

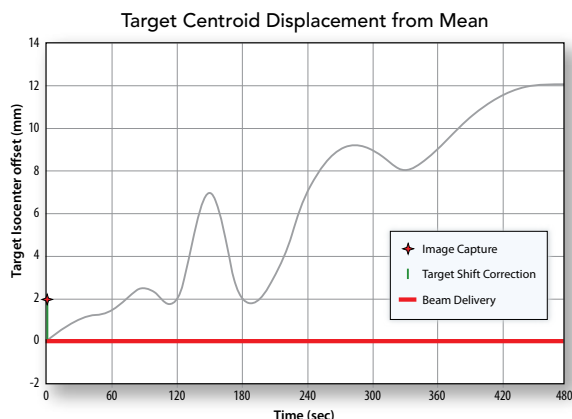
# INTEMPO™

## ADAPTIVE IMAGING SYSTEM



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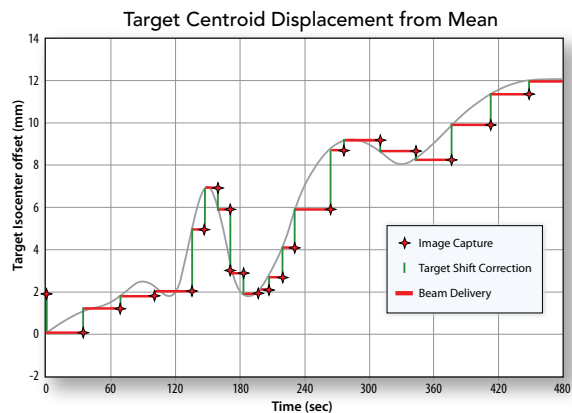
## Conventional Image Guidance System



Plot representing intra-fraction prostate motion and targeting accuracy typical of gantry-based IGRT / CBCT image guidance. With pre-treatment, setup-only image guidance, the targeting isocenter remains fixed throughout the treatment even though the target has shifted – which may result in unacceptable surrounding tissue toxicity.

Studies have shown the prostate to move up to 12 mm in as little as 8 minutes of treatment delivery<sup>1</sup>. When delivering the doses required for hypo-fractionated radiosurgery, image guidance at set-up is inadequate – you need continual image guidance and automatic targeting corrections throughout the treatment to ensure surrounding tissue preservation.

## CyberKnife® Robotic Radiosurgery System



Plot representing intra-fraction motion and targeting accuracy with the InTempo Adaptive Imaging System. With the InTempo System, imaging and beam delivery adapt to the rate and extent of tracked movements throughout the treatment, ensuring radiosurgical accuracy is maintained from the first beam to the last.

1. Kupelian et al. Int. J. Radiation Oncology Biol. Phys., Vol 67, No. 4, pp. 1088-1090, 2007.

## InTempo™ Adaptive Imaging System

Tracking random motion of the prostate represents one of the most significant challenges in the accurate delivery of radiosurgery. Unlike other technologies, the CyberKnife® System recognizes that the prostate often moves during treatment delivery. With the InTempo Adaptive Imaging System, the CyberKnife System not only tracks intra-fraction prostate motion, but actually adapts imaging and treatment delivery based on how much and how fast the prostate moves. With this unique approach, the CyberKnife System enables unprecedented targeting accuracy and unrivaled surrounding tissue preservation.



User Interface showing how the InTempo System allows the user to modify delivery parameters on-the-fly.



## Adaptive Imaging – Optimized Delivery

With the CyberKnife System, the user now has complete flexibility in creating not only the ideal treatment plan, but also in determining how the plan is delivered. All systems can create complex treatment plans, but if delivery accuracy is sub-optimal, the delivered treatment is too. With the InTempo System and its adaptive intelligence, clinicians have complete control on all aspects of the treatment and the confidence of being able to accurately deliver their treatment plans routinely, in daily clinical practice.

*Product specifications are subject to change. Please contact Accuray Sales for more details.*

## Benefits

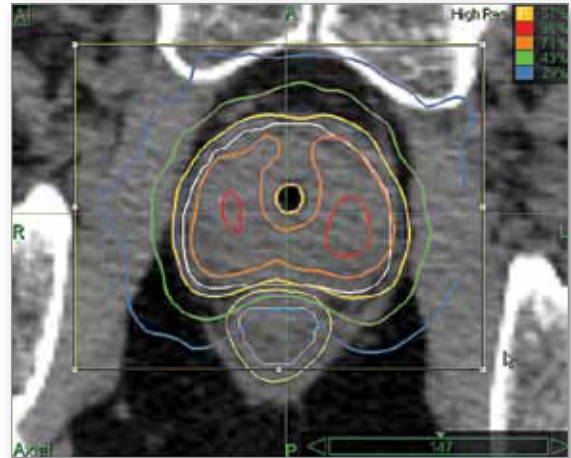
For the first time, the InTempo System empowers the user in determining a treatment delivery scheme that is best suited to the individual patient. Benefits include:

- Better target tracking and delivery compensation for target shifts
- Improved tracking of the prostate under both slow drift movement and sporadic motion
- Intelligent, adaptive and on-the-fly tools available to the user in daily clinical practice
- Integrated checks to assist in patient selection

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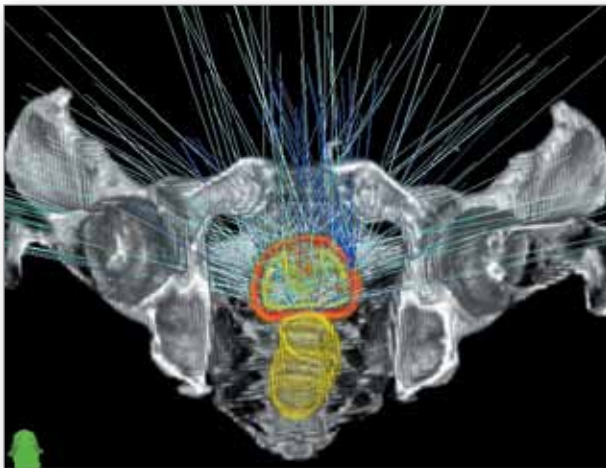
The CyberKnife System has revolutionized prostate radiosurgery as the only system capable of non-invasively delivering HDR equivalent dosing to the prostate with sub-millimeter targeting accuracy while precisely controlling exposure to the rectal wall and urethra. Used as either monotherapy or as a boost following treatment with other modalities, a typical CyberKnife treatment is delivered in just five or fewer outpatient visits.

*Heterogenous, HDR-like dose distribution.*



*Image courtesy of Donald B. Fuller, M.D., CyberKnife Centers of San Diego*

*Three-dimensional rendering of non-coplanar beam trajectories to the PTV.*



*Image courtesy of Donald B. Fuller, M.D., CyberKnife Centers of San Diego*

Capitalizing on full 6D robotic mobility, the CyberKnife System automatically delivers hundreds of uniquely angled, non-coplanar beams in routine clinical practice – without having to enter the treatment room or manually rotate the couch.

### Treating the Prostate: From Planning to Delivery

The CyberKnife System offers a complete state-of-the-art solution for treating the prostate. Starting with the clinically intuitive Sequential Optimization algorithm available with the MultiPlan® Treatment Planning System, users have the flexibility of creating plans to emulate either homogeneous, IMRT-style dose distributions or heterogeneous, HDR-like dose distributions. Combined with proven sub-millimeter targeting accuracy, clinicians can precisely sculpt radiosurgical doses with dose gradients not achievable with conventional radiation delivery technologies.

# CyberKnife®

ACCURAY®



## A COMPLETE ROBOTIC RADIOSURGERY SYSTEM

*The Accuray CyberKnife® System allows clinicians to provide patients with more accurate treatments and an improved quality of life:*

### **Synchrony® Respiratory Tracking System**–

Continuously synchronizes beam delivery to the motion of the tumor, allowing clinicians to significantly reduce margins while eliminating the need for gating or breath-holding techniques.

**Xsight® Lung Tracking System**–Tracks the movement of the lung tumors directly, without fiducials, with accuracy, reliability and self-adjusting repeatability.

**Xsight Spine Tracking System**–Eliminates the need for surgical implantation of fiducials by using the bony anatomy of the spine to automatically locate and track tumors with sub-millimeter accuracy.

**Iris™ Variable Aperture Collimator**– Using tungsten leaves to rapidly manipulate beam geometry, the Iris Collimator enables treatments of unrivaled conformality and unparalleled preservation of healthy tissue.

**Xchange™ Robotic Collimator Changer**– Automatically exchanges collimator sizes, allowing for highly conformal treatments to be delivered more efficiently.

**RoboCouch® Patient Positioning System**– Robotically aligns patients accurately with six degrees of freedom, reducing patient setup times and enabling faster treatments.

**Linear Accelerator**–Light weight 6MV X-band linear accelerator with an output of 800 MU/min, accurately delivers highly collimated beams of radiation providing superior conformality when treating patients.

**MultiPlan® Treatment Planning System**– This intuitive workflow-based workstation designed for radiosurgery, enables the creation of plans that have excellent conformality and coverage with steep dose gradients.

**Sequential Optimization**–With our user-defined, sequentially prioritized planning objectives, treatment plans are custom tailored to the unique clinical characteristics of each patient.

**4D Treatment Optimization and Planning System**–Takes into account not only the movement of the target but also the movement and deformation of the surrounding tissue.

**Monte Carlo Dose Calculation**–Often considered the gold standard dose calculation, the CyberKnife System's Monte Carlo Dose Calculation produces results in minutes compared to what typically requires hours or days with other systems.

## CYBERKNIFE® SYSTEM HIGHLIGHTS

### • **Continual image guidance**

Without the need for staff intervention or treatment interruption, the CyberKnife's revolutionary image guidance technology continuously works in concert with the treatment delivery system to automatically track, detect and correct—managing even the slightest target movements throughout the entire treatment.

### • **Flexible robotic maneuverability**

Driven by continual imaging and intelligent motion corrections, the CyberKnife's robotic manipulator automatically positions the linear accelerator to an unprecedented range of positions—allowing for access to virtually any tumor from any direction.

### • **Dynamic motion targeting**

With constant updates of target position throughout the respiratory cycle, the CyberKnife System delivers beams synchronized in real-time to targets that move with respiration while adapting to changes in breathing patterns—delivering highly conformal radiation with considerably smaller margins and unprecedented accuracy.

### • **Unrivaled dose conformality**

Unconstrained by clockwise/counter-clockwise gantry rotations, the robotic mobility of the CyberKnife System delivers diverse non-coplanar and non-isocentric treatments to precisely sculpt radiosurgical doses to the unique contours of the target.

# ACCURAY INCORPORATED

**Accuray's philosophy, Our Business Begins with Patients™, drives the company's commitment to advancing the field of robotic radiosurgery through innovation, while also establishing its products as the standard of care.**

Accuray's success is measured by the success of its customers in delivering the most advanced care to their patients. Medical institutions worldwide have expanded their clinical programs using Accuray's CyberKnife® Robotic Radiosurgery System by treating patients that may have been considered untreatable, while building a more comprehensive oncology practice.

To this end, Accuray has developed collaborative partnerships with clinicians, researchers and patients. These partnerships help educate clinicians and patients on the benefits of robotic radiosurgery, enabling Accuray to refine and upgrade its technology based on user and patient feedback. This feedback allows Accuray to develop innovative programs that improve clinician's success while differentiating Accuray from traditional medical device companies.

The result, the CyberKnife Robotic Radiosurgery System, a pain-free treatment alternative for patients that eliminates invasive surgery and results in a significantly improved quality of life for cancer patients the world over.



## UNITED STATES

**Accuray Corporate Headquarters**  
1310 Chesapeake Terrace  
Sunnyvale, CA 94089  
USA  
Tel: +1.408.716.4600  
Toll Free: 1.888.522.3740  
Fax: +1.408.716.4601  
Email: sales@accuray.com

## TomoTherapy

1240 Deming Way  
Madison, WI 53717  
USA  
Tel: +1 608 824 2800  
Fax: +1 608 824 2996

## ASIA

### Accuray Japan K.K. - Tokyo

Daini Tekko Building 6F  
1-8-2 Marunouchi, Chiyoda-ku  
Tokyo 100-0005  
Japan  
Tel: +81.3.6269.9556  
Fax: +81.3.3217.0337

### Accuray Asia Ltd. - Hong Kong

Suites 1702 - 1704, Tower 6  
The Gateway, Harbour City  
9 Canton Road, T.S.T.  
Hong Kong  
Tel: +852.2247.8688  
Fax: +852.2175.5799

### Chengdu Twin-Peak Accelerator Technology

#39 Huatai Road, Longtan  
Industrial Zone,  
Section 2 East, 3rd Ring Road,  
Chengdu, Sichuan 610051  
China

## EUROPE

### Accuray Europe

Tour Atlantique 25e  
1 Place de la Pyramide  
92911 Paris La Défense Cedex  
France  
Tel: +33.1.5523.2021  
Fax: +33.1.5523.2039

### Tomotherapy Belgium BVBA

Pegasuslaan 5  
1831 Diegem  
Belgium  
Tel: +32 (0)2 400 4400  
Fax: +32 (0)2 400 4401/02