



Hong Kong Adventist Hospital is proud to present the most advanced CyberKnife Stereotactic Radiosurgery System, the G4 model. Our Theresa Po CyberKnife Center is the first in Asia to offer this revolutionary technology in radiosurgery.

The CyberKnife gives patients new hope for treatment of tumors and lesions that are diagnosed as inoperable or untreatable.



CyberKnife G4 System Diagram

# What is CyberKnife?

CyberKnife is a robotic radiosurgical system capable of delivering a high dose of radiation (acting like a surgical knife) through convergence of 1,200 possible x-ray beams with submillimeter accuracy to the target tumor or lesion inside the body.

This ability to accurately direct multiple beams to the tumor from different angles allows the surrounding healthy tissue to be maximally protected from radiation damage during treatment.

# What Makes CyberKnife Unique Among Other Radiosurgical Systems?

Unlike other radiosurgical procedures, CyberKnife utilizes a robotic arm that gives the flexibility to reach areas of the body that are unreachable by other radiosurgery systems. Its cutting-edge computer technology is able to locate tumors and their position. This real-time tracking revolutionizes radiosurgery in the following ways:

## 1. *Frameless*

Other radiosurgical systems require a patient to have a metal frame screwed on his/her head for immobilization. This can cause pain and discomfort. CyberKnife utilizes skull bony landmarks for position tracking and as a result releases the need for the metal frame and hence improves patient comfort. It also allows treatment to be staged.

## 2. *Full body treatment capability*

In addition to lesions/tumors in the brain, lesions in the spine and other organs throughout the body can now be treated.

## 3. *Real time motion tracking*

CyberKnife, through its advance computer technology not only allows checking for patient position during treatment, but also compensates for tumor motion as a result of breathing.

## 4. *Multiple treatment angles*

The flexibility of the robot allows over 1,200 possible beam directions. This enhances treatment flexibility in minimizing normal tissue damage.



## Is the CyberKnife Clinically Proven?

The CyberKnife System is FDA and European CE mark approved. It is based on radiation technology that has been proven for over 30 years. Up to 2006, **over 24,000 patients worldwide have benefited** from this technology and many clinical studies with the CyberKnife have been published in various medical journals.

# What can CyberKnife **Treat?**

Many benign and malignant conditions in the body can be treated with CyberKnife. Benign conditions include acoustic neuroma, pituitary adenoma, meningioma, trigeminal neuralgia and arteriovenous malformation. Malignant lesions include primary and secondary brain, lung, liver, pancreas, spine and prostate cancers.

## Simple CyberKnife Optional Outpatient Treatment



### **Step 1** *Immobilization*

Fitting of non-invasive flexible mask or body mold to minimize body movement and ensure comfort



### **Step 2** *Treatment Planning*

Imaging data is imported into the CyberKnife computer where the CyberKnife team will customise the treatment plan

### **Step 3** *Treatment*

With the ceiling mounted diagnostic X-ray (1) and the image detectors (2) monitoring the position of the lesion/tumor, the CyberKnife robotic arm (3) will carry out the treatment with submillimeter degree accuracy (Refer to CyberKnife G4 System Diagram)

## Treatment Time



The treatment time per session ranges from 30 to 90 minutes depending on the dose and complexity of the treatment plan. Treatment can usually be carried out in one single session. In some situations multiple sessions are desired.

## What Patients Are Saying About the CyberKnife Treatment

*"The CyberKnife provided me the only possibility of leading a normal life without paralysis."*



**Valorie**, spinal AVM

*"I looked for an alternative when I was told a 7 hour surgical procedure would result in the loss of a balance nerve and possible damage to a facial nerve. After the 90 minute CyberKnife treatment, my wife and I went out for a glass of wine. It's been 4 years since my treatment, and I believe the CyberKnife procedure gave me a second chance at life."*

**Donald**, acoustic neuroma



*"I came to the CyberKnife Treatment Center in a wheelchair, having had the maximum possible radiation treatment. After the CyberKnife treatment, I resumed working out and taking long walks. I credit the CyberKnife technology with helping me stay one step ahead of cancer."*



**Anne**, spinal tumor

## CyberKnife Team

CyberKnife treatment utilizes a team approach. Our CyberKnife Center team of experts include: clinical oncologist, general surgeon, neurosurgeon, interventional radiologist, medical physicist, therapeutic radiographer and pathologist. Each member has an important and unique role to play in producing a successful CyberKnife treatment.

## More Information on the Theresa Po CyberKnife Center

Consultation hours:  
Monday – Friday  
9:00 a.m. – 5:00 p.m.

For appointments, please call our CyberKnife Center at **3651 8833**.

Address: Hong Kong Adventist Hospital  
40 Stubbs Roads, Hong Kong.

Information on CyberKnife is available on our web site at [www.hkah.org.hk/cyberknife](http://www.hkah.org.hk/cyberknife)

Other resources:  
[www accuray.com](http://www accuray.com)  
[www.cksociety.org](http://www.cksociety.org)  
[www.cyberknifesupport.org](http://www.cyberknifesupport.org)

***By the Grace of God, cancer patients now have new hope.***