Case Study | Integrated Varian Environment Streamlines Workflow

CONVERSION TO AN INTEGRATED VARIAN ENVIRONMENT STREAMLINES WORKFLOW AND IMPROVES THROUGHPUT

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Introduction
Memorial Medical Center replaced two existing Siemens linear accelerators and software with an integrated Varian environment consisting of two TrueBeam™ systems, the ARIA® oncology information system, and the Eclipse™ treatment planning system. The challenging conversion was accomplished smoothly and efficiently. “We are excited as an organization to have this type of technology available because it’s so versatile,” said Drew Snyder, director Oncology Services, Memorial Medical Center. “And since the conversion, our center has experienced an approximately 30 percent increase in throughput and replaced paper charts with a streamlined electronic workflow.”

Background
Located in the second largest city in Illinois, Regional Cancer Center at Memorial Medical Center treats approximately 900 patients a year with external beam radiation. The center’s radiation oncology practice includes four radiation oncologists, two medical physicists, two dosimetrists, thirteen radiation therapists, three nurses, and three front-desk administrative assistants. Another seven staff members are employed in the center’s NCI-funded Community Clinical Oncology Program (CCOP).
The center operates two vaults that have always been equipped with matched linear accelerators for efficiency and economy. From the two previous Siemens Linacs, one was equipped with megavoltage cone beam CT. “The imaging was good at the time, but the technology of onboard imaging has advanced very quickly since then, as has the speed of delivery,” said Snyder. Therefore, in 2011, Memorial Medical Center seized the opportunity to replace the existing linacs with the newly available Varian TrueBeam systems, offering higher quality on-board imaging, including kV conebeam CT, faster treatment delivery, and the versatility to deliver RapidArc® radiotherapy technology IMRT, SRS, and SBRT on the same platform.

At the same time, Memorial converted to the Varian ARIA oncology information system from LANTIS™ Oncology Information System and to the Eclipse treatment planning system from XiO/CMS. “The TrueBeam system was brand new at the time, and we made a decision to go forward with the latest technology and everything that went with it,” said Snyder.

Conversion Report

Converting hardware and software at the same time seemed a daunting task in the beginning. However, with thorough planning, total commitment, and teamwork, the transition to an integrated Varian environment went smoothly, efficiently, and on schedule.

The conversion was executed as a well-orchestrated project of sequential and parallel activities. Varian provided TrueBeam specifications to the Memorial Medical Center’s facilities team, reviewed vault designs, and coordinated delivery and installation. While the vault was being readied for the first TrueBeam system, staff were training at Varian’s Las Vegas training center and onsite. Working groups were mapping processes and creating electronic workflows, using Varian templates and recommendations. Varian Professional Services were migrating data from LANTIS to ARIA.

The first TrueBeam system went live in December 2010. IMRT treatments were transitioned to the new system over a period of six months, as the staff became more accustomed to the new technology. During that time, planning went on for the deinstallation of the remaining linac machine and the renovation of the second vault.

Memorial began treating patients on the second TrueBeam system in August 2011. “Throughout the project, Varian people were always available for any question or issue that we had,” said Snyder. “Even now, they’re still available.”

ARIA applications were rolled out in phases, with the center setting its own pace. The admitting interface was up and running first, before the first patients were treated on TrueBeam. The billing interface was added in the spring of 2011. The last application to be added was the interface for automatically importing transcription documents, accomplished in fall 2012.

Remote capability, through the hospital’s Citrix® system, was implemented from the very beginning. “Doctors can review, revise, and approve Eclipse treatment plans from home or anywhere they are,” said Paul Mueller RT(T). “We can accomplish more remotely than we could with XiO or CMS.”

Memorial is now paperless and all electronic. “There are many things you can find out about a patient in ARIA. It’s easy to look up a patient from anywhere in the clinic and see what’s going on with him. I do simulations and I like to know in advance who is coming in and what I’m going to do. I can find that out easily via ARIA,” said Mueller.

Director Snyder attributes the success of the conversion to Varian to some key factors.

Leadership Commitment

The first factor for a successful conversion was the full backing of the Memorial Medical Center leadership. “We had support from the hospital board. We also had physician buy-in from our radiation oncologists. When you know you have the enthusiastic backing we had, you can move forward with confidence in your decisions,” said Snyder.

Involving Everyone

Another key success factor was involving everyone affected by the change. “We formed multiple working groups in which every function was represented,” recalled Snyder. “The hardest part is getting everyone to the table and fitting in with everyone’s schedule to do these big projects. Varian is very good at helping with this.”

A Partner Who Knows the Ropes

While Varian Site Services can provide management and vendors for every aspect of conversion and new installation projects, if required, Memorial Medical Center facilities department took the lead in managing deinstallation and vault renovation. Varian provided specifications, reviewed designs and timelines, and participated in planning meetings. In addition to the installation services, Varian also provided training for physicians, dosimetrists, physicists, radiation therapists, and administrators on the hardware and software. “Varian was a consistent presence, providing expertise and guidance throughout the project,” said Snyder.
Results
Now that the conversion to a Varian environment is complete, the benefits are clear.

Patient Setups With More Confidence
According to Mueller, patient setups are more precise than they were before, due to improved imaging. “The higher quality imaging we can do with the TrueBeam system helps us in positioning the patients. With really great images that match over the top of other images, we can be more accurate in positioning.” Physicians can view the images as well. “If we aren’t aligning patients as precisely as the physician would like, we can correct that,” added Mueller.

Efficient Workflow
With an environment that integrates the ARIA oncology information system, the TrueBeam delivery systems, and the Eclipse treatment planning system, the transition from plan to treatment is expedited. Collaboration among disciplines is more convenient and natural.

Higher Patient Throughput
Memorial Medical Center treats an average of 65 patients per day on the TrueBeam system, up from 45 per day on the previous linac system. That represents a 30 percent improvement in throughput.

“Even with the image guidance, the TrueBeam system is really fast,” said Snyder. “For example, we found that we could image and deliver a RapidArc IMRT treatment for H&N in a 10 to 15 minute time slot. With our previous machine, the same treatment would probably take 35 minutes. That is a long time for somebody in a mask to lie on the treatment table, when you’re trying to have them hold still. That is probably the biggest impact of the conversion.”
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Intended Use Summary
Varian Medical Systems’ linear accelerators are intended to provide stereotactic radiosurgery and precision radiotherapy for lesions, tumors, and conditions anywhere in the body where radiation treatment is indicated.

Safety
Radiation treatments may cause side effects that can vary depending on the part of the body being treated. The most frequent ones are typically temporary and may include, but are not limited to, irritation to the respiratory, digestive, urinary or reproductive systems, fatigue, nausea, skin irritation, and hair loss. In some patients, they can be severe. Treatment sessions may vary in complexity and time. Radiation treatment is not appropriate for all cancers.