

# Evaluating and Selecting New Linear Accelerator Technology

## The Swedish Cancer Institute Process

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### In Brief:

Faced with replacing four of eight linear accelerators, Swedish Cancer Institute began a year-long process to research new and upcoming radiation technology and to develop a thoughtful purchasing process. After bringing key stakeholders together to form an ad-hoc committee, here's how Swedish Cancer Institute added IGRT to its already extensive list of radiation therapy services.

Swedish Cancer Institute (SCI) is the cancer service line of Swedish Health Services in Seattle, Wash. As part of its comprehensive cancer services, SCI owns and operates a network of four radiation therapy centers in the metropolitan Seattle area. SCI has long been an early adopter of new radiation therapy technology, offering a full array of therapeutic approaches including:

- 3-D conformal radiation therapy using external beam
- High- and low-dose brachytherapy
- Intensity modulated radiation therapy (IMRT)
- Gamma Knife stereotactic radiosurgery.

### The Swedish Cancer Institute Process

In January 2004, SCI recognized that it would need to replace four of its eight linear accelerators over a period of one to three years if it was to continue to provide leading-edge treatment to its cancer patients. While the market offers a number of manufacturers, SCI has historically purchased all of its linear accelerator equipment from one vendor.

The need to invest considerable capital on multiple new linear accelerators raised a number of questions, including:

- What was new in linear accelerator technology?
- Where was radiation therapy treatment and technology going in the future?
- Should SCI stay with the established vendor or evaluate multiple vendors?
- If SCI stayed with the established vendor, what leverage did it have in negotiating best price?
- What were the advantages and disadvantages of having one manufacturer versus two or more manufacturers?
- Could SCI stay with the current independent treatment

planning and department management systems or was there a benefit in going with a linear accelerator manufacturer's system?

- Who would be the best vendor partner going into the future?

To address these questions, SCI formed a multidisciplinary team consisting of SCI administration, radiation therapy department management, radiation oncologists, medical physicists, and hospital purchasing. Based on the size of the impending purchase, SCI knew that this purchasing decision represented a critical turning point in its vendor relationships going forward.

The team consensus was that SCI needed to take the time to investigate the latest technology in radiotherapy, both current and on the horizon, and *all* potential vendors. SCI recognized that the selected vendor would probably be the vendor of choice for many years to come. Alternatively, it was possible that SCI would end up with a multiple vendor department. What followed was a carefully planned linear accelerator selection process through which SCI evaluated all aspects of the decision: current and future technology, price, service, and vendor relationship potential.

### The Selection Process

As the largest provider of radiation therapy services in the Pacific Northwest, treating more than 200 patients daily, SCI was in the fortunate position to offer a strong partnership with enhanced visibility for whatever vendor was selected. The primary goal was to purchase the best value linear accelerator technology available (in terms of functionality, price, and service) and, secondarily, the strategic partner that could best support SCI in providing exceptional patient care and clinical research. To meet these goals, SCI developed and followed an 8-step selection process.

- **Establish a vendor selection committee.** At SCI this committee consisted of SCI's executive director, SCI's administrative director, two radiation oncologists, the radiation therapy manager, the physics supervisor, one staff physicist, the dosimetrist supervisor, the therapist supervisor, a site supervisor, two lead therapists, a linac engineer, the information technology coordinator, and the Swedish Health Services purchasing manager. By involving all the stakeholders in the selection process, SCI hoped to develop consensus around the final decision.
- **Develop a request for proposal (RFP) for vendors.** The committee worked together to develop a RFP that detailed technical specifications, SCI radiation therapy departmental and Swedish Health Services organizational requirements, and the need for any new equipment

to interface with existing software applications. (See a sample RFP on page 41.) The SCI sent the RFP—along with a deadline for response—to the three vendors the selection committee identified as the “leading” manufacturers of linear accelerator equipment. The vendors were given 60 days to respond.

- **Evaluate the vendor proposals and presentations.** Once the RFPs were returned, SCI’s committee began the process of evaluating the vendor proposals and presentations. All three vendors submitted proposals and made formal presentations to the committee. Each vendor had the opportunity to present its latest technology, as well as its vision for future technologic innovations. Each vendor selection committee member was asked to complete an initial standardized vendor equipment evaluation. The responses were compiled by the SCI administrative director and physics team leader. As part of the evaluation, committee members scored each vendor on the following criteria:
  - Compliance with specifications
  - Connectivity to software applications
  - Patient throughput
  - User-friendly operation
  - Proven commitment of manufacturer
  - Technical support
  - Future upgrade options
  - Proven in-service performance
  - Training
  - Features offered beyond initial specifications.

### **Swedish Cancer Institute’s 8-step Vendor Selection Process**

- Step 1:** Establish a vendor selection committee.
- Step 2:** Develop a Request for Proposal (RFP).
- Step 3:** Evaluate vendor proposals and presentations.
- Step 4:** Narrow vendor selection and conduct a second round of meetings.
- Step 5:** Schedule site visits with the remaining vendors.
- Step 6:** Review information from the second round of meetings and onsite evaluations.
- Step 7:** Negotiate with the finalist vendors.
- Step 8:** Negotiate a separate clinical research agreement.

After meeting to review these evaluations, the committee narrowed the selection to two vendors.

- **Plan a second round of meetings with the vendor finalists.** The committee met with the two vendor finalists to discuss relationship building opportunities, specifically clinical application research, educational programs, and demonstration-site opportunities. During this second round of meetings, the committee outlined exactly what SCI would bring to a strategic partnership. The goal was to leverage physician and staff expertise and the network size to position SCI as “a clinical research and education site supporting the roll out of new advanced targeted radiation therapy technologies.” At this time, special interest subcommittees met with both vendors to explore specific areas of technical interest. These subcommittees then reported back to the full vendor selection committee.
- **Schedule site visits.** The committee sent a team to both vendor site visits to evaluate four main areas: the new technology, clinical operations, research programs, and hardware-software interfaces. The site visit teams rated the vendors against criteria in the RFP and critiques were given in writing by each discipline on the committee, taking care to point out any outstanding questions or concerns.
- **Review the evaluations from the second round of vendor meetings and site visits.** After being debriefed by the site visit teams, SCI’s vendor selection committee reviewed the evaluation input from the second round of meetings and the on-site visits. The SCI administrative director coordinated the process. Then each committee member expressed a vendor preference/recommendation. Reaching consensus was difficult; both vendors had made excellent presentations and offered similar image-guided technologies and stereotactic radiosurgery options. Because the vendors were so equally matched, SCI decided to initiate negotiations with both vendors.
- **Begin preliminary negotiations with vendor finalists.** A small negotiating team, including the Swedish Health Services’ purchasing manager and SCI’s executive director and administrative director, conducted negotiations with both vendors. These discussions focused on price, purchase contract terms, and service support. In the end, SCI’s leadership team—the executive and the administrative director—made the final equipment purchase decision. The final decision was in favor of a new vendor for four linear accelerators over a period of two to three years. This decision meant adding new equipment from a dif-

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ferent manufacturer than the existing equipment, making SCI's program a multiple manufacturer department.

Three of the four new linear accelerators will be equipped with IGRT technology. Of these three, two will be capable of providing stereotactic radiation therapy. Today, SCI has linear accelerator equipment manufactured and serviced by two different vendors and linked into a network by a common software infrastructure.

- **Negotiate a separate clinical research agreement with vendor.** As a parallel, but separate process, SCI developed a clinical research strategy with the new vendor. Under the developing agreement, SCI and the vendor will support research protocols evaluating the clinical application of IGRT for a variety of disease sites. This major research project, the Center for Advanced Targeted Radiation Therapy, is being funded by grants and philanthropic donations from the Swedish Foundation, the nonprofit foundation of Swedish Health Services.

### **What We Learned**

The rapid development of new radiation technologies necessitates a detailed and well-planned selection process of the available technology. For SCI, it took a full year to carefully evaluate the new technology and all potential vendors. Now that the process is complete, SCI's vendor selection committee has identified several take-away lessons to help in future technology purchasing decisions.

First, radiation departments with multiple machines must adopt a purchasing strategy for new technology that specifically addresses *how* the new technology will fit into the department's overall technology program. This step is particularly important because of the variety of stereotactic radiosurgery technologies currently available.

Second, multiple vendor solutions are worthy of consideration. Initially, SCI's committee had concerns about adding new equipment from a manufacturer that had not produced the institution's existing equipment. Concerns included software compatibility, internal service engineer training, and therapist training and adaptation. Many of these concerns were answered during site visits to radiation departments using multiple types of equipment. The SCI committee was able to talk with staff and, in fact, learned that some of our own staff had previous experience with multiple brands of machines.

In the end, SCI's committee believed that the positive considerations outweighed the concerns of having different manufacturers provide equipment in the same network. Other radiation departments had adapted successfully to multiple manufacturers and differences were not critical to the decision making. Some of the benefits: SCI was able to take advantage of newer technology, to negotiate a

### **Reimbursement for IGRT**

Though evolving, reimbursement codes are available for image guidance during radiation therapy treatment. Available codes include CPT code 76370 "Computed tomography guidance for placement of radiation therapy fields," CPT code 76000 "Fluoroscopy (separate procedure)," and CPT code 77421 "Stereoscopic X-ray guidance for localization of target volume for the delivery of radiation therapy." Providers should contact their intermediaries, carriers, and coding experts to gain insight into regional/payer interpretations of specific reimbursement eligibility and documentation requirements.

more competitive price, and to establish a new vendor relationship. With three of SCI's four linear accelerators now operational, our therapists have adapted very well and are pleased with the ease with which they learned to operate the new equipment. They do not find having equipment from two different manufacturers in the same department to be a significant problem. The lesson learned was simple—competition can be good for customers *and* vendors.

We also learned the importance of software support. SCI weighed the advantages and disadvantages of using treatment planning and verification systems from independent companies versus adopting the dedicated software of our new linear accelerator manufacturer. Having a single vendor system with equipment married to dedicated software had its appeal. However, the cost and significant effort of converting from existing satisfactory treatment planning and verification systems to a totally new system outweighed any advantages. SCI staff was accustomed to and satisfied with the existing systems, and the systems were compatible with all of the linear accelerator systems we were evaluating.

For large radiation therapy departments able to purchase several pieces of equipment at a time, SCI suggests a multiple-machine package purchase commitment over time as an incentive for the vendor to reduce the purchase price. Probably the most important factor in good pricing, however, is having a great negotiator on your side, which is where our purchasing manager earned his pay.

Overall, the linear accelerator evaluation and negotiating process was time and resource intensive but, ultimately, SCI staff is very comfortable with the purchasing decision. Every stakeholder group believed they had a significant role in the selection process. Staff learned a great deal about linear accelerator technology in the process. Even more importantly, SCI is now best positioned for the foreseeable future with its new technology and new research initiatives. 📖

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