Leksell Gamma Knife®

Icon™

Elekta

Shaping a new era in intracranial radiosurgery

Helping clinicians
improve patients' lives

Elekta

New possibilities evolve for more personalized treatments

"It's a new paradigm in SRS with Icon where we have flexibility in fractionation, workflow, the lowest integral dose, sharp dose gradients and all with the patient comfortable in a mask."

Arjun Sahgal, MD, FRCPC
Radiation Oncologist, Odette Cancer Centre
Sunnybrook Health Sciences Centre
Toronto, Canada

The current environment presents significant growth potential for advanced brain programs, and Icon is designed to meet the demand.

The demand for stereotactic intracranial radiosurgery is increasing, propelled by many factors:

- Rise in cases among aging populations
- Higher expectations on quality of life
- Trend toward more personalized treatment strategies

In this environment, advanced brain programs are poised for significant growth, and Leksell Gamma Knife® Icon™, the latest generation Gamma Knife system, is designed to meet the demand.

Building on Gamma Knife precision and adding new technology, Icon gives clinicians the option to perform single or fractionated frame-based or frameless treatments, allowing for more individualized delivery—without sacrificing precision and accuracy.

Precision care for the brain

Leksell Gamma Knife Icon is a truly integrated system with all components built on the same rigid structure and calibrated to one another. This tight integration improves precision. It also contributes to an assured uptime standard of 98 percent.*

High therapeutic dose with maximum precision
During Gamma Knife radiosurgery, up to 192 low-intensity radiation beams from cobalt-60 sources converge with high accuracy on the target. At isocenter where the beams merge, radiation dose is concentrated powerfully at the target, sparing healthy brain. Target mass and shape determines the number of beams used, and beams can be individually modulated, further enhancing accuracy.

Stereotactic cone-beam CT
Integrated stereotactic cone-beam CT, calibrated to the robust patient positioning system, determines the stereotactic coordinates in 3D.

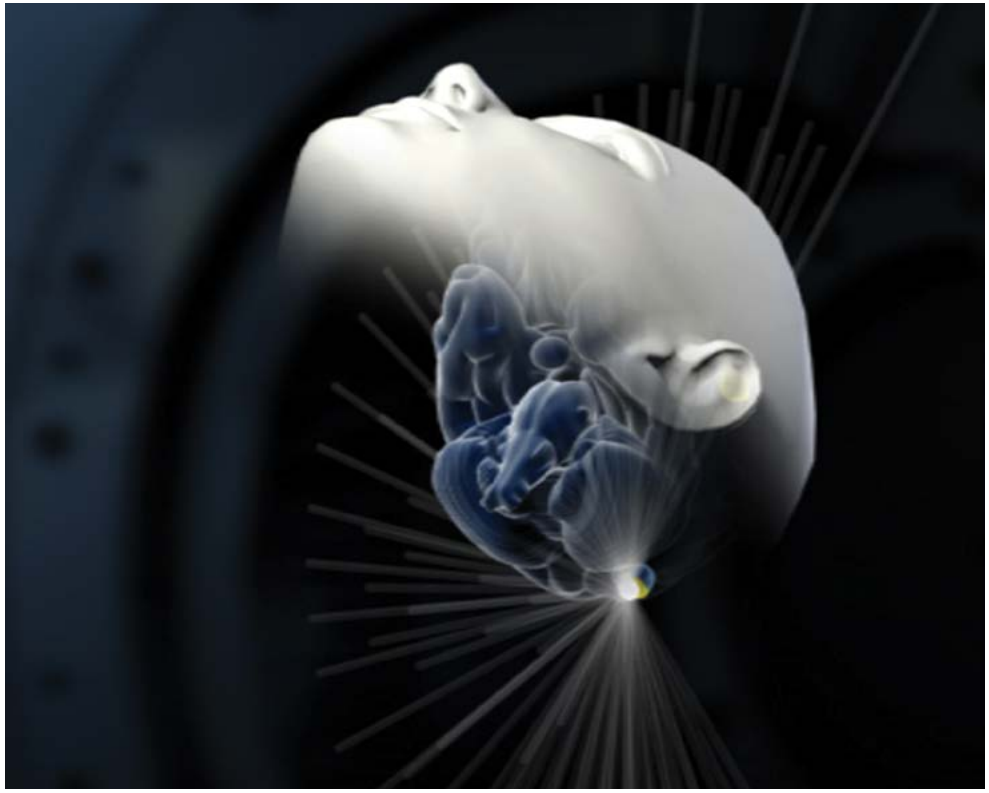
Online Adaptive DoseControl™
Online Adaptive DoseControl confirms accuracy and ensures precise treatment delivery during every fraction of treatment. Integrated with the control system, it permits clinical decision making during the treatment process.

The automatic dose correction is made possible by the unique design of Leksell Gamma Knife. Since Leksell Gamma Knife uses up to 192 non coplanar beams instead of shaped beams, it is possible to move some or all of the shots to compensate for smaller patient movements. If the patient has shifted, the shots will follow the anatomy. We call this virtual 6D couch since it adapts for movement.

The online dose evaluation is the last step prior to treatment, and gives the physician an opportunity to look at the plan to be delivered each day and compare with the dose that was originally planned. If needed, the physician has the choice of adjusting the delivery.

Real-time motion management
High Definition Motion Management monitors the patient during treatment, with a resolution of 0.15 mm. If the patient moves outside a pre-set limit, beam delivery automatically turns off. The result: the highest possible accuracy for both frameless and frame-based treatment.

*With valid service contract



Elekta guarantees the accuracy of Leksell Gamma Knife for its entire lifetime—no other radiosurgery system does the same*

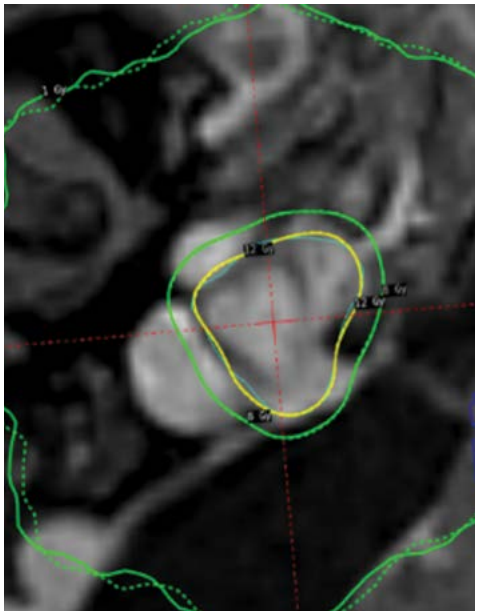
* With a Platinum service contract. The supported lifetime of Icon is 10 years.

Gamma Knife delivers lower dose to healthy tissue than other systems:

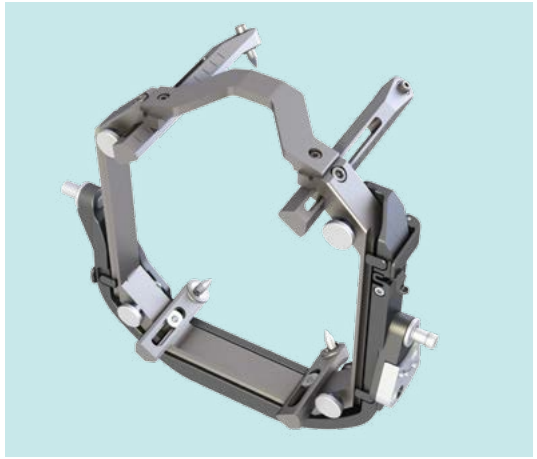
2-4x

lower dose to normal brain

Ma L, Nichol A, Hossain S, et al. Variable dose interplay effects across radiosurgical apparatus in treating multiple brain metastases. Int J CARS. Published online: 20 April 2014. doi: 10.1007/s11548-014-1001-4



Leksell Gamma Knife Icon enables frameless or frame-based treatments with uncompromising accuracy



Clinical decisions determine the workflow

No patient or radiosurgery treatment is exactly the same as another. Gamma Knife Icon offers new freedom to adapt and optimize treatment to the needs of patients and to everyday clinical logistics.

Clinical and workflow flexibility for intracranial SRS

Icon introduces flexible workflows for:

- Frameless or frame-based procedures
- Single session or fractionated treatment

Treat more patients with improved efficiency

Streamlined Icon workflows contribute to efficient patient throughput. Icon treatment times are often shorter than those of linac-based systems, when considering all steps required, from planning and quality assurance to treatment.

Flexible workflows aid efficiency

Frame-based workflow with fiducial based registration

option: QA check only (no correction)

Frame-based workflow with stereotactic CBCT based registration

option: QA check only (no correction)

Mask-based workflow with stereotactic CBCT based registration

Correction applied

"What is amazing is the capability of the Icon system to adapt, very precisely, the planning to the new position of the patient. And this is really meeting our expectations in terms of real-time recalculation of the dose."

Jean Régis, MD
Director Stereotactic, Functional Neurosurgery and Radiosurgery
Timone University Hospital, Marseille FR

Planning and QA – elegantly efficient even in complex cases

Leksell GammaPlan® is a sophisticated treatment planning and management software that is fully integrated with Icon and designed specifically for the needs of the brain. It provides specialized tools that make full use of the advanced technology incorporated into Icon, while providing safe and efficient workflows.

Optimal plans in your daily clinical practice
A complete and accurate modelling of Icon and patient fixations enable both accurate dose calculations and simulation of all geometries to ensure you deliver exactly what you have planned efficiently and simply.

- WarpSpeed™ and Inverse Planning tools are tailored for Icon. They allow for interactive dose sculpting, and make it possible to complete plans in a matter of minutes, even for complex and multiple targets.
- The Convolution tool provides optional heterogeneity correction for targets near bone and air cavities.
- Both manual and automatically calculated dose statistics are available for efficient plan review.
- Re-Treatment™ functionality provides tools for efficient management of reoccurring diseases, in particular metastases.
- Pre-planning makes it possible to plan on frameless images.

Fast and easy quality assurance
The QA procedure for Leksell Gamma Knife Icon is fast and fully automated. It is integrated in the system with no need for external QA tools (e.g. water phantoms). Special patient specific QA is not needed.

System Accuracy QA:	Max. 10 min/day
Treatment Plan QA (optional):	5 min/patient

Advancing new treatment paradigms

Icon achieves high accuracy regardless of the method of immobilization—frame-based or frameless. This unique capability opens up new paradigms for fractionation, enabling treatment of larger targets and targets close to critical structures. As a result, most cases in the brain, regardless of the size, location or number of targets, can be treated with Gamma Knife accuracy and confidence.

Performing ultraprecise radiosurgery

Leksell Gamma Knife is the only technology capable of performing ultraprecise radiosurgery, enabling treatment of the most complex and critically located targets. For these types of indications, treatment must be optimized along many parameters: accuracy, conformity, selectivity, dose fall-off and integral dose. Only Leksell Gamma Knife can achieve such strict optimization across all parameters at the same time.

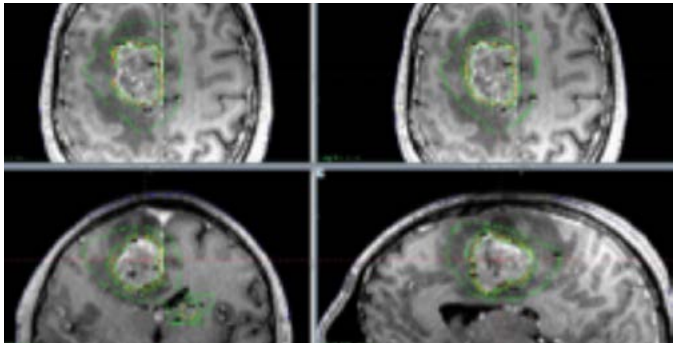
Fractionation with highest precision and dose distribution sparing healthy tissue

Icon enables new methods of immobilization and the option to fractionate treatment, making the exceptional accuracy and precision of Leksell Gamma Knife radiosurgery a possibility for many more types of cases and many more patients.

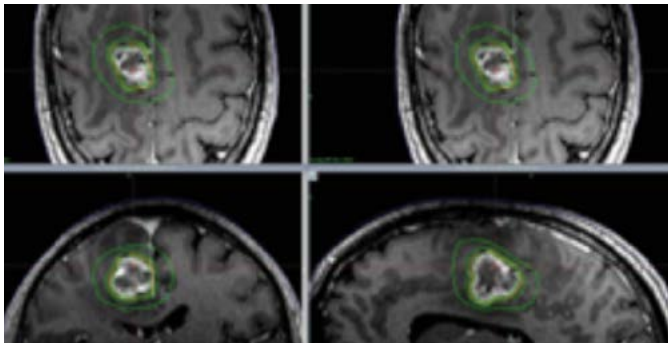
Icon can be deployed in different treatment regimens and adaptive, mask-based approach ranges from single session treatments and hypo-fractionation to full fraction approaches.

Typical frameless cases:

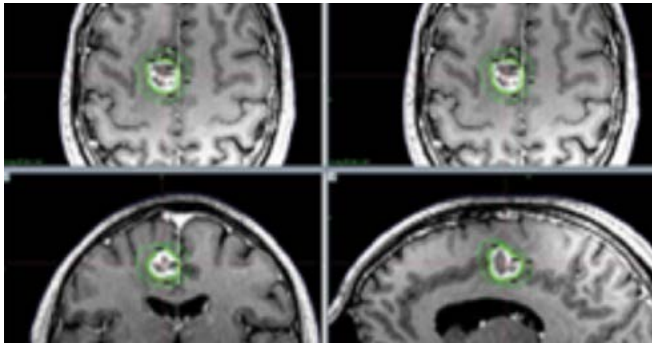
- Hypofractionation of larger volumes
- Ability to treat more complex targets
- Easier re-treatment of patients with brain metastases who present with new or recurring lesions



Fraction 1: volume 15.643 cm3



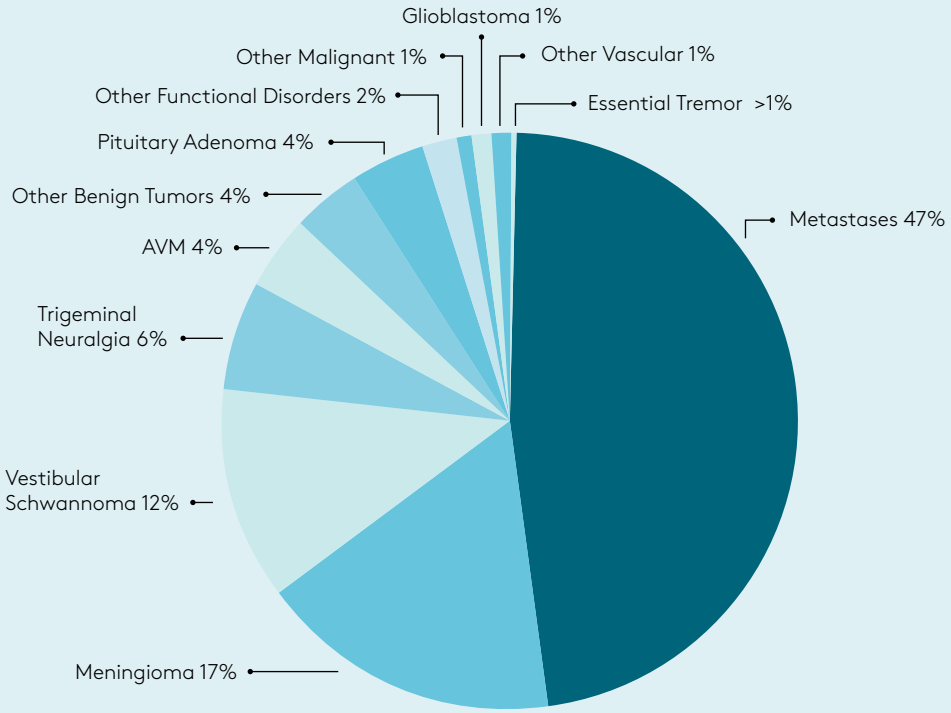
Fraction 2: volume 6.628 cm; 57.6% reduction at fraction 2



Fraction 3: volume 2.639 cm3; 83.1% reduction at fraction 3

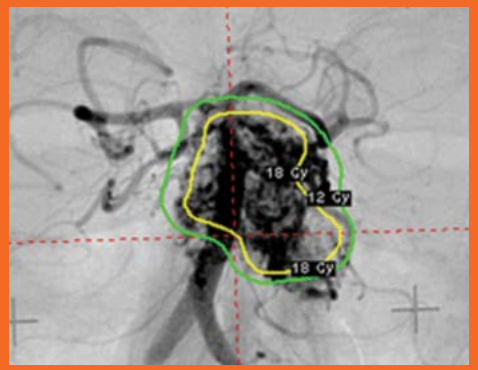
Images courtesy of Bristol Gamma Knife Centre, University Hospitals Bristol

Icon enables intracranial treatments for a broad case mix



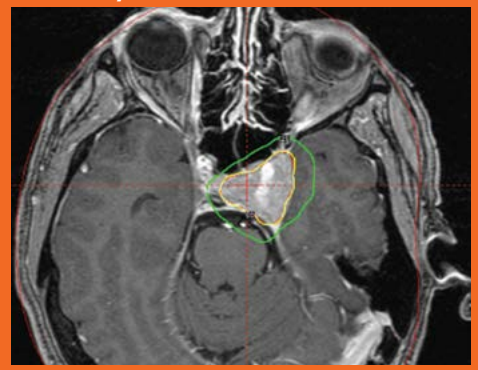
Leksell Gamma Knife Treatment Statistics Report, 1968–2016 (published: 2017) Leksell Gamma Knife Society

Brainstem AVM



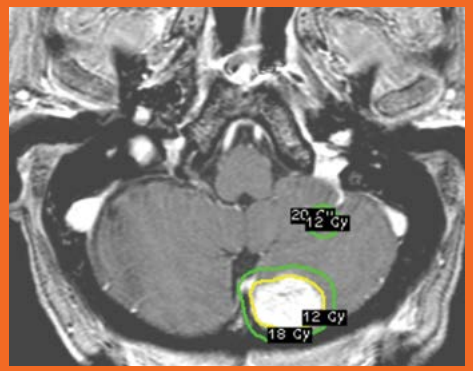
45 year old male, no prior OP, Embol, no hemorrhage, facial pain

Pituitary adenoma



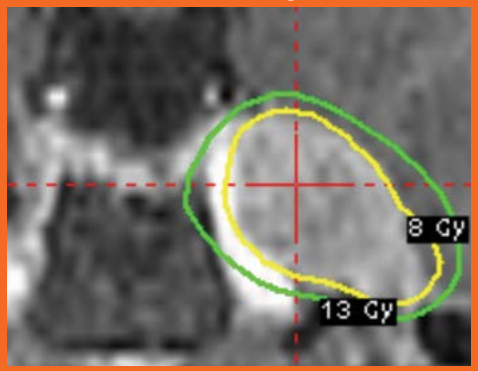
56 year old male, double vision, Prolactin level 1900

Multiple mets



63 year old female, breast cancer, ER(+), PR(-), Her2/neu(+), bone and lung metastases (+), no prior WBRT

Caverous sinus meningioma



43 year old female, no prior surgical resection, Lt. CN 4, 6 palsy, Lt. facial numbness

Images courtesy of Cleveland Clinic Foundation, USA

Feature-benefit summary

"We need Icon to cover all of the patients requiring Gamma Knife treatment. With Icon, we can expand the indications treated with Gamma Knife and treat 10 to 20 percent more patients."

Prof. Jung-Il Lee, Neurosurgeon
Samsung Hospital
Seoul, Korea

Icon capabilities support system continuity for current and future needs

High therapeutic dose with maximum precision
- Effective tumor control sparing organs at risk
- 2-4x lower dose to normal brain
- Highest possible accuracy for both frame-based and frameless treatments

Online Adaptive DoseControl
- Continuous quality control
- Delivers exactly what is planned efficiently and simply

Cranial SRS flexibility
- Treatment options include frame/frameless, single session/fractionation, SRS/microradiosurgery

System integration
- Efficiency, safety, reliability

0.15
mm average accuracy

10
minutes QA

98
percent uptime

2,800
peer reviewed journal articles

>1,000,000
patients treated

Contact your Elekta representative for more information about Icon and the Gamma Knife experience.

Choose Icon and gain access to a robust support system designed to help you get the most from your system.

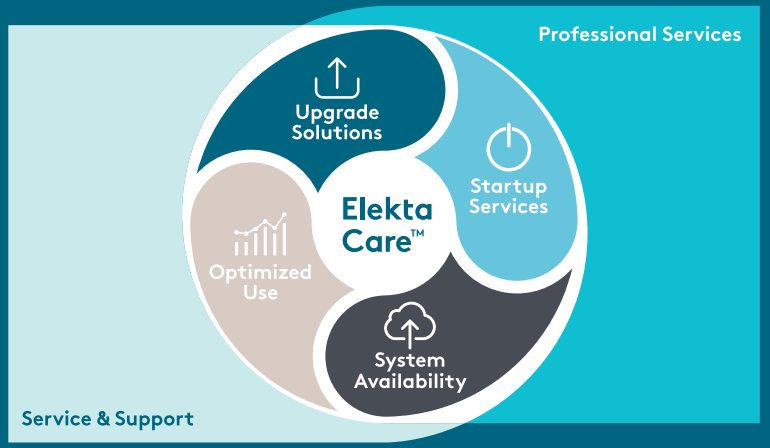
Elekta Care
Personal response, experiential learning and lifecycle management are ways we stay connected to help you improve patient care. Find out more at elekta.com/elektacare.

Education and training
A comprehensive training package supports sustainable learning and inspires continuous development for Icon users. Find out more at elekta.com/services/education-and-training.

SMART communications
Online tools and templates support the promotion of your Gamma Knife clinic. Visit elekta.com/smart for more information.

Leksell Gamma Knife Society
As an Icon user, you become a member of Leksell Gamma Knife Society – a scientific community of more than 1,500 members sharing knowledge and driving the development of cranial SRS. Visit LGKSociety.com for more information.

Elekta Care™ supports you from startup through your product's lifecycle with comprehensive options from education, training and upgrades to solutions allowing you the highest uptime and improved operational efficiency.



We are healthcare technology innovators, specializing in radiotherapy treatments for cancer and brain disorders.

We help clinicians to improve patients' lives through our forward-thinking treatment solutions and oncology informatics, creating focus where it matters to achieve better outcomes.

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