The TrueBeam System
Radically Redefining Radiotherapy and Radiosurgery

Relying on ARIA: Clinics Large and Small Depend on ARIA Software

Speed + Quality: RapidArc Advances Radiation Treatments Around the World
Varian's new TrueBeam™ system for image-guided radiotherapy and radiosurgery is designed to treat a moving target with unprecedented speed and accuracy.

Advanced motion management capabilities, including Gated RapidArc®, are now available on Varian’s Trilogy® platform.

In hundreds of hospitals on five continents, doctors are using RapidArc to advance the quality and speed the delivery of radiation treatment.

Varian’s new SuperFAST process speeds the installation of complete IGRT systems and On-Board Imager® upgrades.

Varian now offers the widest spectrum of radiation therapy technologies available, says Dow Wilson, president of Varian’s Oncology Systems business line.

Renowned neurosurgeon John R. Adler, Jr., MD, has joined Varian as vice president and chief of new clinical applications.

Clinicians at the Rinecker Proton Therapy Center in Munich, Germany, have treated more than 200 patients using Varian’s advanced proton therapy systems.

At a recent forum in Atlanta, Georgia, clinicians discussed the challenges and opportunities of cancer survivorship programs.

ARIA for Medical Oncology has received Surescripts® e-prescribing certification for new prescriptions and refill requests.

Acuros™ BV advanced dose calculation offers a significantly more accurate way of calculating the dosimetry of brachytherapy treatments.
Earlier this year, Varian introduced the TrueBeam™ system—a radically different approach to treating cancer with image-guided radiotherapy. TrueBeam is Varian’s first fully integrated platform, designed from the ground up to target tumors with unprecedented speed and accuracy. It seamlessly integrates respiratory gating, imaging, and treatment techniques, opening the door to new possibilities for the treatment of lung, breast, prostate, head and neck, and other cancers.

TrueBeam is the culmination of many years of collaborative research and development. We took everything our customers told us they wanted to enable next-generation treatments, and we challenged ourselves to engineer a completely new radiotherapy solution. Through intelligent automation, TrueBeam carefully orchestrates all the important workflow steps, from processing images to delivering dose. It was designed to help clinicians navigate the complexities of cancer care with confidence. We think you’ll find it innovative, intelligent, and intuitive. You can read more about it in an article you’ll find on page 4.

This enormous milestone in the field of radiation therapy arises directly out of Varian’s mission, which is to explore and develop radiation technology that protects and saves lives. Our goal is to help save 100,000 more lives each year, and we aim to reach this goal by working with our customers—researchers, physicists, doctors, and other clinicians—as partners for life. Our strategy is simple: to give clinicians the tools and capabilities they ask for in order to offer their patients state-of-the-art treatments.

Varian has operated this way for years. Working with our customers, we developed new and better treatment devices and techniques like the multileaf collimator, IMRT, IGRT, respiratory gating, and RapidArc®. And for every solution that we have devised, you have challenged us to continue innovating. You told us you’d like all of your treatments to be as fast, easy, and efficient as RapidArc. You emphasized the importance of submillimeter precision in every aspect of treatment, from patient positioning to isocenter alignment, from beam shaping to motion management. We heard that you need imaging, not just prior to, but also throughout a treatment, to verify that targeting continues to be exact. You said it would help you to have tighter integration of gating with imaging and treatment. And you asked us to keep things simple, with clean, automated interfaces that guide the therapist through a streamlined workflow, using fewer button pushes for even the most complex treatments. Those were our goals as we were developing the new TrueBeam system.

But it doesn’t stop there. Varian is also committed to continually enhancing our entire line of radiotherapy solutions. Consequently, we have added advanced motion management capabilities—including Gated RapidArc—to our Trilogy® radiotherapy platform. You can read more about those developments in a story on page 7.

Varian now offers radiation oncology departments the widest spectrum of cancer treatment technologies available. From a comprehensive range of hardware and software systems for external beam radiotherapy and radiosurgery, brachytherapy afterloaders and treatment planning systems, proton therapy solutions, and informatics software for managing comprehensive cancer clinics as well as survivorship, Varian can optimize a package for each customer’s clinical priorities, patient mix, and budget. *
John R. Adler, MD, joins Varian as chief of new clinical applications

John R. Adler, Jr., MD, has joined Varian Medical Systems as vice president and chief of new clinical applications. Adler, a renowned neurosurgeon, Stanford University professor, and former Accuray executive has joined Varian to play a key role in guiding the development of Varian’s next-generation clinical products and applications for radiosurgery and other new treatments.

Adler, who joined Varian in April, will represent Varian at medical meetings and partner with radiation oncologists and surgeons to develop products and clinical approaches that expand the applications for and improve the outcomes of radiosurgery. His responsibilities include working with the medical community to improve the effectiveness and efficiency of Varian clinical products through best-in-class designs, techniques, and processes.

Adler was the founder, CEO, chief medical officer, chairman, and board member for Accuray (Nasdaq: ARAY), where he served from 1991 until 2009. He also served as a professor of neurosurgery and radiation oncology at Stanford University from 1987 through 2010.

Adler is currently president emeritus and chairman of the CyberKnife Society, an organization he founded, and a member of the Congress of Neurological Surgeons, the American Association of Neurological Surgeons, the Western Neurosurgical Society, the John W. Hanbery Society, the International Society of Stereotactic Radiosurgery, and the American Society of Stereotactic and Functional Neurosurgery.

Varian-equipped proton therapy center treats more than 200 patients

Clinicians at the Rinecker Proton Therapy Center (RPTC) in Munich have treated more than 200 patients using advanced proton therapy systems supplied by Varian. Earlier this year, a second and third treatment gantry were commissioned at the center, which offers advanced pencil-beam proton scanning to cancer patients.

The patients, who required treatment for a wide range of cancers, came from across Germany and 19 other countries, including Canada, Argentina, the UK, and Switzerland. Among them were several children, as proton therapy’s ability to limit exposure to healthy tissue is particularly valuable in pediatric treatments.

Joerg Hauffe, MD, chief executive officer of ProHealth, the center’s operating company, said RPTC benefits from being able to offer Varian’s pencil-beam spot scanning delivery method, which offers distinct performance advantages for more precise dose distribution than is possible with other proton delivery systems. “We believe pencil-beam scanning is the best approach for patients,” says Hauffe, “because you can more easily and effectively shape the dose distribution as necessary and lessen exposure to critical organs such as the spinal cord, which is difficult to achieve using the standard scattering proton technique employed by most other proton centers.”

Experts discuss challenges and opportunities of cancer survivorship programs

Cancer patients who have completed treatment would be better served if oncology treatment centers were equipped to offer them comprehensive, proactive follow-up care, according to experts who presented at a survivorship forum sponsored by Varian in Atlanta, Georgia, in April.

The lack of follow-up care can result in suboptimal long-term outcomes, says Matthew P. Mumber, MD, radiation oncologist with the Harbin Clinic in Rome, Georgia. According to Mumber, very specific forms of follow-up care have better chances of positively impacting a survivor’s quality of life after treatment. Mumber cited studies showing that behavioral and lifestyle changes can have a significant impact on the progression of prostate and colon cancer. One showed that diet and lifestyle changes were directly correlated with prostate cancer patients’ ability to prevent the progression of their disease.
ARIA system now certified for e-prescribing

Varian’s ARIA® for Medical Oncology information system has received Surescripts® e-prescribing certification for new prescriptions and refill requests. This means physicians using the ARIA system to manage chemotherapy will be able to exchange prescriptions electronically with pharmacies connected to the Surescripts network.

“E-prescribing allows the clinician to create a prescription and route it electronically to any pharmacy that the patient wants to use,” says Ken Hotz, PhD, Varian’s product manager for oncology information systems.

Using ARIA, clinicians will be able to send new prescriptions directly to a computer at a participating pharmacy. Pharmacy personnel will be able to send renewal authorization requests directly to the clinic, where prescribers can review the requests and respond with a few keystrokes.

Acuros BV improves brachytherapy dose calculation

Acuros™ BV advanced dose calculation is a significantly more accurate way of calculating the dosimetry of brachytherapy treatments compared to earlier approaches based on Monte Carlo calculations.

“Acuros appears to be a major step forward in accuracy and speed, but there is a long road ahead of us, since most of the previous clinical experience was acquired in the TG-43 dosimetry protocol era,” says Dorin Todor, MD, head of brachytherapy at Virginia Commonwealth University in Richmond, Virginia.

“We, as a community, now need to find out and outline how knowing accurately the delivered dose in various anatomical sites might impact prescription values and treatment guidelines based on less accurate formalisms.”

Todor and his team have been using Acuros to carry out preclinical studies. “We are very active in breast brachytherapy,” he says. “We looked back at a lot of treatments that we did with various modalities and compared TG-43 with Acuros. In the business of computing accurate dose, Acuros is indeed a major change in paradigm.”

Pick up the next issue of Centerline for an update on the results of the early research at Virginia Commonwealth University.

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**Studies have shown that behavioral and lifestyle changes can have a significant impact on the progression of prostate and colon cancer.**

A study found a significant increase in colon cancer recurrences and mortality among survivors with the highest intake of a high-fat Western-patterned diet, with heavy consumption of red meat, sugary desserts, and refined grains. However, Mumber pointed out that, in the current model for cancer treatment, there is little support for making the lifestyle changes that could positively impact survival.

According to Steven Castle, administrator of CJW Medical Center’s Thomas Johns Cancer Hospital (TJCH) in Richmond, Virginia, cancer survivors receive the highest-quality care during the active phase of their treatment, but can be lost in transition to the more passive follow-up phase of survivorship.

“A successful survivorship system must connect and engage the oncologist and the patient with the primary care physician,” Castle says. “So often, primary care physicians are left out of the loop, with potentially serious consequences.”

The survivorship program at TJCH is managed using the web-based Equicare CS™ survivorship management software, which Varian supplies by arrangement with Cogent Health Solutions. It begins with creation of a customized care plan that is provided to patients at the time of discharge or when active treatment is concluded. This plan includes a summary of all treatment delivered, a lifetime schedule for follow-up screenings and appointments, and information about the short- and long-term treatment side effects that could occur. It also includes individualized guidance about diet and exercise and referrals to appropriate support services.

Survivors being followed at TJCH will soon receive secure access to their individual care plans over the Internet. “Having the plan online will enable two-way interaction between survivors and healthcare providers,” Cox says. “Primary care physicians will also have a secure portal where they can view their patients’ care plans and obtain information about post-treatment issues they may be experiencing.”

“Our aim is to create a lifetime connection to our survivors,” Castle adds. “We see the survivorship program as a means to grow loyal patient relationships. Meeting the demands of survivors for individualized follow-up care is likely to increase their satisfaction and their well-being. Furthermore, better follow-up care and earlier intervention when health problems do arise can lower the overall long-term cost of healthcare for survivors.”


During the month of April, at special events in New York and Zurich, Varian introduced a line of radically different accelerators. The TrueBeam™ system for image-guided radiotherapy and radiosurgery is the first fully integrated system designed to treat a moving target with unprecedented speed and accuracy.

Engineered from the ground up to deliver more powerful cancer treatments with pinpoint accuracy and precision, the TrueBeam system enables a radically different approach to treating cancer with image-guided radiotherapy. It integrates imaging and motion management technologies within a sophisticated new architecture that makes it possible to deliver treatments more quickly while monitoring and compensating for tumor motion, opening the door to new possibilities for the treatment of lung, breast, prostate, head and neck, and other cancers.

The TrueBeam system uses a completely reengineered control system and a multitude of technical innovations to dynamically synchronize imaging, patient positioning, motion management, and treatment delivery. “It opens the door to the development of new and improved approaches for treating cancer and other medical conditions commonly treated with image-guided radiotherapy and radiosurgery,” says Tim Guertin, Varian CEO. “We’ve also given TrueBeam a patient-friendly look with a beautiful sleek design, but it’s what’s under the covers that makes this system so special. It’s intuitive and intelligent, and we think it’s a game changer.”

The TrueBeam system can be used for all forms of advanced external beam radiotherapy including image-guided radiotherapy and radiosurgery (IGRT and IGRS), intensity-modulated radiotherapy (IMRT), stereotactic body radiotherapy (SBRT), and RapidArc™ radiotherapy. The product line includes TrueBeam STx, specially configured for advanced radiosurgery.
FASTER, MORE PRECISE SYSTEMS

TrueBeam can deliver treatments up to 50 percent faster than was possible with previous generations of Varian technology. A new beam-generation system can be configured with up to seven X-ray energies, including high-intensity modes that can deliver dose rates up to 2,400 monitor units (MUs) per minute—double the maximum output of Varian’s earlier linear accelerators. Such capabilities make the system ideal for stereotactic radiosurgery and hypofractionated stereotactic body radiotherapy treatments.

“Intelligent” automation further speeds treatments with an up-to-fivefold reduction in the number of steps needed for imaging, positioning, and treating patients. A standard intensity-modulated treatment that would typically take ten minutes can be completed in less than two minutes. Complex radiosurgery that typically takes 40 minutes to an hour can be completed in just 5 to 20 minutes. “When we introduced RapidArc radiotherapy, we were thrilled to see treatments done in about two minutes,” says Guertin. “With TrueBeam, RapidArc treatments can now be completed in about a minute.”

The precision of a TrueBeam system is measured in increments of less than a millimeter. This accuracy is made possible by the system’s sophisticated architecture, which establishes a new level of synchronization between imaging, patient positioning, motion management, beam shaping, and dose delivery technologies, performing accuracy checks every 10 milliseconds throughout an entire treatment. More than 100,000 data points are monitored continually as a treatment progresses, ensuring that the system maintains a “true isocenter,” or focal point of treatment.

The TrueBeam system also delivers Varian’s new Gated RapidArc radiotherapy, which compensates for tumor motion by synchronizing imaging with dose delivery during a continuous rotation around the patient. “This exciting new capability makes RapidArc an even more powerful tool for treating cancers of the thorax, such as lung and liver cancer, when tumor motion is an issue,” Guertin says.

Other innovations built in to the TrueBeam system include:

• A streamlined treatment console with a modern, graphical, easy-to-use interface that consolidates all controls for imaging, treatment, and motion management. Treatment processes and workflows are simplified and easy to learn, with prompts, messages, and a “follow-the-light” system that enhances safety by guiding therapists through the steps of even the most complex treatments. “One-button” IGRT simplifies the process of acquiring images for patient positioning.

• A newly designed X-ray tube is optimized for generating high volumes of quality 3D (cone-beam CT) images.

• These 3D images can be generated in 60 percent less time than is required with other imaging technologies, with the potential for a 25 percent reduction in X-ray dose to the patient.

• A treatment couch that can be positioned with submillimeter accuracy in relation to imaging and beam-delivery processes.

• A unique nonclinical Developer Mode designed to facilitate collaboration with oncology thought leaders interested in pioneering new treatment and imaging techniques.

“TrueBeam augments Varian’s existing product line while offering clinicians a significant new weapon in the fight against cancer,” says Dow Wilson, president of Varian’s Oncology Systems business. “We are tremendously excited about this powerful and fully integrated high-end system, and the oncology community seems to share our excitement. It’s clearly a significant step forward in our mission of providing doctors with optimized tools for beating cancer.”

“When we introduced RapidArc radiotherapy, we were thrilled to see treatments done in about two minutes. With TrueBeam, RapidArc treatments can now be completed in about a minute.”

Tim Guertin, Varian CEO
“I have been astonished and excited to see the degree to which the image isocenter matches the beam isocenter, at a level of precision I have never seen before.”

Urs M. Lütolf, MD

In March of this year, clinicians at Zurich University Hospital in Switzerland became the first in the world to treat patients using a TrueBeam system—in their case, the TrueBeam STx model optimized for radiosurgery. These first cases involved patients with prostate cancer, lung cancer, schwannomas, brain metastases, and spinal metastases.

“We are finding the system technically wonderful, giving us dose distributions that are slightly superior to IMRT from a conventional system, with lower doses to surrounding healthy tissues,” says Urs M. Lütolf, MD, clinical director and chairman of the Department of Radiation Oncology at Zurich University Hospital. “I have been astonished and excited to see the degree to which the image isocenter matches the beam isocenter, at a level of precision I have never seen before.”

Two patients with vestibular schwannomas were the first to receive RapidArc treatments on the hospital’s new TrueBeam system. At the highest dose delivery rate available on the system, these treatments took just over 1.6 minutes to deliver—treatments that would require 6 to 8 minutes at conventional dose delivery rates. “It’s a quarter of the time we needed for this type of treatment before,” says Lütolf.

“Clinical tools and processes have been implemented from scratch and built into the TrueBeam design,” observes Jan Hrbacek, scientific collaborator at Zurich University Hospital. “This strategy has simplified a wide spectrum of activities, while increasing the accuracy of performed processes and our control over them. We have only just begun to explore the possibilities of this new system, but it is clear already that it simplifies the treatment process quite considerably and makes the whole process considerably faster.”

ERGONOMIC EFFICIENCY

A key benefit of TrueBeam is the ergonomic efficiency of the new system, according to Hrbacek. “The user interface is very stylish and streamlined, with only two monitors, one dedicated keyboard, and everything integrated,” he says.

“Clinical tools and processes implemented in the past that proved themselves over years of clinical use have been reimplemented from scratch into the TrueBeam design,” says Hrbacek, “and this strategy has resulted in the simplification of a wide spectrum of activities performed with a treatment machine, while increasing the accuracy of performed processes and our control over them. From a physics point of view, TrueBeam offers many new features that widen the range of possibilities for treatment—features such as flattening filter-free beams and their high dose rates, imager arms that ensure an alignment to the effective treatment isocenter at any moment, imaging during treatment, a stereoscopic gating camera, and the integration of Gated RapidArc.

“The TrueBeam platform creates a very universal environment that brings a lot of potential for the future because any degree of freedom can, in principle, be used in the delivery process. In the past, treatment planning systems had to comply with the limits introduced by technology; now the ball is in the court of treatment planning to keep pace with technological advances. Hopefully, we will shortly see new optimization algorithms that combine the best from known principles in order to generate robust and conformal plans.”

“We are proud to be at the forefront of such a technological advance,” says Lütolf. “In addition to all its clinical advantages, the new system looks beautiful, and when you enter the treatment room, you feel you are entering another world. It’s like an oasis for the patient and its design reminds me of the precision of a Swiss watch!”

Radiation oncologist Gabriela Studer, MD, says she was particularly impressed by the image acquisition capabilities of the new machine, particularly cone-beam CT and kV-kV imaging. She is also excited about the greater hypofractionation potential offered by the HD120 (high definition multileaf collimator) on the TrueBeam STx.

“We will certainly use the TrueBeam system for a wide range of frameless stereotactic treatments,” says Studer. “Using this system, we can manage the patient much more simply, enabling greater ease of use and more comfort for the patient, with at least the same results—if not better.”

INNOVATION ACROSS PRODUCT SPECTRUM

Some of the motion management tools developed for the new TrueBeam system have been added to Varian’s Trilogy platform and are being made available to customers with Clinac® iX accelerators. “As we develop new capabilities for this system,” says Varian CEO Tim Guertin, “we’ll use what we learn to continually enhance our full line of treatment solutions, ensuring that we can continue to offer the widest spectrum of advanced solutions for meeting our diverse customers’ needs.”
In April of this year, Varian announced the addition of advanced motion management capabilities including Gated RapidArc® to its Trilogy® platform. The new tools make it possible to monitor and adjust for tumor motion during treatment, and to utilize respiratory gating during a RapidArc treatment.

“Extensive research and development into motion management systems has culminated in powerful new capabilities that will be standard on the new Trilogy accelerators and available as an upgrade on our large installed base of Trilogy and Clinac® ix machines,” says Dow Wilson, president of Varian’s Oncology Systems business. “Our Clinac ix and Trilogy accelerators, together with our new TrueBeam platform, can now offer clinics an unmatched combination of motion management, speed, and versatility.”

Gated RapidArc

Gated RapidArc radiotherapy makes it possible to monitor patient breathing and compensate for tumor motion while quickly delivering dose during a continuous rotation around the patient. This development enables the use of RapidArc to target lung tumors with greater precision by gating the beam during treatment.

“With the new Gated RapidArc, it is possible to deliver highly targeted treatments to many types of tumors, including lung cancers that are moving, in less time than would otherwise be required,” says Wilson. “According to the American Cancer Society, during the last decade, lung cancer became the leading cause of cancer death for both men and women in the United States. Gated RapidArc should make an impact in the treatment of lung cancer.”

Motion management interface

The new Trilogy system also incorporates an open interface that can be used with positioning devices like the Calypso system, allowing clinicians to monitor tumors in real time, gate the beam if the tumor moves outside of a predefined area, and make targeting adjustments when necessary. Varian and Calypso have been developing this capability under a strategic agreement to jointly produce products that integrate the two companies’ technologies.

“A recent peer-reviewed study1 shows that gating the beam and repositioning the patient on the basis of signals from Calypso implanted transponders results in a significant reduction in patient-reported side effects when delivering prostate cancer radiotherapy in the presence of tumor motion,” says Corey Zankowski, Varian’s senior director of product management. “Our new interface automates this process.”

The motion management interface can also be used with surface imaging technologies from companies such as Vision RT to position the patient, monitor continuously for any movement, and gate the treatment beam either as a result of detected patient motion or according to the patient’s breathing cycle.

The interface also opens the door for other third-party companies to connect their devices to Varian accelerators for the purpose of monitoring motion. These capabilities are of particular importance during frameless radiosurgery and SBRT treatments. “Varian is committed to the continual development of an open architecture that makes it possible to interface with third-party technologies for the advancement of clinical care,” Zankowski says. “By working with other companies, we can offer clinics different methods for gathering and acting on real-time information about tumor position during treatment.”

Around the World with RapidArc

Speed or quality. Quality or speed. With RapidArc technology, clinicians worldwide are finding they can give patients both—with no compromise.

By Nancy Heifferon
Introduced in early 2008, RapidArc® technology has quickly earned world-wide acceptance as a faster way to provide accurate conformal radiation treatment for challenging cancers. Today RapidArc is being used in hundreds of hospitals on five continents. This world tour highlights some clinic locations where RapidArc has been adopted recently and how doctors are using it to advance the quality and speed the delivery of radiation treatment.

### Montefiore Medical Center, New York City, New York, USA

The speed of radiation dose delivery often gets top billing when talking about RapidArc. The name of the technology is RapidArc, after all. Delivering the prescribed radiation dose in only one or two rotations of the accelerator gantry—as RapidArc does—creates a cascade of benefits, starting with treatments that are shorter than conventional IMRT. Shorter treatments are more comfortable for patients to tolerate. Comfortable patients move less. The less they move, the greater the accuracy of the treatment.

However, Shalom Kalnicki, MD, chairman of the Department of Radiation Oncology at Montefiore Medical Center in the Bronx, New York City, looks at RapidArc from a different angle. His take on RapidArc can be summed up this way: *There is no value to doing things faster if you aren’t first doing things better.* Kalnicki doesn’t deny that faster, shorter treatments could help departments accelerate throughput, but speed is not his first thought—better plans are.

*“With RapidArc, presumably an unlimited number of potential beam combinations are made possible by the sweep of the machine,” says Kalnicki. “We should take advantage of the fact that Varian has mastered how to make the machine and the multileaf collimator work and move at the same time and look for better plans, without regard to the speed. This is an extremely rewarding exercise with RapidArc, because RapidArc inherently gives you so many possibilities. The more you look, the more you find.”*

### Jewish General Hospital, Montreal, Quebec, Canada

A 71-year-old woman with recurrent squamous cell carcinoma of the nose is an example of the type of complex head and neck cases that are typically treated with image-guided RapidArc at the Jewish General Hospital in Montreal. After a complete rhinectomy, she concurrently received 66 Gy at the primary site and 56 Gy at the lymph nodes, delivered over 30 fractions in two full rotations of the accelerator gantry—one with a collimator rotation of 30 degrees and the other with a collimator rotation of 330 degrees. Treatment was guided by daily kV-kV imaging and weekly cone-beam CT scans.

*“Keeping all the critical structures nearby—the lens, the optic nerves, the optic chiasm—below dose constraints is difficult, if not impossible, without IMRT,” explains Eric Reynard, medical physicist. “Image-guided RapidArc slightly improves the DVH (dose volume histogram) criteria over conventional IMRT. In my opinion, we are better able to meet the goals that the oncologist sets up for us using RapidArc.” That is why all head and neck IMRT cases at Jewish General Hospital are now being treated with image-guided RapidArc.*

Reynard acknowledges the advantage of faster treatment as well. “We have waiting lists of patients and limited resources. We need to be able to treat with the best care possible within a limited amount of time. RapidArc may either allow departments to treat more patients in the day or provide additional time for image-guided treatment.” Either way, says Reynard, RapidArc can ease the strain on busy departments.

*“In my opinion, we are better able to meet the goals that the oncologist sets up for us using RapidArc.”* 

Eric Reynard
Einstein, São Paulo, Brazil

The Hospital Israelita Albert Einstein is a private hospital in São Paulo, the largest city in Brazil and the seventh largest city in the world. The first patient treated there with RapidArc technology was a 50-year-old man with a cervical metastasis from an unknown primary origin, receiving radiation following neck dissection. Conforming dose to the nasopharynx, oropharynx, and hypopharynx while sparing his parotid glands and other surrounding structures posed a significant challenge. “RapidArc is capable of good radiation dose conformality and a very quick dose delivery time,” says Robson Ferrigino, MD. In fact, this patient's daily treatment took 90 seconds, excluding the localization and imaging.

Though the RapidArc program at the Hospital Israelita Albert Einstein is just beginning, clinicians there expect to use RapidArc technology ultimately for the majority of conformal treatments. In the shorter term, they intend to substitute RapidArc when conventional IMRT treatments take too long for patient comfort, such as in head and neck cases, as well as make it their first choice for stereotactic body radiotherapy. Of RapidArc, Michael Chen, MD, says, “We are able to add quality to patient care by providing state-of-the-art technology to radiation therapy treatments. RapidArc enables us to provide patients with faster and consequently more comfortable treatments.”

Ghent University Hospital, Ghent, Belgium

At the Ghent University Hospital in Belgium, a 56-year-old male rectal carcinoma patient was treated in just 75 seconds with RapidArc, more than four times faster than possible using conventional intensity-modulated radiotherapy. The patient’s treatment involved treating the rectum, pelvis, and lymph nodes in a single revolution of the linear accelerator. All similar rectal treatments will now be carried out using the RapidArc technique, and the team at Ghent plans to begin using RapidArc for other cancers in the pelvic region.

The time saved by RapidArc is very important for the well-being of the patient, says Marc van Eijkeren, MD, PhD, head of Ghent University Hospital’s Department of Radiation Oncology. “In addition, we were able to achieve an increase in dose to the tumor while using far fewer monitor units of radiation to achieve this. Indeed, there was threefold reduction in monitor units used, which is helpful in tissue sparing and increasing patient comfort,” he explains.

The savings in time is also important for the efficiency of the hospital. Ghent is a busy university hospital, under constant strain to deliver advanced IMRT treatments within the standard 15-minute treatment slots. “With RapidArc,” says van Eijkeren, “that will no longer be a problem as we will be able to offer advanced conformal treatments to more patients.”

Docrates Clinic, Helsinki, Finland

Docrates Clinic in Helsinki is a comprehensive cancer clinic and the only private radiotherapy center in the Nordic region. Clinicians at Docrates are using RapidArc radiotherapy to treat patients with multiple brain metastases and cancers of the abdomen and prostate.

“RapidArc is used routinely where pelvic lymph nodes are treated simultaneously with lower daily dose than the prostate,” says Timo Kiljunen, medical physicist. “We also use it for metastatic and primary cancers in the abdominal region, such as liver and pancreatic cancers.”

Chief oncologist Mauri Kouri, MD, PhD, adds, “RapidArc has been very helpful in treating multiple brain metastases. In one case, four separate brain metastases were treated with two arcs and the total irradiated high dose volume was estimated to be a third of that with conventional dynamic arc treatments.”

Marc van Eijkeren, MD

Mauri Kouri, MD

“RapidArc has been very helpful in treating multiple brain metastases.”

“RapidArc enables us to provide patients with faster and consequently more comfortable treatments.”

Michael Chen, MD
says RapidArc has enabled his team to introduce a new treatment model for head and multiple brain tumor treatments, sparing the hippocampus areas in prophylactic radiotherapy. “Sparing the hippocampus has been proven to reduce the effects on the patient’s memory,” he says.

**University College London Hospitals, London, United Kingdom**

To reduce dose to the optic nerve and spare surrounding tissues, doctors at the University College London Hospitals (UCLH) recently treated their first brain tumor patients using RapidArc. “RapidArc performed very satisfactorily in its first treatments, addressing what would have otherwise been difficult brain tumor volumes,” says Susan Short, MD, consultant clinical oncologist in charge of the UCLH brain unit. “RapidArc produced a lower dose to the optic nerve than conventional IMRT treatment, and its precision minimized exposure to surrounding critical tissues,” reports lead clinical oncologist Anna Cassoni, MD.

For UCLH, an added advantage of the highly conformal RapidArc treatment was its speed compared to conventional IMRT. The patients were treated using one arc of the machine around the patient delivered in less than two minutes. “The treatment is very quick and that’s a good thing,” says one patient, aged 24, who underwent the treatment following surgery to remove traces of a benign but locally aggressive tumor. “I just want everything to be back to normal again, and I am looking forward to continuing with my life.”

**Beijing Cancer Hospital, Beijing, People’s Republic of China**

Nowhere are faster conformal treatments more appreciated than in mainland China. The radiation oncology department of the Beijing Cancer Hospital (BCH) treats more than 2,000 new cancer patients each year from across China, as well as from neighboring countries such as Vietnam.

In recent years, BCH has treated 5,000 patients with conventional IMRT, and now the hospital has become the first in mainland China to use RapidArc. According to Guangying Zhu, MD, professor of radiation oncology at BCH, RapidArc will be particularly helpful in helping to cut growing waiting lists at the hospital, with cancer rates rising significantly year-on-year. “From a technology and expertise standpoint, large hospitals in China have advanced equipment and clinical expertise that is no different from that in more developed countries,” he says. “We just have nowhere near enough capacity to meet our needs.” There are 12 machines per million people in the United States, and only 0.7 machines per million people in China. “The speed and precision of RapidArc make it perfect for the heavy patient throughput that we see in China,” says Zhu. “We will be able to treat more patients with the new RapidArc-equipped accelerator, which should certainly help to improve the regional control rate and offer significant benefits to patients.”

**Premion Cancer Care, Brisbane, Australia**

Premion Cancer Care recently improved access to advanced radiation therapy for prostate cancer patients in Australia, adding RapidArc to its treatment center in Brisbane. Premion is the largest private provider of radiation therapy services in Queensland. “We strive to avoid waiting lists and improve patient access,” says James MacKean, MD, lead radiation oncologist for the RapidArc program. Improving conformality shares priority with speeding treatments. “With RapidArc, improved conformality and daily treatment setup accuracy is combined with dynamic rotational arc treatments, keeping unwanted radiation doses away from nearby structures such as the rectum and bladder,” says MacKean. “Treatment times are reduced, which improves the overall patient experience.” Soon Premion expects to expand its RapidArc program beyond prostate treatment to include the treatment of brain, head and neck, and lung tumors.

Nancy Heifferon is a freelance healthcare writer.
Clinics Large and Small Rely on ARIA Technology

By Maren Dale

Cancer centers large and small, multi- and single-site, are relying on Varian’s ARIA oncology information system to improve administrative systems, make clinical care more efficient, and help ensure quality patient care is delivered consistently. From the University of Pittsburgh Medical Center, which treats thousands of patients each year at a variety of locations, to Cancer Treatment Services Arizona, in Casa Grande, Arizona, a town of 41,152 halfway between Phoenix and Tucson, to Cancer Care Manitoba, which supports a local population of 1.3 million, treatment centers of all types are using ARIA to move their practices forward.
UPMC CANCER CENTERS

The cancer centers at the University of Pittsburgh Medical Center (UPMC), headquartered in Pittsburgh, Pennsylvania, comprise one of the largest integrated community networks of cancer physicians and health care specialists in the United States. Working out of nearly 50 medical offices and 21 radiation centers, staff see about 44,000 new patients a year and perform more than 150,000 treatments annually.

“Our ARIA system forms the backbone of our integrated network. About three-quarters of our centers use it,” explains Dwight E. Heron, MD, FACRO, who serves as chairman of radiation oncology at UPMC Shadyside, vice chairman of radiation oncology at the University of Pittsburgh Cancer Institute, and associate professor of radiation oncology at the University of Pittsburgh School of Medicine. “In a large, diverse center like ours, we have been very pleased with the ability of ARIA to meet our clinical and operational goals of delivering the best care to our patients.”

ARIA is deployed in a “hub-and-spoke” model, anchored by UPMC’s Hillman Cancer Center location in Pittsburgh.

“For us, what this means is a patient can come in for a complex surgery, or we may even see them as an inpatient at our main academic hospital,” says Heron. “Then, once these patients go home, with the click of a button, we can send their records—including a treatment plan—to their host site. The next day, without skipping a beat, the patient can continue his or her care at that site.”

Heron also appreciates how ARIA makes the entire network transparent, and says this benefits UPMC staff—and patients—in a number of ways.

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Dwight E. Heron, MD

“As director, I can oversee patients across the entire system,” he says. “Additionally, the system helps reduce miscommunication and errors. You’re not looking all over to find elements of the patient’s radiation record. When your system is electronic, you go to a single repository and all the information is there.”

UPMC has found some unique ways to customize ARIA to fit their needs. Because some of their centers are located 30 to 70 miles away from the host site, they needed to ensure enough bandwidth was available to transfer files, particularly large image files.

“Our sites need to be able to execute and deliver, but we have the hive,” says Heron, referring to the fact that the central ARIA database resides in one location, and all other sites access it through a network. “We’ve built in redundancies, so if we lose connectivity with a site, they can still deliver treatment. We’ve worked to ensure they have efficient speed locally as well as enough strength for us at the main site to be able to look at what is going on remotely.”

The UPMC Cancer Centers have also benefited from ARIA software in other ways. For example:

• **Working with a satellite office in Dublin, Ireland.** The UPMC Cancer Center in Dublin is also using ARIA, and files can be shared across the platform as necessary.

• **Mining for patient utilization data.** When UPMC Cancer Centers needed to determine exactly how long it was taking patients to receive treatments—from the time they entered the room to the time they left—they used ARIA to gather this data.

• **Significantly improving the billing process by capturing charges at the point of care.** UPMC Cancer Centers were able to change from a manual billing system based on 60 to 90 days in Accounts Receivable to a paperless system that offered results in fewer than 30 days. Some centers needed to access the main hospital’s billing systems, and ARIA allowed them to do so through HL7 connectivity.

“We are pleased with our relationship with Varian,” says Heron. “And I believe, because of our sheer size and volume, if they can make a solution work for us, they can make one for anyone.”
Cancer Treatment Services Arizona is a freestanding medical oncology and radiology clinic in Casa Grande, Arizona, with affiliates in Florida and California. As it was getting ready to open its doors just two and a half years ago, stakeholders recognized they had a unique opportunity to establish an electronic chart. (A fully paperless department is not yet an option, as they work frequently with retirees who winter in Arizona and whose out-of-state paper charts are sent to their center.) Despite the challenges they anticipated, they recognized the rewards would far exceed the challenges and ultimately would lead to better patient care.

“We knew implementing ARIA would require more than just buy-in from everyone; it would require the ability to see the big picture and have an open mind,” says Susan Vannoni, MS, RT, director of operations at Cancer Treatment Services Arizona’s Casa Grande site.

Making the most of the system required that everyone who used it had typing skills—or a willingness to learn. Those who did not, including a senior physician, learned how to type. Once a voice recognition system was purchased, they also invested time “training” their voice recognition software to increase efficiency and productivity.

These steps were needed to “ensure accessibility of the real-time data we need in the day-to-day operations of the clinic,” says Vannoni. “Using outdated methods, where a physician dictates and then utilizes a transcriptionist, is not efficient and is not using the system optimally. Our physicians now enter data using voice recognition software, then type in needed edits on-screen.”

Physicians can make changes in real time, ensuring accuracy and accountability.

ARIA also supports Cancer Treatment Services Arizona in other ways. For example:

- **Accessing data via a single login.** Cancer Treatment Services Arizona is the only center in Casa Grande using ARIA that offers both radiation and medical oncology services, and therefore they frequently need to access records from both areas to treat a patient. Vannoni says they appreciate that they can scan in one place and all the data from either side can be seen. “You don’t need to log out and back in to access notes on the other side,” she says. “This sounds like a small thing, but it is not.”

- **Realizing that the more they use the system, the more they learn.** Clinicians have learned, for example, that it is easier to track patient data if you enter the primary diagnosis first. Vannoni explains: “If you have, for example, a breast cancer patient, you’ll only use one primary diagnosis code. However, if the patient has symptoms of nausea and is being treated with chemotherapy, that diagnosis code may be entered as well, but it is critical that the primary diagnosis is entered first.”

- **Firmly believing that the system will continue to deliver.** As more radiation oversight is expected or if an audit were ever to occur, Vannoni firmly believes ARIA will help provide the data they need.

**ARIA software ranked #1 in 2009 Top 20 Best in KLAS Awards:**

Software & Professional Services report

Varian’s ARIA oncology information system was ranked number one and designated the category leader for the oncology market segment in the 2009 Top 20 Best in KLAS Awards: Software and Professional Services report.

KLAS is an independent research firm that specializes in monitoring and reporting on the performance of healthcare vendors. The Top 20 Best in KLAS Awards report is a high-level overview of performance ratings for vendors offering software, professional services, and medical equipment to the healthcare industry. Ratings are compiled from evaluations received during the 12-month period prior to its publication from healthcare professionals in North America. Data is collected from healthcare providers. Each vendor product or service is categorized into a market segment so that like products can be compared and ranked against one another.

A “category leader” designation identifies top-rated vendor products in the Top 20 Best in KLAS Awards report for each market segment. Varian was also ranked number one among oncology IT vendors in 2008 in an independent oncology report released by KLAS in June of that year, having earned top scores in categories including ease of use and compatibility with third-party products, and tying with another vendor for the top score on quality of releases and updates.

KLAS’s mission is to improve healthcare technology delivery by independently measuring vendor performance for the benefit of healthcare provider partners, consultants, investors, and vendors. For more information, visit http://www.KLASresearch.com, send an e-mail message to marketing@KLASresearch.com, or call +1 800 920 4109 to speak with a KLAS representative.
CANCERCARE MANITOBA

CancerCare Manitoba (CCMB) serves the province of Manitoba, population 1.3 million. Located in Winnipeg, CCMB has been charged by the Canadian government to perform a critical task: deliver all cancer radiation therapy for all patients within four weeks of the ready-to-treat date. To help ensure quality care is delivered to this population (about 3,100 patients per year), CCMB employs 15 staff radiation oncologists, 12 medical physicists, and approximately 50 radiation therapists, plus about 40 support staff.

Early on, CCMB realized implementing the right technology would be critical to their continued success. Therefore, in October of 2008, they began combining their ARIA radiation oncology system with their ARIA medical oncology system, and today radiation therapy records are paperless, says James Butler, MD, FRCP, who served as lead radiation oncologist for the ARIA radiation oncology implementation. The final step happened in October 2009, when radiation oncology records were moved to electronic charts.

“Now everything from appointments to radiation treatments to prescriptions are handled electronically,” says Butler. “We are very pleased with how the system is working.”

When implementation of ARIA began, the center had three goals: upgrade treatment technology to the state of the art, deploy a fully integrated information system to streamline operations and yield comprehensive information about each patient’s course of treatment anywhere within the system, and integrate the medical and radiation oncology treatment processes for better coordination of patient care.

Has this happened? Yes, says Jeff Bews, PhD, FCCPM, head of radiotherapy physics and lead radiotherapy physicist in the ARIA radiation oncology implementation, but getting to this point took a commitment of both dollars and human resources. Bews stresses the importance of staff training—and realizing the long-term gains one seeks may result in some inefficiency in the short term.

“Staff needs to be taken off their clinical duties to do training,” says Bews. “For the first few weeks after you go clinical with the new system, people will be uncomfortable and tasks will take longer to complete. Over time, efficiency will increase.”

Now the team at CancerCare Manitoba is in a self-described phase 2 data collection mode, using ARIA to help them pinpoint their weaknesses and develop new strengths. Currently they are in the process of creating reports to help them understand the bottlenecks in the radiation therapy process.

“ARIA is actually providing us information that differs from what our frontline staff members have been telling us,” says Butler. “Recently, we had a small group of patients who didn’t move through the radiation therapy process as quickly as we wanted, and the explanation given by frontline staff was not consistent with the data we mined from ARIA. The ARIA reports enabled us to track the bottlenecks scientifically, rather than deal with subjective impressions or best guesses. With accurate information, we can determine how to utilize resources more efficiently.”

ARIA is also helping CCMB staff manage patient expectations. Prior to the paperless environment, patients often were given short notice regarding their upcoming appointments, usually getting a phone call to let them know they would be commencing treatment the very next day.

“We’ve made a few small adjustments in processes and procedures, and we continue to collect data to drive future adjustments,” says Bews. “Knowing schedules can be better managed, and providing patients with a better opportunity to prepare for what is ahead—those things made us realize that we’re not only becoming more efficient, we are providing better patient care.”

Maren Dale is a freelance healthcare writer.
U.S. HITECH Act Promotes “Meaningful Use” of Healthcare IT

Varian commits to meeting certification criteria that will allow ARIA software users to qualify for government incentive programs.
Early last year, the U.S. Congress passed the American Recovery and Reinvestment Act of 2009. This included the HITECH Act, which will provide for incentive payments to healthcare providers that can demonstrate “meaningful use” of a “certified” electronic health record (EHR) over the course of the next several years. “Varian is committed to meeting the EHR certification criteria so that customers can use our products in a manner that allows them to qualify for the HITECH Act incentive payments,” says Maureen Thompson, senior director of oncology information systems.

“The government is trying to find a way to promote the use of information technology in healthcare,” says Ken Hotz, Varian oncology information systems senior product manager. “The Department of Health and Human Services (DHHS) is working to establish a set of criteria for defining ‘meaningful use.’ Only EHR systems that support the required activities will be certified, enabling users to qualify for the incentive payments should they use the EHR in a substantial enough manner.”

Recently, the DHHS released several proposed regulations to assist in the implementation of the HITECH Act, including a draft set of criteria for certifying EHR systems. DHHS is now in the process of evaluating public comments on these proposed regulations. “There are still many unknowns in terms of what EHR providers will be required to include,” says Hotz. “The criteria are expected to be finalized sometime this summer.”

For doctors and treatment centers deemed eligible to receive incentive payments, there is a lot at stake. Incentives for private practice oncologists who qualify early will amount to over $44,000 over a five-year period; hospitals could get as much as $2 million over five years. In addition, after five years, there will be penalties for failing to implement an EHR in a “meaningful” way. The incentives are slated to run for five years, starting in 2011, and the penalties, in terms of lower Medicare payments, will start in 2015.

Varian is watching the developments closely while planning to make any needed modifications to the ARIA® oncology information system, Hotz says. “As of now, we have completed a gap analysis, assessing ARIA against the proposed criteria, and we have developed a plan for addressing gaps in functionality.”

Varian is also working on plans for deploying upgrades and training customers on how to use ARIA to achieve meaningful use. “The plans are fluid right now because there are still many unknowns,” says Hotz. “We’ll be making adjustments to our plans as more specific information becomes available.”

Meanwhile, Varian’s government relations office has been actively working to provide legislators, government staffers, and others with input regarding the specific needs of the oncology community. Dow Wilson, president of Varian’s Oncology Systems business, testified before the DHHS HIT Policy Committee when it was seeking input from stakeholders. And earlier this year, Varian worked with other Oncology EHR vendors to comment on the proposed regulations, seeking to influence what is ultimately defined as “meaningful use” in the medical and radiation oncology settings.

“Overall, the proposed requirements are positive steps that reflect a commitment, on the part of the U.S. government, to improve the value, efficiency, and effectiveness of healthcare delivery,” says Hotz. “Still, there are some proposed requirements that are just not relevant to the oncology setting. For example, there’s a requirement that the system support the ordering of immunizations and transmission of that data to a registry. That’s not even a service that most oncologists, and certainly radiation oncologists, perform. In our letter, we asked the DHHS HIT Policy Committee to take another look at provisions that don’t make sense in the context of an oncology practice.”

The full letter was filed with DHHS and can be accessed at http://www.regulations.gov (search for document CMS-2009-0117-1617). This and other related updates are also available to Varian customers on the MyVarian website in the Government Affairs corner (http://www.my.varian.com).
A leading radiotherapy center in the northeast of Belgium has carried out a migration to Varian’s ARIA oncology information software in a process that is a model example of how such an approach works in a multicentric, multivendor environment.

Over the last few years, the Limburg Oncology Centre—which has sites in Hasselt and nearby Genk—has transitioned from a Lantis oncology information system and MDS Nordion Helax treatment planning environment to an all-Varian software infrastructure, using ARIA for oncology information and Eclipse for treatment planning. At the same time, three new Varian Clinac linear accelerators have been acquired to replace and augment the center’s Siemens machines.

“The transition was surprisingly seamless,” says Eddy Bressers, Limburg Oncology Centre medical physicist. “We managed to migrate over a single weekend, starting on Friday and with a ‘go live’ on the Monday, without any significant problems. There were some minor issues which needed a workaround as could be expected in such a complex project, but they were nothing too major.”

Keen to explore the benefits of a multivendor network, Limburg Oncology Centre made the decision to move away from its legacy hardware and software infrastructure. After tendering for a new record-and-verify system, a planning system, and three new linear accelerators, Varian software and hardware were selected.

Two of the new machines were installed at a newly constructed satellite hospital in Genk, and the third Varian machine replaced an aging Siemens Primus in Hasselt. Today, the center offers radiotherapy treatments on five treatment machines, three of them from Varian, plus two older Siemens machines.

“One of our most important requirements was that everything be integrated in one database and that we would be able to keep our historical data from the last ten years,” says Bressers. “We also needed a uniform process for the operators of the five linear accelerators.

“ARIA fulfilled all our demands and made life much easier for radiation therapists, physicists, dosimetrists, and nurses. It has helped us to streamline our department workflow so that radiation therapists can spend more time on their patients. There’s no more need to import and export data because only one database is used. We can now evaluate diagnostic and treatment images from anywhere in our organization, work with up-to-date patient information, and make use of review tools for image-based radiation treatment techniques.”

According to Paul Bulens, MD, medical director of the Limburg Oncology Centre, “Our key challenge was to make the Hasselt and Genk sites effectively one big center, and we needed a supplier who could handle that level of integration. Our staff travel regularly between the two sites, and complete integration is vital.”

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Paul Bulens, MD
Varian’s ARIA® oncology information system has been implemented for the management of medical oncology practices across a large network of hospitals in the United Kingdom. Already more than 850 clinical staffers across the Thames Valley Cancer Network are routinely using the system, which enables patients to become more involved in managing their own care.

“The ARIA system has been extremely well received by clinical teams and patients alike,” says Claire Blesing, MD, consultant clinical oncologist at Churchill Hospital in Oxford and clinical lead for the project. “We needed something that could be accessed from all hospitals across the Thames Valley Network without losing data between them. This enables a patient to be prescribed initial chemotherapy in one hospital in the network and then have follow-up treatment in another.”

The ARIA system provides all the tools needed to manage the clinical, administrative, and financial activities of a medical oncology department. The oncology-specific electronic medical record (EMR) is the centerpiece of the system, enabling a personalized care pathway to be designed for each patient from initial diagnosis through follow-up. The system manages chemotherapy, drug orders, and all other nondrug physician orders.

“A big plus is that ARIA is not just a prescribing system, like the previous method we had here in Oxford; it’s a full medical record,” says Blesing. “The system’s toxicity evaluation sheet records the side effects a patient has when taking chemotherapy, and we can record how well they are and how much they weigh each time they come in for a consultation. This is all on the same patient record as you use to prescribe chemotherapy. So when a patient is with me, I have it displayed on the screen in front of me and the patient can also see it. We also give the patient a record book to take home, and they become much more involved in managing their treatment.”

ARIA’s reports were also an advantage. “You can extract excellent reports from the ARIA system,” says Blesing. “There is a very quick review page so you can see exactly what doses were administered, and there’s a flow sheet with dates across the top and events down the side, giving the total story of what is happening with a particular patient on a single sheet.”

Blesing worked with colleagues at trusts across the network to ensure the ARIA implementation matched the robust nature of the network’s protocols. “Before any network-agreed chemotherapy regimen is used, we have a very thorough checking process where the pharmacist checks off prescriptions, then the oncologist or hematologist checks, and then a different pharmacist will check again,” she says. “All the protocols had to be entered into the system. We currently have 530 regimens entered, around half of them for oncology and the others for hematology and clinical trials. This means all the steps in the process—from prescribing to pharmacy checking, dispensing, and drug administration by nursing staff—can now be signed off electronically. Now nothing needs printing, and this reduces the possibility of errors.”

Clinicians at the Thames Valley Cancer Network have offered to share their regimen library and user guides with all other UK ARIA for Medical Oncology users to reduce duplication of work across the country and help speed the process of ARIA implementation elsewhere.

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Claire Blesing, MD
Varian has hit a new milestone for the speedy installation of a Clinac® or Trilogy® linear accelerator, outfitted for image-guided radiotherapy, in just 11 days. Similarly, existing systems can be upgraded with an On-Board Imager® device over just a few extended nonconsecutive weekends. These accomplishments are due to the recent development of two new programs:

- **The SuperFAST program**, which allows Varian service teams to replace a treatment system so that patients can receive IMRT treatments in as little as two weeks, sacrificing only 11 clinical days.
- **The Minimal Clinical Impact for On-Board Imager Upgrade program**, for quickly adding an On-Board Imager device to an existing system, allowing customers to continue treating patients at least four days per week during the upgrade.

Both of these new processes include applications training and immediate on-site support during the “go live” period to ensure a seamless transition to clinical use of the new products.

“Our goal is to minimize the clinical downtime at a treating facility during installations,” says Scott Brouse, vice president of worldwide installations and project management with Varian’s Oncology Systems Customer Support Services organization. “We realize that clinical downtime forces our customers to transfer patients to other facilities, and that creates challenges. So we reengineered our processes to speed up installations as much as possible.”

**SuperFAST installation process**

One of the first sites to benefit from a SuperFAST installation was Laughlin Memorial Hospital in Greeneville, Tennessee. The hospital accepted a Trilogy system on January 30, 11 days after installation commenced. By February 3, hospital staff had completed the commissioning and the system was ready for patient treatments.

The SuperFAST program is designed to replace an existing system and obtain customer acceptance within 12 days after an older system has been removed. At sites that require removal of very old Varian systems or non-Varian systems, additional time may be necessary. This would be the case if major construction were needed, such as replacing a base frame that gets grouted into the foundation. The additional time can be minimized to approximately one additional week, bringing the total time to three weeks.

**On-Board Imager upgrade program**

Not every installation involves setting up an entire system from the ground up. Many involve upgrading existing Clinac machines by adding an On-Board Imager device for image-guided treatment. Varian’s global installation team has also been working to reduce the clinical impact of this kind of installation.

“A typical On-Board Imager upgrade takes two weeks to complete,” says Matthew Snyder, installation manager for Varian’s southern region. “But a two-week delay in the patient treatment schedule is not practical for facilities with just one machine.”

To address this challenge, the global installation team devised the Minimal Clinical Impact for On-Board Imager Upgrade program. The upgrade process takes place over a series of extended, nonconsecutive weekends, allowing customers to continue treating patients at least four days per week during the upgrade. By going to a “holiday weekend” schedule, the site never really experiences any loss in treatment time.

“Both the SuperFAST and the On-Board Imager processes offer great benefits for Varian customers, especially single-vault centers,” says Snyder. “By minimizing the delay in treatment and maximizing clinical availability, we are helping our customers improve the level of medical care they can offer. This is part of our contribution to Varian’s goal of helping to save an additional 100,000 lives each year.”
The ARIA® oncology information system is designed to meet the specific needs of oncology professionals and their patients. ARIA automates chemotherapy prescribing, enables electronic ordering, provides clinical decision support, and manages oncology clinical trials. ARIA electronically documents the care you provide for each patient, enabling evidence-based reporting and outcomes analysis.

Varian, in partnership with Cogent Health Solutions, now offers a patient portal and cancer survivorship software that lets your patients play a more active role in their treatment and recovery.

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Varian’s latest Trilogy system also advances motion management with the introduction of a new motion management interface. This interface is part of an open architecture approach to advance care with ancillary tracking and monitoring systems. Ask about the Trilogy system with advanced motion management capabilities—because a body in motion is never at rest.

Find out more at www.varian.com/trilogy.