Only Elekta provides the ability to treat brain disorders with sub-millimeter accuracy that is three times more precise than the closest competitor. Elekta is miles ahead in numbers of patients treated, peer-reviewed articles and support services, like financing for your purchase, consulting to ensure maximum reimbursement, outstanding technical support and service and marketing assistance that's just a click away (www.gammaknifemarketing.com). It's no wonder Leksell Gamma Knife® remains the most proven and trusted treatment for brain disorders… with equally strong results for your bottom line.

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LEKSELL GAMMA KNIFE

- *Two Model Programs*
- *Reimbursement Outlook*
- *Developing a Financial Proforma*

Gamma Knife® At-a-Glance

The Gamma Knife® uses computerized planning technology that delivers a highly conformed dose of radiation therapy to intracranial sites.

An MRI performed prior to treatment determines the precise location of the lesion, and is used to develop a 3D image of the brain, which guides the radiation beams toward the lesion.

A light-weight head frame, affixed to the patient for the procedure, immobilizes the skull and frame together and creates reference points to the patient's brain anatomy. The collimator has 201 holes that can be fitted with sleeves of varying sizes. Depending on the size and location of the treatment area, the physician and physicist determine the correct sleeve size and sequence so that the radiation travels through the holes and intersects precisely at the lesion.

These beams coalesce at the target, where they expose the lesion to a lethal dose of radiation. In the latest model (pictured on cover), a robotic automatic positioning system (APS) tracks the target 10 times per second. Precision is an astounding 0.3 mm to cranial lesion(s).

Cover Image, top image, and bottom image on this page provided courtesy of Elekta, Inc. Two middle images provided courtesy of Alexian Brothers Medical Center.

Gamma Knife® Technology at Archbold Medical Center Thomasville, Georgia

by Steven L. Black, MBA
Director of Oncology Services and Integrative Medicine

The John D. Archbold Memorial Hospital is committed to combining "human touch" with "high tech." The Gamma Knife® offered an ideal opportunity to develop a program that provides an alternative to a craniotomy, the previous standard of care for treating many intracranial problems.

Generally, with a craniotomy a patient requires a two-to-three day post-operative stay in an intensive care unit, followed by up to five additional days on a medical/surgical floor, and several weeks of rehabilitation. A Gamma Knife patient is typically treated in the morning, discharged so he or she can return home by early afternoon, and usually is able to resume normal activities and routines the day after the procedure.

Patient care is coordinated with a multidisciplinary team that includes one neurosurgeon and one radiation oncologist for each patient.

Moving Forward

Neurosurgeons at the South Georgia Neurological Institute met with Elekta representatives in early 2001 to learn about the technology and the patient volumes that would be required to support a Gamma Knife program in Thomasville. That initial meeting led to discussions with the leadership at Archbold Medical Center as well as the radiation oncologists who practice at the Lewis Hall Singletary Oncology Center. After many meetings and detailed financial analysis, the hospital sought to secure approval from the state based on the Certificate of Need (CON) process.

James L. Story, Jr., MD, President and CEO of the John D. Archbold Memorial Hospital, became a champion for the new technology. In April 2002, Story made a presentation to the Archbold Foundation, asking for the funds to purchase the machine and establish the service. The Foundation unanimously approved the request and the real work to establish the Gamma Knife program started.

A Blueprint for Success

In addition to the acquisition cost of the Gamma Knife machine, the pro forma provided by Elekta included an estimate for construction of a vault to house the equipment, at a cost of $400,000 to $500,000. Fortunately, the hospital had a vault already constructed for future expansion of the radiation oncology program and, therefore, did not have to incur the cost of building a new vault.

All of the physicians, as well as the physicist, needed training in order to be able to treat patients with the Gamma Knife. The cost for training was approximately $5,000 per person plus travel expenses.

The program was fortunate to have a physicist already on staff. The physicist worked with the radiation oncologists and took the initiative to secure the necessary amendment to the hospital's radiation license, coordinated the acceptance testing of the machine, and calibrated the initial dose rate so that we could begin treating patients. The Gamma Knife Center at Archbold Memorial Hospital treated its first patient in February 2003, and has treated 232 patients through February 2006. Approximately 50 percent of patients have had an oncology-related diagnosis, while the remaining patient diagnosis breaks down as follows:

- Meningiomas: 21 percent
- Trigeminal neuralgias: 11 percent
- Other benign tumors: 8 percent
- Acoustic neuromas: 7 percent
- Arteriovenous malformations: 3 percent.

The Business Plan

Hospitals or cancer centers that are considering adding Gamma Knife need to develop a business plan that looks at, among other factors, four key areas:

- The program's traditional catchment area
- The proximity of other Gamma Knife sites
- Physician referral patterns
- The most commonly treatable diagnosis to determine the potential size of the program's target market.

In addition, the program should budget substantial dollars to print brochures, purchase television, radio, and print advertising, and produce information packets, including DVDs, to market the new technology to patients, physicians, and payers. Your program must continually educate referring physicians, payers, and patients about the benefits of Gamma Knife technology each year that your program is in existence.

IMAGE PROVIDED COURTESY OF JOHN D. ARCHBOLD MEMORIAL HOSPITAL

Reimbursement Outlook

A snapshot of how Gamma Knife® Services are paid

Currently, reimbursement for the Gamma Knife® is good. The alternative to this non-invasive approach, craniotomy and five to seven day hospitalization with a potential for additional rehabilitation services, far exceeds the cost of Gamma Knife radiosurgery. Most private payers cover the single-session procedure, although cancer centers should first contact payers for pre-approval authorization.

The Centers for Medicare & Medicaid Services (CMS) changed the reimbursement codes available for billing stereotactic radiosurgery services effective January 1, 2006. Consequently, programs considering adding Gamma Knife technology must work closely with their billing departments to ensure that all billable codes have been added to the charge master and then to audit individual patient bills, especially during the first year to validate the process.

Cancer program staff that handles managed care contracts should meet with payers to verify coverage under this technology. If current payer contracts do not allow coverage for Gamma Knife services, the program will need to negotiate with individual payers for coverage.

Table 1. Professional Reimbursement for Radiation Oncologists†

	CPT/HCPCS Code	Modifier	Description	Professional Fee
Medicare*	77263	N/A	Radiation therapy planning	$159.24
	77295	26	Set radiation therapy field	$226.11
	77300	26	Basic radiation dosimetry calculation(s)	$30.75
	77334	26	Radiation treatment aid(s)	$61.50
	77432	N/A	Stereotactic radiation treatment	$406.63
	20665	N/A	Removal of fixation device	$103.10
			TOTAL	**$987.63**

	CPT/HCPCS Code	Modifier	Estimated Payer Description	Fee Range
Private Payer	77263	N/A	Radiation therapy planning	$590-$690
	77295	26	Set radiation therapy field	$626-$770
	77300	26	Basic radiation dosimetry calculation(s)	$34-$232
	77334	26	Radiation treatment aid(s)	$215-$255
	77432	N/A	Stereotactic radiation treatment	$1,055-$1,285
	20665	N/A	Removal of fixation device	$103+
			TOTAL	**$2,623-$3,335**

*Based on 2006 rates.
†Rates may vary by geographical location.

Table 2. Medicare* Reimbursement for Hospital Outpatient Centers

CPT/HCPCS Code	APC	Description	Reimbursement Rate
77295	0310	Set radiation therapy field	$826.12
77300	0304	Radiation therapy dose planning	$103.09
77315	0305	Teletx isodose planning, complex	$234.09
77370	0304	Radiation physics consult	$103.09
77334	0303	Complex treatment device	$168.07
G0243	0127	Multisource photo stereotactic radiosugery delivery	$7,304.97
		TOTAL	**$8,739.43**

*Based on 2006 rates.

Table 3. Private Payer Outpatient Hospital Reimbursement

	Total Estimated Average Reimbursement
Managed Care (HMO/POS)	$13,000-$24,000
Indemnity /PPO	$18,000-$22,000
Self-Pay*	$16,000-$40,000

*Cash rate includes professional fees.

The Financial Proforma

Helping answer the question: Is Gamma Knife technology right for your cancer center?

The purchase of new technology is a two-tiered decision-making process. One tier looks at clinical evidence supporting how the new technology will affect patient care; the second tier looks at the new technology from a business perspective (i.e., cost, reimbursement).[1] Integral to this decision-making process, is the financial proforma, which is made up of four key components:

1. Payer mix
2. Payer reimbursement
3. Patient volume throughput
4. Capital expenditures.

Payer Mix

Before purchasing any new technology, your community cancer center must fully understand its payer mix. Generally, public payers reimburse Gamma Knife services at a much lower rate than private payers. So a cancer center with an unusually high percentage of public payers must look carefully at the following three components to fully understand the financial feasibility of acquiring this new technology. Conversely, cancer centers with a high percentage of private payers will likely have a better reimbursement outlook.

Payer Reimbursement

Knowing your payers and their reimbursement rates will allow you to come up with an overall weighted average reimbursement amount for each Gamma Knife procedure performed. Table 4 shows how to use your payer mix and payer reimbursement to arrive at this weighted average.

Patient Volume

Your cancer center must also identify which patients would potentially be treated with Gamma Knife technology (see Table 5), as well as how many of these patients your cancer center would treat in a given year. Generally, the patient volume needed for programs to break even financially is relatively small: about 72 to 80 patients a year.

Capital Expenditures

This component of the proforma involves the actual purchase price of the new equipment or technology and associated programmatic costs, such as staff training. For example, a financial proforma of Gamma Knife technology will include the cost of the system (about $3.87 million) and site preparation to create a room to house the new unit (about $500,000). Keep in mind that the actual cost of the system and site preparation will vary from hospital to hospital.

References

[1]Reiling RB. To buy or not to buy: integrating new technologies into community cancer centers. *Oncol Issues.* 2004;19(3);28-30.

Table 4. Overall Weighted Average Reimbursement Amount for Each Gamma Knife Procedure

Payer	Percent Mix	Technical Reimbursement	Total Reimbursement
Private or self-pay	5%	$25,000	$1,250
Private insurance	20%	$20,000	$4,000
Blue Cross/Blue Shield	15%	$16,000	$2,400
Managed care	25%	$16,000	$4,000
Medicare w/ CC	15%	$13,244	$1,984
Medicare w/o CC	10%	$7,706	$771
Medicare Outpatient	10%	$8,571	$857
		Total Weighted Average	**$15,262**

Table 5. ICD-9 Codes for Indications Commonly Treatable by Gamma Knife Surgery*

ICD-9 Code	Description
191.0-191.9	Malignant neoplasm of the brain
192.0	Malignant neoplasm of the cranial nerve
192.1	Cerebral meninges
192.3	Spinal meninges
194.3-194.4	Malignant neoplasm (pituitary/pineal)
198.3-198.4	Metastatic neoplasms (brain/nerve/meninges)
225.0-225.2	Benign neoplasms (brain/nerve/meninges)
227.3-4, 237.0	Pituitary/craniopharyngeal neoplasm
237.0-1	Neoplasms of uncertain behavior
227.6	Glomus juglare
237.3	Glomus neoplasm
747.81	AVM of cerebral vessels
350.1	Trigeminal neuralgia
332.1	Essential tremor

*This is not a complete list of ICD-9 codes available for Gamma Knife surgery.

Gamma Knife® Technology at Alexian Brothers Medical Center Elk Grove, Illinois

by Kristen DiCicco, RN, MS, MM, MBA
Director, Neurosciences
Alexian Neurosciences Institute

The Illinois Gamma Knife Center at Alexian Brother's Medical Center opened in June 2005, the first occupant of a newly constructed medical office building. The Illinois Gamma Knife Center cost the hospital and investors $5 million for the most advanced Gamma Knife machine and planning system available, supportive computing equipment, space build-out, and initial training.

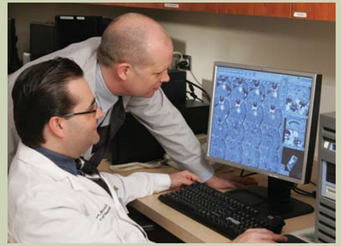
Marketing the New Technology

Alexian Brothers mailed educational information to about 15,000 physicians. Other marketing efforts included:

- Distributing several internal hospital network communication pieces
- Creating a new and distinct website, *www.igkc.org*, to showcase the Gamma Knife technology
- Hos ting a formal open house at the center
- Holding a number of informal tours of the new center
- Coordinating with local press to develop patient stories, which highlighted the new technology's importance to the community.

Alexian Brother's Medical Center serves a community of two million people living northwest of Chicago.

Since opening, the Illinois Gamma Knife Center has treated 130 patients, approximately 42 percent of which are brain metastases, 40 percent are primary benign or malignant brain tumors, and 18 percent are functional disorders. Currently, the Illinois Gamma Knife Center treats the following conditions: metastatic brain tumors, acoustic neuromas, AV malformations, trigeminal neuralgia, meningiomas, and pituitary adenomas.



Despite the name, Gamma Knife technology uses no surgeon's scalpel. A radiation oncologist, neurosurgeon, and physicist collaborate in determining the exact site and radiation dose based on standards developed from clinical research results.

IMAGE PROVIDED COURTESY OF ALEXIAN BROTHERS MEDICAL CENTER

Collaborating Disciplines

For Alexian Brothers, the Illinois Gamma Knife Center was a true collaboration between the Cancer Institute and the Neurosciences Institute. Ultimately, the decision was made to include the Gamma Knife Center as a part of the Neurosciences Institute; however, the Cancer Institute remains actively involved in the new technology and played an integral role in the decision to purchase the new technology. Both Institutes are Centers of Excellence and both remain committed to providing patients with high-tech treatment options, close to home.

The Illinois Gamma Knife Center operates as a department within the hospital and employs only one full-time staff member, a registered nurse manager. This nurse manager fields calls to the Center, coordinates consultations and schedules appointments, and provides education to patients and visitors about the procedure and indications for Gamma Knife. Physician, physicist, administrative support, additional nursing, and volunteer support are supplied by the Cancer and Neuroscience Institutes as needed. For Alexian Brothers, this staffing model has proved to be the most cost-effective way to deliver care to a growing and fluctuating patient volume.

Patients are treated almost exclusively on an outpatient basis. Given that the entire procedure typically lasts only a few hours and no more than three patients are treated on the same day, patient satisfaction with this new technology remains extremely high.

The Illinois Gamma Knife Center exceeded budgeted targets for the program the first months after opening, and patient volume growth has continued to be robust. Patients have traveled to the Gamma Knife Center from Georgia and as far away as Puerto Rico; however, most come from within a 30-mile radius. Perhaps most importantly, patients in the community have expressed appreciation for not having to go "downtown" to have the Gamma Knife procedure done.