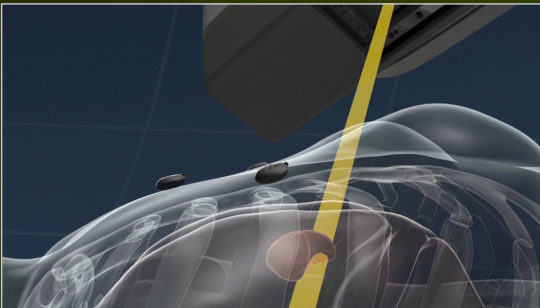
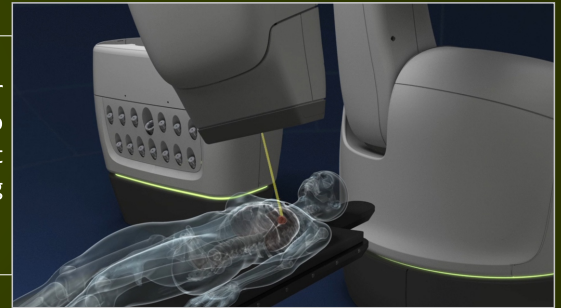
The CyberKnife M6 Series reduces treatment times with fewer Monitor Units (MUs) while delivering unrivaled dose distributions and further improving plan quality.

Details & Highlights of CyberKnife



CyberKnife System has been successfully used to treat conditions - non cancerous conditions and cancers - throughout the body, including prostate, lung, brain, spine, head and neck, liver, pancreas and kidney. The treatment is done without restrictive devices used to immobilize the patient (Except in a few select situations).

Cyberknife is particularly useful in synchronized treatment i.e. where the lesion or tumour is inside or in contact with a moving structure like lung. It is possible to synchronize the treatment such that treatment is administered to the tumour as it moves during breathing (the cyberknife robot moves along with the moving tumour)

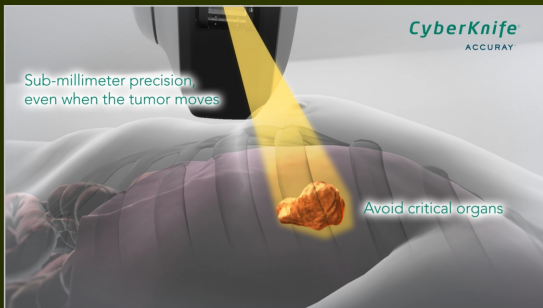


In Cyberknife, multiple beams of high energy radiation are delivered from multiple points outside of the body and converge precisely at the tumor or lesion inside the body. The machine's robotic arm moves around the body delivering high doses of radiation directly to the tumor with pinpoint precision minimizing exposure to surrounding healthy tissue (an effect very similar to surgical excision, hence the term Cyberknife)



Cyberknife treatments are extremely precise. The robotic arm provides a great degree of maneuverability so that treatment can be done in an expansive range of angles as well as in multiple planes. These wide ranges and multiplanar beams can also be used in moving targets called dynamic motion compensation.

Cyberknife has the facility to track and perform adjustments to the beam accordingly, in treatment of both fixed and moving targets (Synchronized treatment). This tracking is automated and is combined with real time beam adjustment for greater accuracy.



All these features are designed to provide sub millimetric precision in treatment. This precision not only enhances the accuracy of treatment, but also helps in avoiding dose to critical organs nearby, thereby reducing side effects.

Benefits of CyberKnife®

- Pain-free
- Non-invasive
- No anesthesia required
- Outpatient procedure
- Exceptional accuracy spares healthy tissue and organs
- No recovery time
- Immediate return to normal activity
- No invasive head or body frame
- No breath holding or “respiratory gating” required during treatment

CyberKnife® patients routinely report that they have no side effects or minimal side effects from their treatment and in most cases, they can immediately return to their normal daily activities. Speak with your doctor about possible side effects you may encounter.

For Queries Call
+91 8800404999
cyberknife@artemishospitals.com

North
India's
First

Treats
Incurable
Tumors

Risk Free
Surgical
equivalent
treatment

No
Incision
&
No
Pain

