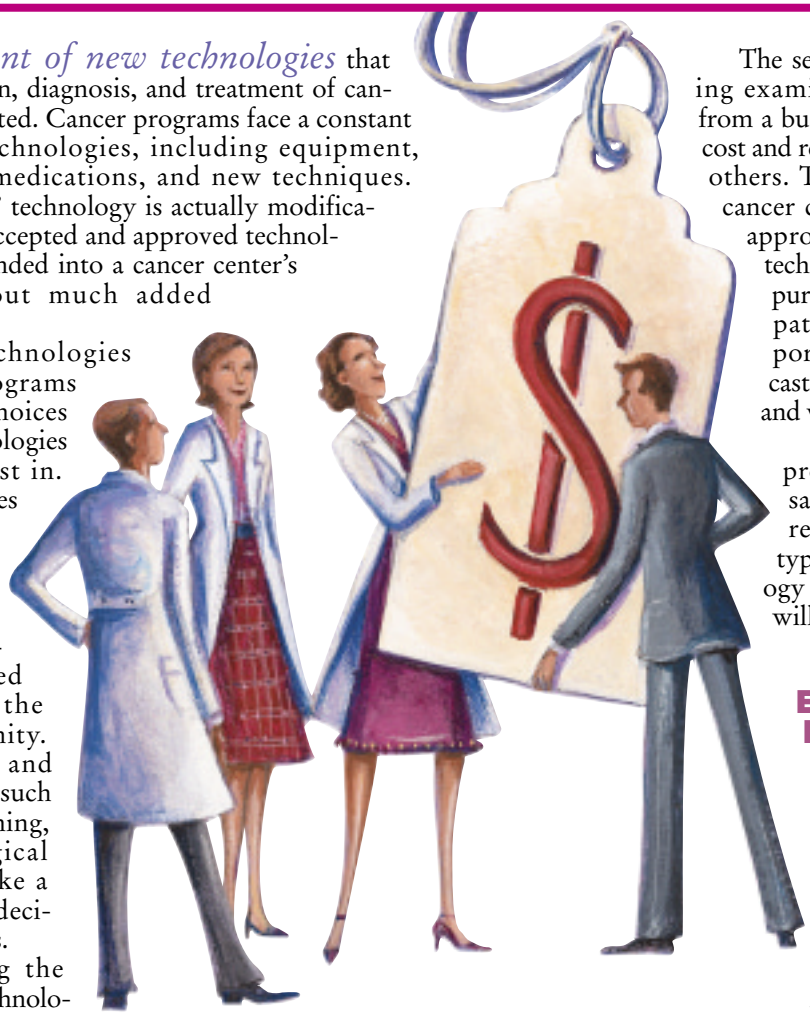
To Buy Or Not to Buy

by Richard B. Reiling, MD, FACS

The development of new technologies that aid in the prevention, diagnosis, and treatment of cancer continues unabated. Cancer programs face a constant barrage of new technologies, including equipment, instrumentation, medications, and new techniques. Much of this "new" technology is actually modification of previously accepted and approved technology that can be blended into a cancer center's operations without much added process.



Truly new technologies present cancer programs with challenging choices about which technologies to acquire or invest in. Some new techniques —such as sentinel lymph node biopsy or surveillance with PSAs for prostate cancer— have been adopted quite rapidly by the oncology community. Other techniques and costly innovations, such as MRI, PET scanning, and robotic surgical techniques, provoke a more complicated decision-making process.

In considering the purchase of new technology, many community cancer centers use a two-tiered decision-making process. One tier looks at the evidence supporting how the new technology will affect patient care. This process involves careful review of outcome-oriented research. Cancer centers evaluate whether the investment of capital and staff time for a new technology or technique will improve patient outcome.

The second tier of decision-making examines the new technology from a business perspective, assessing cost and reimbursement issues among others. This process is critical for cancer centers that are constantly approached by vendors of new techniques and equipment, each purporting to improve care of patients and each with supporting documentation forecasting a sunny reimbursement and volume of use picture.

Cancer centers want to promote innovation. At the same time, programs cannot rely on a Field-of-Dreams-type response to new technology (i.e., if you buy it patients will come).

Establish Procedures, Meet Regularly

Each cancer program must carefully evaluate and implement innovation within the context of its own scope and mission. To cope with the array of new technologies emerging each year, an established framework for evaluation and decision-making is imperative. Procedures that permit free, unencumbered discussion by physicians, clinical support teams, and administrators in the decision-making process are critical. So is a system that allows for accountability.

Just as research that presents evidence-based out-

comes is the benchmark of modern medicine, accountability is vital to tracking the results of acquiring new technology. Evaluating the consequences of buying new technology should be the responsibility of the providers (usually physicians), as well as the administrators. Working together, providers and administrators can reach decisions that avoid unrealistic demands by the providers on the one hand and unrealistic expectations by administrators on the other.

Sometimes, though, the decision-making process can slow acquisitions down to the point that programs are unable to adapt as quickly as they would like. This "wait and see" attitude can bring long delays in getting new technology on board, possibly causing the program to miss opportunities to capture market shares.

A multidisciplinary decision-making procedure can help. Programs that have some type of regular acquisitions team meetings that follow an established decision-making process have the advantage of an ongoing "business plan" development model. With many cancer programs spending in the range of $1 million per year just to stay current with radiation facilities, an acquisitions team for new technology can be critical.

In larger healthcare systems, the cancer center program may not be directly involved in the acquisition of new technology. Instead other departments such as diagnostic imaging and surgery may take the lead. By establishing a team approach to the decision-making process, healthcare specialists from a number of disciplines are guaranteed input in the acquisition decision.

When it comes to new technology, any cancer program considering whether to buy or not to buy can benefit from addressing three core questions:

- What is the need for the new technology?
- What measurable benefit to patients and to the cancer program will this innovation bring?
- What is the cost versus the realistic return in investment? Over what time frame?

Your answers will help ensure that your program receives a return on its investment in new technology.

The following four articles describe the decision-making processes used by a multi-hospital system, two community cancer centers, and one physician practice. Each has developed its own processes and procedures for evaluating and integrating new technologies.

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Selected New Technologies

- *Digital mammography* takes an electronic image of the breast and stores it directly in a computer, allowing the recorded data to be enhanced, magnified, or manipulated for further evaluation. The electronic image can also be printed on film.

- *Computer-aided detection (CAD) technology* provides mathematical modeling of nodule and tissue anatomy to guide image analysis.

- *Magnetic resonance spectroscopy* (MRS) provides information about cellular activity (i.e., metabolic information) and is used in conjunction with magnetic resonance imaging (MRI), which provides information about the shape and size of the tumor (spatial information).

- *Nuclear medicine imaging* (also called radionuclide scanning) is a diagnostic tool that shows both the anatomy (structure) of an organ or body part and the function of the organ.

- *Optical imaging* creates functional images of molecular and cellular events in cancer development and progression *in vivo,* allowing physicians to identify altered gene expression in cancer cells.

- *Positron Emission Tomography* (PET) is an advanced imaging technology that uses a computer linked to an X-ray machine to measure the metabolic activity of cells in the human body. The physiologic images are based on the detection of subatomic particles, which are emitted from a radioactive substance given to patients.

- *Single photon emission computed tomography* (SPECT) is a method of computed tomography that uses radionuclides, which emit a single photon of a given energy. The camera is rotated 180 or 360 degrees around the patient to capture images at multiple positions along the arc. The computer is then used to reconstruct 3D-images. SPECT can be used to observe biochemical and physiological processes, as well as size and volume of an organ.

- *Sentinel lymph node biopsy* is a new diagnostic procedure used to determine whether breast cancer has metastasized to axillary lymph nodes. In sentinel node biopsy, only one or a few lymph nodes are removed for laboratory analysis, in contrast to the standard practice of removing a much larger number.

- *Scintimammography* employs a radioactive tracer injected into a vein to identify abnormal cells based on the difference in metabolic characteristics between cancer cells and noncancerous cells. The localization of the tracer can be imaged using sensitive detection devices.

- *TomoTherapy Hi·Art System®* is a new medical system to deliver conformal radiation therapy to cancer patients. The system's helical tomotherapy offers 3D image guidance before each treatment, allows for verification of treatment volumes before each treatment, and provides optimal dose delivery for all patients.

ILLUSTRATION/KAREN STOLPER

The Two-Tier Process of a Multi-Hospital System:

Lehigh Valley Hospital and Health Network in Pennsylvania

by Jon K. Larrabee, Steven W. Jagiela, and Teri U. Guidi, MBA, FAAMA

For nearly six years, Lehigh Valley Hospital has had two formal processes that essentially work in parallel for integrating new technology. One is the strategic and financial decision-making process known as "Strategic Initiatives." The second process is the analysis of the technology itself that is handled by the Technology Assessment Committee (TAC). For more information on how the TAC works, see the sidebar on page 31-32.

Lehigh Valley Hospital and Health Network (LVHHN), comprised of two hospitals, has three locations in eastern Pennsylvania. The Cancer Center has facilities in Allentown and in Bethlehem.

Lehigh Valley Hospital's senior leadership believes that innovations and new business development are so important that they set aside millions of dollars in each fiscal year's capital budget just to fund new programs, services, and new technologies that will have strategic importance to the hospital.

Each fiscal year, the Strategic Initiatives process goes through the following cycle. First, various clinical departments submit their Strategic Initiative proposals. Each includes a summary of reasons to fund the project highlighting how the project will contribute to LVHHN clinically, strategically, and in terms of quality and contribution to the organization's mission. (Initiative sponsors are any of the 50 top executives of the organization, i.e., the chair of a clinical department or senior executive from administration or operations.)

Next the sponsor presents the proposal to the Extended Senior Management Council (LVHHN's 50 senior executives). The council prioritizes the proposals based on how well each contributes to the hospital's mission or strategic positioning. These prioritized proposals then go to the Network Coordinating Group (NCG), which is composed of the organization's seven most senior executives. The NCG decides which of the Strategic Initiatives should undergo business plan development.

Full business plans are then developed by the initiative's sponsor with support from a team from planning, finance, materials management, facilities, care management, risk management, and marketing. Initiatives that involve new technology are sent to the TAC for simultaneous review on the validity and appropriateness of the

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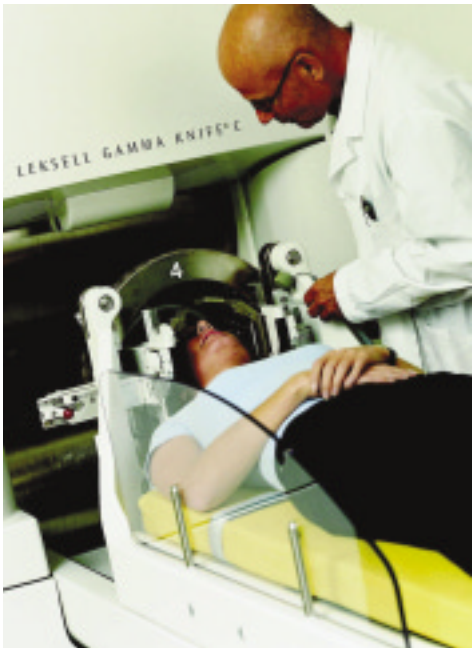


Through the Strategic Initiative program, Lehigh Valley Hospital and Health Network has added Gamma Knife technology to its program.

A look at the entire Gamma Knife apparatus including the bed, the scanner, and the helmet. The patient's head is fitted into the helmet. Treatment is administered by sending gamma rays through tiny pinpoint holes in the helmet at varying angles to destroy tumor cells.

A close-up view of the Gamma Knife helmet in use at Lehigh Valley Hospital.

PHOTOGRAPHS COURTESY OF AMERICAN SHARED HOSPITAL SERVICES.

How the TAC Process Works

Lehigh Valley Hospital and Health Network's Technology Assessment Committee (TAC) works in tandem with its Strategic Initiatives Process to evaluate new and evolving technology, such as new clinical equipment, new devices, new consumables or reusable products that the hospital might want to acquire.

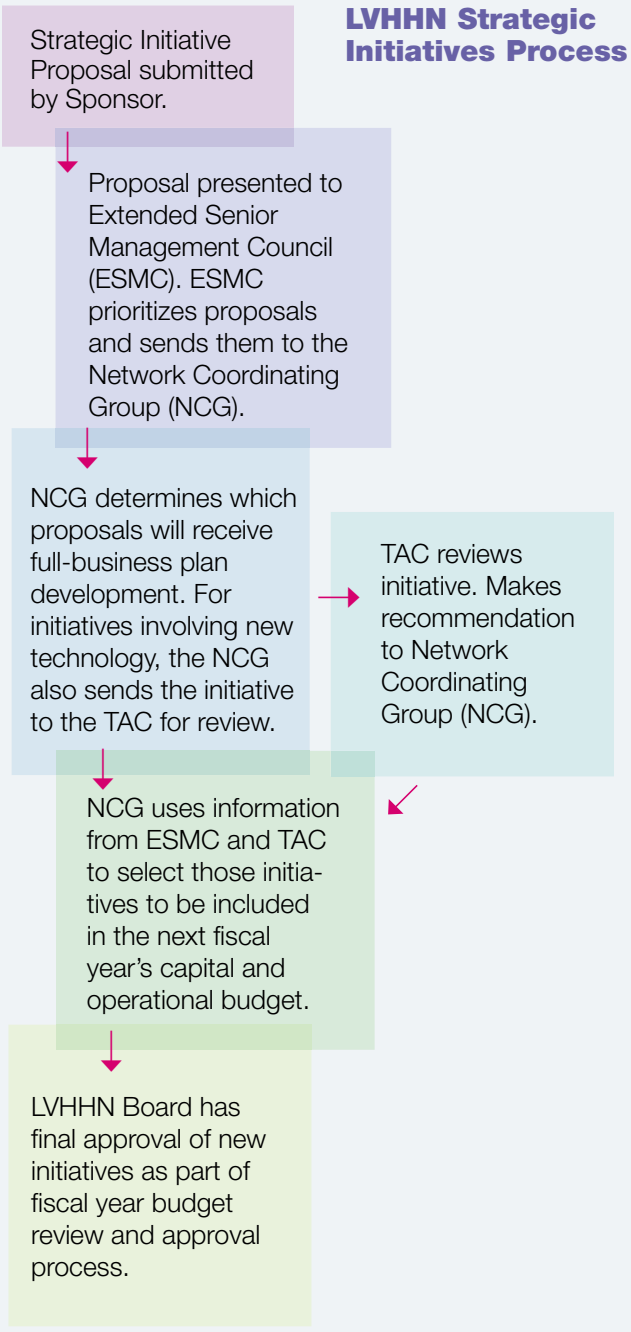
The 12-member committee is composed of a broad cross-section of hospital staff including medical staff, clinical engineering, information systems, nursing, care management, finance, materials management, strategic planning, and administration. The TAC meets monthly, usually for an hour or two, to assess various new technologies under consideration. LVHHN strives to ensure that money budgeted for new technology goes to the best candidates. The threshold for review is $50,000 or up in annual expenditures either for a piece of equipment or for a consumable or some combination of consumable and equipment.

Typically, the TAC's review process works as follows. In advance of the TAC meeting, the initiative sponsor completes a questionnaire, available on the institution's intranet, that describes the new technology being proposed. The sponsor may also supply TAC members with vendor brochures or additional information, such as studies from professional journals that discuss the efficacy of the new technology. Committee members review these materials before the TAC meeting.

At the meeting, TAC members listen to a presentation by the new technology's sponsor, who is typically a clinician or clinician's assistant. After the presentation, the TAC scores the new technology on three factors: clinical (low, medium, or high recommendation); strategic (low, medium, or high recommendation); and financial impact or net present value (positive, negative, or neutral) over the project's life. Within one week, the TAC makes its recommendation to the Network Coordinating Group, which meets twice a month.

When Cancer Services proposed acquiring Gamma Knife technology, both the TAC and Strategic Initiatives reviewed and approved the proposal. The TAC also reviewed and approved a proposal from Urology in collaboration with Cancer Services to acquire cryosurgery equipment.

Over the years, the TAC has streamlined its review process. In addition, the committee does a significant amount of follow-up on approved technologies. One challenge the TAC faces is that clinicians don't often have a clear picture of the process and may be less than precise about the TAC's role in the acquisition process. The TAC committee has been working on correcting this by communicating its role to physicians in the physician newsletter and by making presentations about the process at department head meetings. So far, the



TAC committee has found that this improved communication has resulted in staff following the process rather than circumventing it, and helping to streamline the process if it's not working as needed.

Another forward-looking step the TAC is taking involves talking to other hospitals about their processes for new technology evaluation and acquisition. While the primary focus of LVHHN's TAC is responding to requests for new technology, TAC leadership is

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expanding the focus of the team to be more proactive in scanning the horizon for emerging technologies that may benefit patients, staff, and clinicians.

What the TAC Asks

LVHHN's TAC evaluation process asks a series of questions aimed at understanding both the clinical and strategic implications of acquiring the new technology under consideration.

On the clinical side, the TAC gleans information in seven categories by asking two to five questions in each area. Here are some examples:

- Is the technology in research?
- Is the technology in early clinical use?
- Is it in a clinically accepted stage of utilization?
- What about alternatives?
- How does this technology compare with the standard technology?
- Is it replacement or redundant technology?
- Is it complementary? Does it enhance technology or is it completely new and different?

From the strategic perspective, the TAC's questions evaluate regulatory status, staffing and training considerations, how the technology will integrate with existing programs and equipment, and more. The questions might include:

- Is the technology FDA approved?
- Is FDA clinical application pending or is it investigational status? (The TAC scores new technology based on its clinical application status. If is the technology has investigational status, 0 points; if is has a human exemption use, 2 points; and if it is approved technology, 4 points.)
- Does the implementation of this technology meet state and local codes?
- Does this technology improve access to healthcare and/or promote the allocation of resources as addressed in our strategic plan?
- Does the technology represent tertiary, secondary, or primary care? Does it diminish that level of care? Is it neutral or does it elevate that level of care?
- Can existing staff be trained to use the new technology?
- Does it contribute to academic programs?
- Are there different clinical specialties in which this technology will be used?
- Will the technology require modifications to the facility or additional construction costs?

technology. For example, when Gamma Knife technology was under consideration as a Strategic Initiative, the plan was also forwarded to the TAC for evaluation and comment. (See "How the TAC Process Works," page 31.) An initiative for a new software package for medical transcription, for example, would not need TAC review.

Once final business plans (including detailed financial analyses focusing on net present value) are developed, the NCG selects those to be included in the next fiscal year's capital and operational budget taking into account the available capital for the coming year.

The final step for any new initiative is Board approval, which occurs when the Board reviews and approves the fiscal year budget.

The Strategic Initiative Process has laid the funding groundwork for several oncology-related initiatives. In fiscal year 2003, Cancer Services submitted two proposals: One for an additional linear accelerator and the other for a radiation oncology information system. Both projects were approved, funded, and have been completed.

For FY 2004, Cancer Services submitted three proposals. Two were approved and are now being implemented: the expansion of the LVH-Muhlenberg in Bethlehem and the acquisition of Gamma Knife technology. The third proposal—for a mobile van with multiple cancer and other health-related services—was turned down.

The cancer program submitted five proposals for FY 2005: 1) a surgical oncology program to include physician recruitment and development of the physician's practice, 2) gynecologic oncology program expansion to include physician recruitment and development of satellite clinical services in outlying areas, 3) a medical oncology information system to build on last year's radiation oncology system, 4) a multidisciplinary lung cancer clinic, and 5) the addition of a second linear accelerator at Muhlenberg. The first was subsequently withdrawn, the second was deferred by NCG, and the last three were approved for implementation.

Two to three years after a Strategic Initiative is approved, LVHHN starts the "Look Back" process. This retrospective review examines the initiative's original business plan's financial and/or patient satisfaction or patient volume expectations as compared with actual program results. This assessment involves both the finance department and the initiative sponsor.

"Look Back" results are presented to the Senior Management Council. Over the past several years, this learning tool has helped the organization as a whole better understand how to structure future initiatives and projects to maximize the potential for success. Almost every "Look Back" has performed at or better than expectation because LVHHN's expectations are so conservative in the business plan.

The Strategic Initiatives process at LVHHN is constantly evolving and being tweaked. What is impressive about this process is that it puts everyone on a level playing field so everyone has an opportunity to propose his or her ideas in a fair and structured fashion. Still, these planning processes are not short and initiative sponsors may sometimes find they have to wait for the next fiscal cycle to submit a proposal. A lot of work is involved to develop the proposals and business plans for these two processes, but they instill a very important financial and strategic rigor that is well worth all the work in the long run.

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