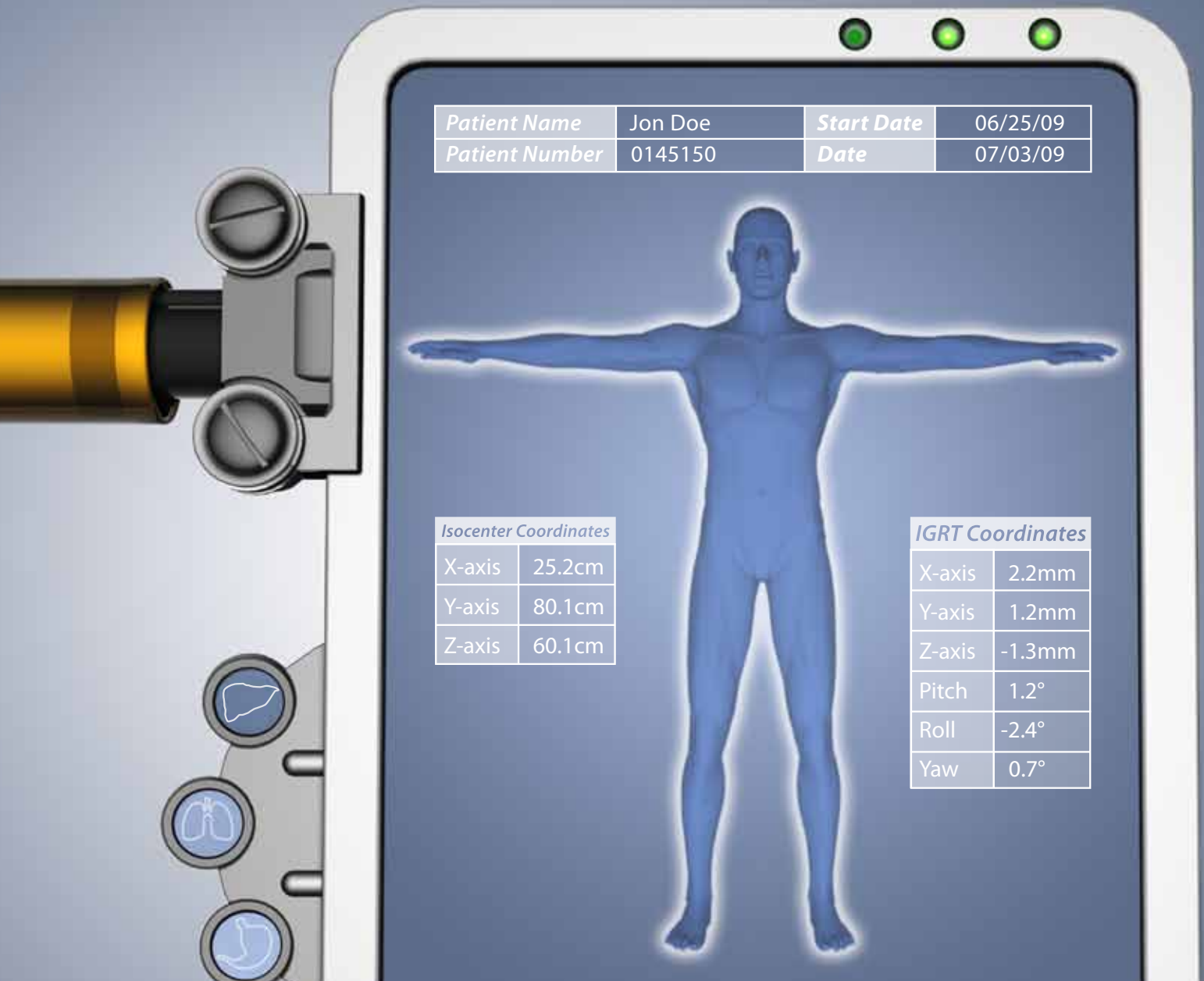


Program

Summer 2009

Radiation Therapy



<i>Patient Name</i>	Jon Doe	<i>Start Date</i>	06/25/09
<i>Patient Number</i>	0145150	<i>Date</i>	07/03/09

<i>Isocenter Coordinates</i>	
X-axis	25.2cm
Y-axis	80.1cm
Z-axis	60.1cm

<i>IGRT Coordinates</i>	
X-axis	2.2mm
Y-axis	1.2mm
Z-axis	-1.3mm
Pitch	1.2°
Roll	-2.4°
Yaw	0.7°

IGRT in Practice: Are we Delivering on the Promise?

Year 1: SBRT Body Pro-Lok™ · PhilaSRT Advocates for CARE Bill · Surviving Canine Osteosarcoma



Editor's Letter

Last year at this time, CIVCO's team was prepping for Houston's AAPM while keeping a nervous eye on Hurricane Dolly as she took aim on the south Texas coast. Luckily, Dolly left town in time for everyone to arrive safely.

The year since AAPM 2008 has been an exciting one for CIVCO. Our Body Pro-Lok™ for SBRT has made an impressive impact across the country, and Dosimetry Check IGQA™ is making intuitive IMRT QA a reality.

In this issue, we chose to focus on a central question in radiotherapy today: are we delivering on the promise of IGRT? Three prominent members of the physics community weigh in here.

At AAPM 2009, in Anaheim, CIVCO is introducing Protura™, a 6 Degree of Freedom Robotic Couch as well as our Universal Couchtop™. Both devices exemplify our commitment to making the promise of IGRT a reality, and will be available in the fourth quarter.

Check out the inside back cover for more information on Protura and the Universal Couchtop.

Liz Etchells
Editor

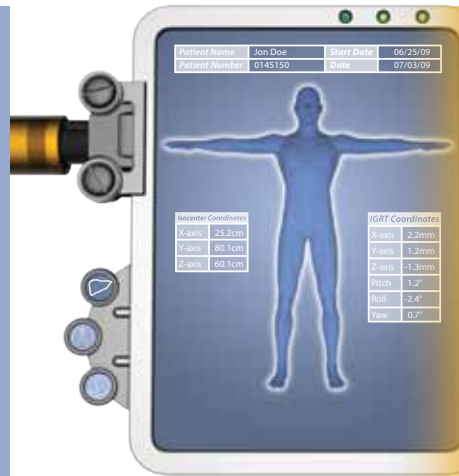
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IGRT in Practice:

Are we Delivering on the Promise? . . . 6

IGRT provides clinicians with highly detailed information regarding tumor motion and location, promising more accurate treatment planning and delivery, with better outcomes and fewer side effects. However, the application of such information to treatment can pose serious challenges to clinicians. Here, three prominent physicists discuss the pursuit of IGRT's potential and the challenges facing IGRT delivery.

Product Updates 4-5

Dosimetry Check IGQA and Body Pro-Lok for SBRT users discuss their experiences. D. Jay Freedman, MS, and John Keane, MS, both consider DC IGQA to be the best IMRT QA system on the market. Hear from Body Pro-Lok users in Indiana, Tennessee and New York.

Territory Updates 10-11

Arizona Oncology, of Tuscon, recently installed a Novalis Tx, and has combined the new linac with CIVCO's Body Pro-Lok. Members of PhilaSRT, including Bernadette Garofola, met with Congressional members to discuss the CARE bill, and CIVCO remembers Vicki LaCerbera.

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News from CIVCO's OEM partners Toshiba and Eclipse.

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CIVCO teams up with Revenue Cycle, Inc., and Product Manager Dayna Bodensteiner traverses the Ride to Conquer Cancer.

Fur & Feathers 14

Stella, a Rottweiler/German Shepherd mix, is surviving and thriving after surgery and chemotherapy at UC Davis' School of Veterinary Medicine for osteosarcoma.

Statement of Purpose:

PROGRAM RT is published specifically for oncology professionals. Its purpose is to provide news and information to enable, enlighten and entertain users of oncology technology. PROGRAM RT seeks to act as an unbiased forum for ideas and discussion regarding issues important to oncology professionals. To this end, PROGRAM RT encourages reader response and invites readers to submit contributions, opinions and suggestions.

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To submit new products for OEM Updates send a brief description (50-75 words) along with a photo of the product.

For inclusion in PROGRAM RT, send news snippets relating to company restructuring, new management and business cooperatives.

Review Send written reviews of new

oncology products or procedures to Review. Please indicate reviewer's name, credentials and include any pertinent quantitative data, images or photography.

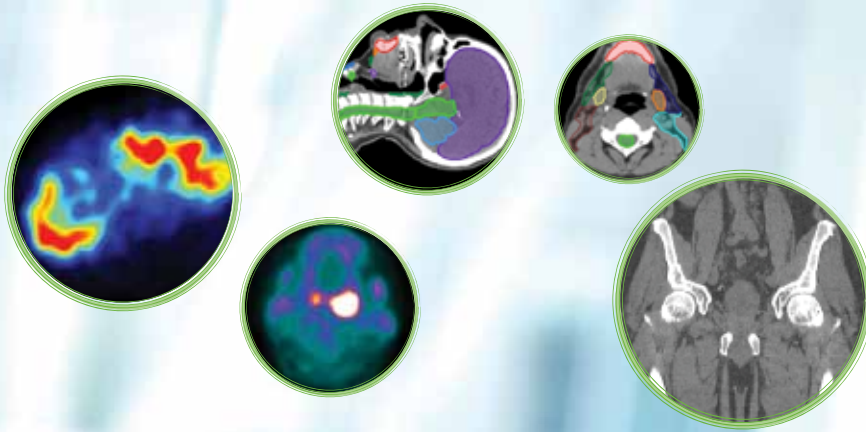
Tips and Tricks Have an oncology tip or procedural pointer to share with our readers? Send it to Tips and Tricks.

Fur & Feathers We're looking for unusual oncology applications. Send any images, photos and/or case studies of veterinary, zoological or other unique oncology studies to Fur & Feathers.

Oldies But Goodies Dust off those old time photos of early oncology equipment or procedures and send them to Oldies But Goodies. Be sure to include the dates, equipment used and a brief description of the procedure.



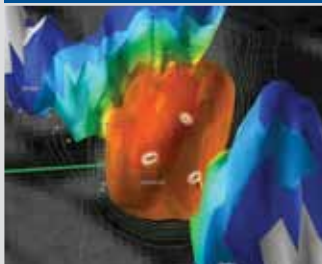
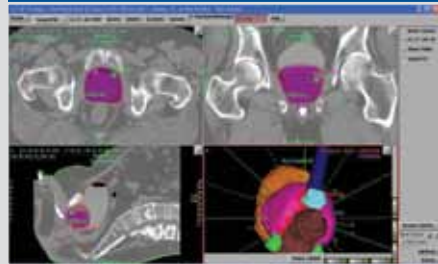
Items for publication should be received four weeks prior to press time.

Note: PROGRAM reserves the right to edit submissions for clarity, brevity and bias. Photography and artwork will be returned upon request.



Deliver on the Promise of IGRT



SBRT Body Pro-Lok™	Protura™ 6DOF	ACCULOC® IGRT	Dosimetry Check IGQA™
			
<p>Patient Immobilization CIVCO's SBRT Body Pro-Lok aids in providing comfortable immobilization for hypofractionated and complex treatment plans.</p>	<p>Robotic Positioning The Protura 6DOF Robotic System with the Universal Couchtop is ideal for IGRT treatments and tracking.</p>	<p>Image Guidance ACCULOC IGRT provides the translational and rotational shifts needed to correct any patient setup.</p>	<p>Image Guided Quality Assurance Dosimetry Check IGQA calculates the dose on the actual patient's CT and compares it to the treatment plan providing Image Guided Quality Assurance.</p>

Contact CIVCO for an Integrated IGRT Solution!



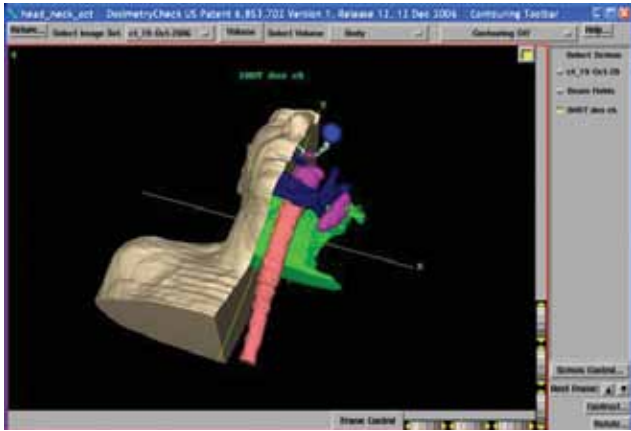
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Dosimetry Check IGQA™

Using the EPID for IMRT, RapidArc™ and VMAT

CIVCO began exclusive distribution of Dosimetry Check IGQA in early 2009. The revolutionary software takes IMRT QA to a new level, allowing you to see what QA results mean. Working with any integrating EPID and any treatment technique, including RapidArc and VMAT, the software provides a volumetric measurement for



IMRT QA. Dosimetry Check IGQA allows physicists, therapists and doctors to see the dose distribution on the patient's CT plan rather than through planar images.

Both D. Jay Freedman, MS, and John Keane, MS, are experienced Dosimetry Check IGQA users. Keane, Chief Physicist for Advanced Radiation Centers of New York, and Freedman, Senior Physicist with Radiation

3D surface doses, 3D gamma analysis, Gamma Volume Histogram (GVH) analysis, and Comparative Volume Histograms (CDVH) analysis.

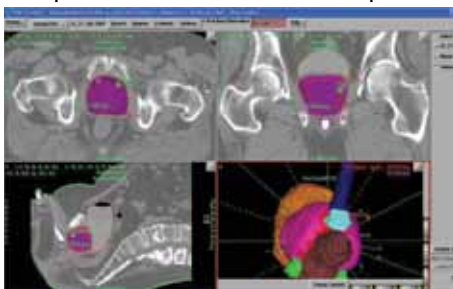
Given the complex nature of radiotherapy today, Dosimetry Check is a multifaceted program. "We do 180 RapidArcs a day over our 4 centers, and it takes a complex tool to monitor that many treatments on a daily basis," Keane said. "Dosimetry Check has a lot of features. It's easy to learn quickly, and over time, you understand the full power of the program."

Freedman, too, has invested a great deal of time into optimizing the software to work best for him. "The great thing is that I'm now able to help colleagues

Medical Physics, Inc., in Newport News, VA., agree that Dosimetry Check IGQA is the best QA tool on the market. "I had used a variety of QA devices and was able to get usable data," Freedman said. "However, with Dosimetry Check, I am able to project dose calculations onto the patient's CT data set, actually comparing the planned dose to measured dose. If the plan appears to fail, I can see what the failure zones are, and with anatomy and isodose lines, I can tell if the hot areas matter."

Keane's four facilities were the first on the East Coast to use RapidArc™, and just the third in the country to do so. He looked extensively for a QA tool. "I spent a lot of time looking at every QA tool on the market, and when I saw Dosimetry Check, I knew it was the product for us to use," Keane explained. "It doesn't make any sense to evaluate RapidArc on a homogenous phantom; you need to have a volumetric measurement. Being able to use the patient's data set is ideal. This is the only product on the market where you can do that."

Unlike other systems which use single plane QA analysis, Dosimetry Check uses the patient CT data set as a phantom. This is done by converting each beam's



2D EPID image information to a measured calibrated fluence, which is then projected onto the patient's CT data set. In this way, the delivered dose is reconstructed with the same CT data set as the original treatment plan, thus allowing for planned and measured dose comparison. Plan comparison includes isodose overlays, dose profiles, point doses, dose differentials,

"The confidence in the treatment plan is the most important thing gained by using Dosimetry Check IGQA, I know where the dose is going, and I've gained the ability to pass plans that would have failed using other tools. Before this, I could only make educated guesses about where the hits and misses are."

- D. Jay Freedman, MS - Senior Physicist - Radiation Medical Physics Inc.

setup and configure the software in a few hours," Freedman commented. "Using the EPID data source is a nice thing because there's relatively little to setup."

Dosimetry Check IGQA provides more information for IMRT QA with less work. "The confidence in the treatment plan is the most important thing gained by using Dosimetry Check IGQA," Freedman said. "I know where the dose is going, and I've gained the ability to pass plans that would have failed using other tools. Before this, I could only make educated guesses about where the hits and misses are."



Year 1: SBRT Body Pro-Lok™

At AAPM 2008, CIVCO introduced the Body Pro-Lok for SBRT (stereotactic body radiotherapy). Over the course of the last year, Body Pro-Lok has become an essential immobilization tool at numerous clinics, both for SBRT and other treatment procedures. "The radiation community has shown great interest in Body Pro-Lok," Dayna Bodensteiner, CIVCO Product Manager, said. "We feel privileged to be able to offer new technology that has enabled access to SBRT treatments for more patients."

The Cancer Center at Ball Memorial Hospital in Muncie, Indiana, recently purchased a new linac with RapidArc™, OBI, CBC, the capacity for respiratory gating and SBRT. Radiation Therapy Manager Rhonda Harmon, BSRT, knew the facility also needed an additional immobilization system for SBRT. The modular nature of Body Pro-Lok was a major advantage for Harmon's team. "Body Pro-Lok's extra immobilization is in one comprehensive package that includes many parts we use on a daily basis," Harmon explained. "We use Vac-Lok™ cushions, masks, shoulder suppression and indexing extensively, so we were already very comfortable

Given the variety of treatments delivered at Ball Memorial, Body Pro-Lok's flexibility is highly valuable. "The extra immobilization can be beneficial for respiratory gating and some IMRT setups as well as SBRT," Harmon said. "We know that as we use the system, we'll be able to see uses we didn't originally think of." Harmon's group also appreciates the user-friendly patient transfer board.

"Body Pro-Lok offers a reproducible setup that is attainable during each treatment successfully with minimal movement or change to the patient's setup."

- Patty Strain, RTT - Methodist Healthcare

Body Pro-Lok users have treated a wide variety of anatomical sites, ranging from lung and liver to metastatic spinal lesions. Patty Strain, RTT, of Methodist Healthcare in Memphis, Tennessee, has used Body Pro-Lok primarily for both lung and liver treatments. Strain has observed her patients to be in a more stable position during simulation, and their setups have been more reproducible during each treatment.

"Body Pro-Lok offers a reproducible setup that is attainable during each treatment successfully with minimal movement or change to the patient's setup," Strain said. "The CIVCO SBRT system is fast and easy to setup by myself, and it does exactly what it was created for. It is an effective system that minimizes patient movement and constricts breathing but allows the patient to be comfortable and not intimidated."

Chris Bohm, Modality Manager, Director of Operations and radiation therapist at Long Island Radiation treated a patient with a cranial and spinal tumor using Body Pro-Lok. "Our patient was treated using a Tomotherapy machine with 18 minutes of beam-on time," Bohm explained. "Body Pro-Lok kept the patient perfectly straight and immobilized during the entire treatment. We were able to treat the brain and the entire spine cord in a situation where, in many cases, the patient would have been told the treatment was not possible."

Bohm credits the modular nature of Body Pro-Lok as its best characteristic. "The best thing about Body Pro-Lok is how well it works with other CIVCO positioning devices," Bohm said. "The treatment went amazing, and we were familiar with the majority of the components of Body Pro-Lok."

The decision to purchase an SBRT immobilization system is an important choice for any cancer center. When Ball Memorial Hospital was testing different SBRT immobilization devices, they chose to demo three different systems before making a decision. "We had one therapist act as a patient in all three demos, so we could get a detailed impression from the patient's perspective," Harmon explained. "She felt most comfortably and securely immobilized in Body Pro-Lok, and the pneumatic respiratory restrictor felt like it constrained breathing better than others while being much more comfortable." Strain's patients have also responded well to the setup during treatment and simulation. Patient comfort has been a primary concern for CIVCO during the design of Body Pro-Lok.

Bodensteiner has had the opportunity to speak with most Body Pro-Lok users. "The feedback has been very positive," she comments. "During numerous product demos, we have heard customers asking for more information on SBRT in general. Therefore, we have developed an 'Understanding SBRT' CE course to support continuing education needs. We'll continue to listen to customers and respond to their needs."



with the components of Body Pro-Lok. Many of the devices can be used with or without the SBRT system depending on the treatment type, so it fits into the flow of our clinic."



IGRT in Practice

Are we Delivering on the Promise?

IGRT provides clinicians with highly detailed information regarding tumor motion and location, promising more accurate treatment planning and delivery, with better outcomes and fewer side effects. However, the application of such information to treatment can pose serious challenges to clinicians. Here, three prominent physicists discuss the pursuit of IGRT's potential and the challenges facing IGRT delivery.

Participants

Tim Fox, Ph.D.

Dr. Fox is Director of Medical Physics and Associate Professor of Radiation Oncology for the Department of Radiation Oncology at Emory School of Medicine in Atlanta, Georgia.

Paul Keall, Ph.D.

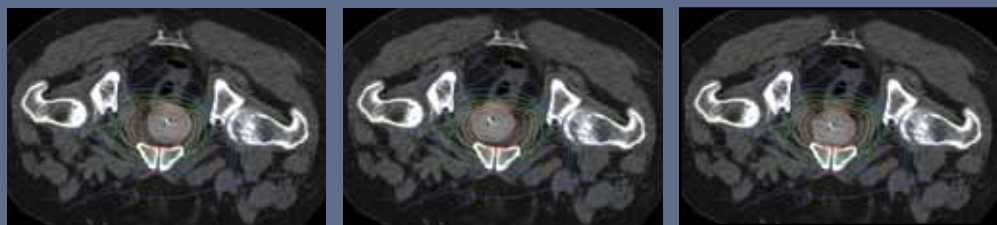
Dr. Keall is Associate Professor of Radiation Oncology and Director of Radiation Physics at Stanford University in Stanford, California.

Todd Pawlicki, Ph.D.

Dr. Pawlicki is Director of Medical Physics and Clinical Operations in the Department of Radiation Oncology at the University of California, San Diego.

IGRT's Promise: Do you believe the promise of IGRT is being fulfilled today? What are the current problems with IGRT delivery?

Fox: IGRT has been the latest technological evolution in radiation oncology patient treatment. The evolution of CT simulation followed by IMRT led the industry to address improvements to patient positioning for treatment delivery. The ability to match internal anatomy for more precise target positioning was the main driving force in early IGRT adoption. However, an often overlooked benefit of IGRT is that patient positioning for treatment delivery has been integrated into the record-and-verify (R&V) systems. Before routine IGRT, laser-based positioning was used and was not stored in the R&V system. Using IGRT, the patient positioning information is stored in the R&V system and is reviewed by the physician.



One of the current problems with IGRT delivery is that these systems have been used to position the patient on the treatment delivery couch to match the anatomy of the patient at simulation. This is difficult due to the soft tissue deformations that occur for many disease sites. In the future, it may be necessary to reverse this process where the patient's simulation anatomy and treatment plan is matched via deformable image registration to the patient's current anatomical changes on the treatment delivery system. Thus, the integration of IGRT delivery systems into the adaptive radiation therapy process is the next challenge for our industry.

Keall: IGRT is being used, but not to its full potential. There is limited integration of imaging during treatment. There is limited use of prior information, and we do not analyze and record most of the information we get. There is not an automated method to feedback IGRT results into planning for individual patients or patient populations as a whole.

There is still a long way to go to fully realize the benefits of IGRT. Current IGRT technologies (CBCT, fluoro, etc.) are a step forward but they still do not provide complete information about the true extent of the target or its location at a given time.

Pawlicki: In part, yes, the promise of IGRT is being delivered today. However, there is still a long way to go to fully realize the benefits of IGRT. Current IGRT technologies (CBCT, fluoro, etc.) are a step forward but they still do not provide complete information about the true extent of the target or its location at a given time. Similar issues exist for normal tissues. Another aspect that needs to be addressed is the varied implementation of IGRT. Using new technologies requires understanding and training. All of these issues need to be resolved to fully realize the benefits of IGRT.

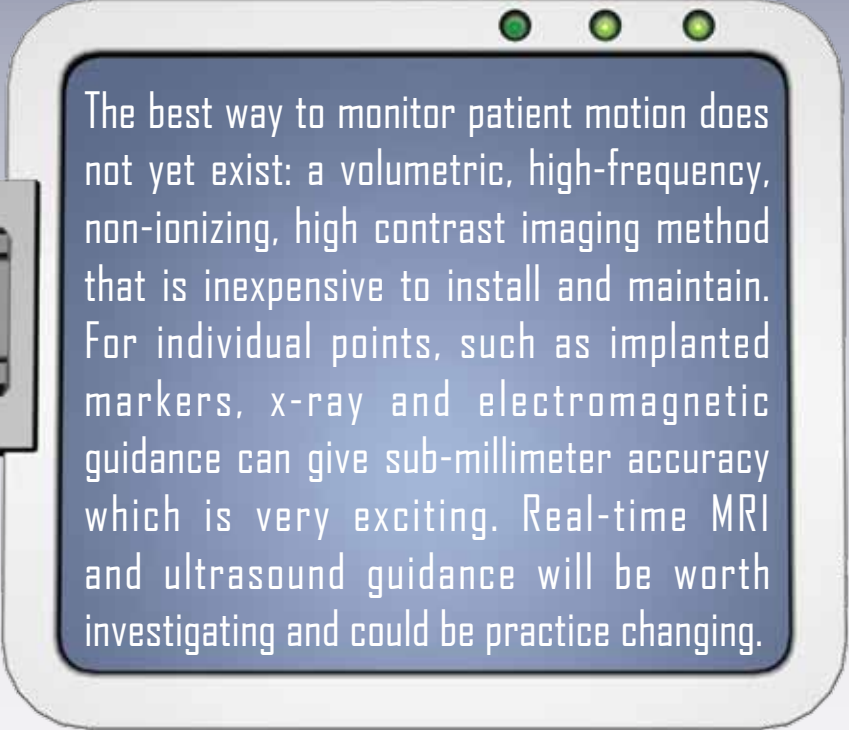
Monitoring Patient Motion: Numerous methods exist for monitoring patient motion, including external and internal markers, infrared tracking & cone beam CT. What is the best way to monitor patient motion, and how important is it to do this?

Fox: IGRT has allowed physicians to better manage interfraction and intrafraction motion. In the initial phases of IGRT, the management of interfraction motion has been successful using fiducial markers, radiographic imaging and CBCT. I believe the management of intrafraction motion is difficult to accomplish with current IGRT technology. Using current IGRT delivery systems, there is not an ideal solution for monitoring intrafraction motion during the treatment delivery process. Electromagnetic beacons implanted in the patient such as the Calypso system have been an effective method for monitoring intrafraction motion; however, it does require the invasive insertion of markers into the patient. I believe IGRT systems have successfully handled interfraction motion, but additional technology may be needed for real-time monitoring of intrafraction

motion.

Keall: The best way to monitor patient motion does not yet exist: a volumetric, high-frequency, non-ionizing, high contrast imaging method that is inexpensive to install and maintain. For

(Continued on next page) ➔



The best way to monitor patient motion does not yet exist: a volumetric, high-frequency, non-ionizing, high contrast imaging method that is inexpensive to install and maintain. For individual points, such as implanted markers, x-ray and electromagnetic guidance can give sub-millimeter accuracy which is very exciting. Real-time MRI and ultrasound guidance will be worth investigating and could be practice changing.

individual points, such as implanted markers, x-ray and electromagnetic guidance can give sub-millimeter accuracy which is very exciting. Real-time MRI and ultrasound guidance will be worth investigating and could be practice changing.

Pawlicki: It is very important to do this. However, the best way depends on the type of treatment site you are monitoring. For example, cranial SRS cases might be appropriately monitored using an external visual mapping system whereas lung motion would require a completely different approach. The most appropriate approach for different treatment sites is still being investigated.

Compensating for Patient Motion: There are also diverse compensation methods for tumor motion, including moving the patient, linac, MLC or adaptive planning for dose adjustments. What is the future of motion compensation in IGRT?

Fox: IGRT has been effective for interfraction motion management such as prostate for matching the patient's anatomy acquired prior to treatment delivery to patient's anatomy at time of CT simulation. However, even with this approach, IGRT does not account for soft tissue deformations between the two image datasets. The future of motion compensation using IGRT for intrafraction motion is unrealized as a routine method for many radiation oncology centers. The use of gated IGRT and treatment delivery methods is the current state of the art, and these systems are not ideal for daily reproducible use. Intrafraction motion compensation is still a research problem for many disease sites where the idea solution involves tracking target volumes in beam delivery.

Keall: The future of motion compensation is tumor tracking. If the tumor moves, the beam and tumor should be realigned. The concept is intuitive and explainable to non-experts who are often surprised that this does not happen routinely. As to the type of tumor tracking there are several options. My group has been focused on investigating the MLC as it can account for patient and tumor translation, rotation and deformation. A longer term plan is the integration of real-time adaptation.

Pawlicki: This depends on what type of motion we're talking about. For breathing motion, there may be more than one solution that depends on the type of tumor or patient. Perhaps tracking the tumor using fluoro with a feature recognition approach will prove most appropriate for some lung tumors. Another approach, called snap-shot therapy, may redefine our approach to treating moving tumors. Snap-shot therapy (SSRT) generally describes the ability to deliver a single intensity modulated treatment field in sub-seconds. The entire beam-on for a full dose fraction might be delivered in



one second or less (not included gantry rotations, etc.). With this approach, treating moving tumors is reduced to a

localization problem only without any concern for tracking the tumor during delivery. It's a much simpler problem to solve. SSRT can be considered a special case of gating where the entire dose for a field is delivered in less than one gate window. This novel technology is currently being developed at University of California, San Diego.

Managing Patient Immobilization: How do you view patient immobilization in relation to motion management and IGRT?

Fox: Patient immobilization is still very important to implementing a successful IGRT program. However, the purpose of patient immobilization may be different



for IGRT versus laser-based external anatomy matching. With laser-based methods, patient immobilization required that the therapists be able to easily view the laser alignment with immobilization devices for correct positioning. With IGRT positioning, it is not as important that the immobilization devices be able to allow for the lasers to view the isocenter location marked on the patient since internal anatomy will be used for positioning. It is important that the IGRT patient immobilization

systems provide the patient with a reproducible and comfortable positioning for the patient. If the patient is uncomfortable and moves on the treatment table after the acquisition of IGRT images, then the use of IGRT will not provide any accuracy for the treatment delivery positioning process. Patient immobilization for IGRT should limit patient movement, but it should accomplish this with patient comfort in mind.

Keall: With the ability to adapt to a new patient pose including deformation and track tumors, immobilization becomes less important, though it is still an integral part of the treatment process. Tumor tracking can allow faster patient set-up and therefore the immobilization part of the treatment process could be time-limiting and therefore may come under close scrutiny.

Pawlicki: It's all about patient comfort and efficient delivery rather than patient restraint. The more comfortable a patient is and the faster the delivery, the less that motion is an issue.

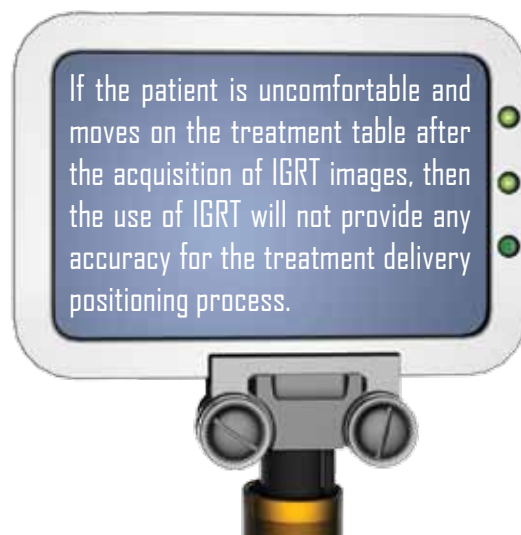
Overcoming Obstacles: What hurdles exist to the widespread implementation of further enhancement to motion management with IGRT? (Availability of affordable technology, ability of non-academic institutions to implement, financial issues including reimbursement, staffing and the need for cost/benefit analysis)

Fox: Many current IGRT delivery systems use robotic kilovoltage systems and even megavoltage systems for imaging anatomy. These are systems acceptable for performing the task of acquiring pre-treatment radiographic or volumetric imaging of the patient in the treatment delivery room. I believe the next hurdles for IGRT are to integrate this technology with simulation and planning for adaptive radiation therapy (ART). Online or offline ART is the next step for routine implementation in radiation oncology; however, many questions still exist on the best methods for integrating into the clinical process. For intrafraction motion management, the implementation

of today's IGRT systems is lacking in producing information for real-time tracking of tumor volumes. Vendors are investigating and discussing many options, such as image acquisitions during beam delivery; however, true real-time volumetric imaging during treatment delivery is a difficult hurdle for many systems. The future for IGRT is integrating these systems into the patient treatment cycle for continuous adaption of the plan to the patient as determined by physician involvement.

Keall: From an operator point of view, if motion management is available it is not difficult to implement and can actually save time. Most linear accelerator systems were not designed to be real-time applications, which is a challenge as hardware and software development may be required. The growth of methods for real-time target position measurement/estimation will challenge vendors that do not offer real-time motion management to develop solutions that will be of benefit to our field and our patients.

Pawlicki: This is still a research issue. Widespread adoption may come to fruition with improved techniques and documentation that those techniques actually work. New approaches to quality assurance will have to be developed in order to experience widespread adoption. We can't simply continue to hire more people to address the increasing complexity of IGRT. We need to have smarter, more efficient approaches to implementation, use and quality assurance of IGRT technologies.



Arizona Oncology Installs Novalis Tx™

Arizona Oncology, of Tucson, recently installed a Novalis Tx treatment device for image-guided radiosurgery, and the center is now able to offer patients fast, accurate, non-invasive treatments for cancer and other abnormalities of the brain and body. The Novalis Tx incorporates advanced imaging with treatment planning and delivery technologies from Varian Medical Systems and BrainLAB, enabling doctors to perform highly precise, image guided radiosurgery.



Image-guided radiosurgery (IGRS) involves delivering precisely focused, high-energy radiation to a localized area to destroy tumors throughout the body that often cannot be addressed by conventional surgery. These include some malignant and benign lesions, brain metastases, arteriovenous malformations, and other functional conditions such as trigeminal neuralgia. Treatments to other areas of the body include, breast, spine, lung, prostate and liver. The versatility of the Novalis Tx platform will

make it possible for doctors at Arizona Oncology to offer the most appropriate form of treatment based on patients' specific needs, from stereotactic radiosurgery to longer courses of image-guided radiotherapy, with lower-dose treatments spread out over more sessions.

Comfortable immobilization and stabilization of the patient are critical to the success of image guided radiosurgery. Arizona Oncology has included CIVCO's Body Pro-Lok™ for SBRT into their treatment program. "We've been exclusively using CIVCO products for our treatment devices and patient stabilization needs at all of our sites for quite a number of years," Lindy Heidt, Chief Radiation Therapist, said. "After a review and demonstration of CIVCO's SBRT product line, the radiation therapy staff and physician decided that CIVCO had the best solution for our requirements."

Doctors at Arizona Oncology plan to use Novalis Tx to offer non-invasive stereotactic radiosurgery procedures for a diverse spectrum of conditions, including spine, lung, liver and prostate cancer. "With Novalis Tx, we're entering a new age of medicine and

making surgery without an incision a reality for the people of our community," Dr. David Frye, MD, said. Regardless of the type of treatment prescribed, the powerful Novalis Tx can deliver it very quickly, so that patients spend little time immobilized on the treatment table. "Fast treatments are easier on the patient," Dr. Frye said.

To ensure precise treatments, Novalis Tx incorporates three imaging systems. "One provides us with information about the precise location and shape of the tumor prior to treatment and the other tracks motion, during treatment, so we can adjust our targeting if the patient shifts by even a few millimeters," Dr. Frye said. "The third enables us to verify treatment accuracy. There are also tools for synchronizing treatment with the patient's normal breathing patterns that we can use to compensate for motion when treating in or near the lungs."

Additionally, the Novalis Tx features radiosurgery treatment planning software that facilitates collaboration between doctors and other clinicians through a web-based network, so that Arizona Oncology's radiation oncologists can easily confer with their neurosurgical colleagues and other referring physicians in the community.



If your cancer center would like to be featured in Program RT, contact us at liz.etchells@civco.com or speak with your CIVCO account representative!

PhilaSRT Advocates for CARE Bill

Members of the Philadelphia Society of Radiologic Technologists (PhilaSRT) recently traveled to Washington, D.C. to lobby the 111th Congress in favor of the CARE bill. The CARE bill (Consistency, Accuracy, Responsibility and Excellence in Diagnostic Imaging and Radiation Therapy) proposes that all medical imaging technologists, radiation therapists and medical physicists meet minimum certification standards as a condition of payment through the Medicare system. It amends and adds enforcement protocols to the Consumer-Patient Radiation Health and Safety Act of 1981.



Bernadette Garofola, Chief Radiation Therapist at Thomas Jefferson University Hospital, is the Legislative Committee Co-Chair for PhilaSRT. "Besides the patient safety and quality assurance issues that the CARE bill addresses, the cost issue is extremely important especially now that Medicare is stage front in Congress," Garofola explained. "The ASRT designed the CARE bill to reduce health care costs by lowering the number of medical imaging examinations that must be repeated due to improper positioning or poor technique. The bill requires that personnel who perform medical imaging

examinations meet minimum certification standards thus reducing errors." ASRT believes that by enacting the CARE bill, repeated imaging examinations may decrease, saving Medicare approximately \$92 million per year.

ASRT and multiple other imaging organizations have advocated for the CARE bill for 11 years and numerous sessions of Congress. "In the 110th Congress, the CARE bill gained over 150 cosponsors in the House and 27 cosponsors in the Senate by December 2008," Garofola said.

"However, the bill was not passed due to an extensive legislative calendar and Congress adjourned. It seemed that the most expensive items in the CARE bill were taken out and inserted in the MIPPA Act." Senators Ted Kennedy (D-MA) and Michael Enzi (R-WY) sponsored the bill in the 110th Senate.

Garofola has high hopes for CARE in this session of Congress due to the Obama administration's emphasis on healthcare.

"Congress supported the MIPPA Act to require accreditation of MR, CT, PET and nuclear medicine facilities in order to receive payment for the technical component of services by January 2012," Garofola said. "The CARE bill is more expansive and includes all the modalities: diagnostic imaging (x-ray, ultrasound, MR, CT, etc), nuclear medicine and radiation therapy. Combined, MIPPA and the CARE bill would cover the entire radiologic community with enforceable minimal personnel certification standards."

Garofola encourages ASRT members and members of the general public to advocate for passage of the CARE bill by contacting their congressional representatives to voice their concern and opinion on the CARE bill.



Senator Lautenberg and Bernie Garofola

Victoria LaCerbera



Victoria (Vicki) LaCerbera, MS CMD, passed away March 8, 2009, after a 10 month battle with acute myeloid leukemia (AML).

She was 34. Vicki is survived by her husband, Matt, and two sons, Anthony (5 years) and Alexander (10 months). Alexander was delivered eight weeks early, one day after Vicki was diagnosed with AML.

Vicki began her career as a radiation therapist, progressed to dosimetry and earned her master's in medical physics. Most recently, Vicki lived outside of Chicago, Illinois, and was a physicist/dosimetrist with Radiation Oncology Resources (ROR), located in Goshen, Indiana. "When I met Vicki, I immediately knew she was something special, with her passion, her contagious smile and her physics background," Dayna Bodensteiner, CIVCO Product Manager, said.

Throughout her treatment, Vicki encouraged others to join the National Bone Marrow Registry. "Although she knew it was too late to help her, she was the absolute warrior against cancer even near the end of her life," Patty Root, Vice President and General Manager of ROR, commented. "We will remember her smile, the sparkle in her eyes, her endless energy, dedication and her ultimate respect for the patient."



For more information about Vicki's life and to make a donation to an educational fund for Anthony and Alex, please visit the website dedicated to her memory and legacy at www.vickishope.com.

OEM Updates

Toshiba Aquilion® Large Bore Provides Uncompromised Positioning

Providing unparalleled patient positioning, the Toshiba Aquilion Large Bore CT system enables superior imaging for radiation oncology treatment planning. With the industry's largest CT bore and acquired field-of-view, the Aquilion Large Bore takes full advantage of the patient positioning capabilities of the CIVCO Flat Table Top and Breast Board package. When treating breast cancer via radiation therapy, it is crucial to position the patient with arms overhead and the torso at an incline. This helps to spare surrounding healthy anatomy from the radiation beam during treatment. The Aquilion Large Bore and the CIVCO Breast Board package can easily accommodate simulation for these types of treatment positions.



With the industry's largest bore opening of 90 cm, the Aquilion Large Bore makes it possible to provide unrestricted patient positioning. The system's 70 cm true acquired field-of-view and 85 cm extrapolated field-of-view provides dramatically more anatomical coverage than other large bore CT systems, simplifying patient setup and ensuring treatment planning images fully capture patient anatomy.

"The Aquilion Large Bore is the ideal solution for radiation oncology because it mirrors radiation therapy positioning without compromising image quality and patient access," Doug Ryan, Senior Director, CT Business Unit, Toshiba, said. "No longer will therapy plans be restricted by the physical dimensions of the CT system. The Aquilion Large Bore's larger gantry opening allows patients to comfortably and easily place their arms overhead, allowing for unparalleled image acquisition during the CT exam. Additionally, the Flat Table Top and Breast Board package from CIVCO further enhance the ability for flexible patient positioning." For more information, visit www.medical.toshiba.com.

TOSHIBA
Leading Innovation >>>

Affordable Radiation Oncology Solutions

Eclipse Medical Imaging, the leader in refurbished CT systems for oncology and radiology, builds highly reliable, practical, efficient and state-of-the-art imaging solutions. Working with hospitals, medical centers and outpatient clinics nationwide, Eclipse provides quality, turnkey CT scanner solutions at an affordable price. The best high-end equipment is offered, Eclipse guarantees every piece meets strict purchase prerequisites, and the company can offer customers a top-of-the-line mobile unit until installation.

Eclipse's CT packages come with fully refurbished scanners from manufacturers like GE, Phillips, Siemens and Toshiba, and include DICOM-3 interfaces, one-year warranties, Carbon Fiber Table Tops, shipping, installations, and applications training—all backed by a team of seasoned medical and technical professionals who have been in the CT industry from the start.

Eclipse works with customers to identify the imaging system that best fits clinical needs and budgetary needs. From creating site drawings and evaluating purchase options to installing systems, training personnel and tailoring a service program, Eclipse commits to customers now and for years to come. For complete information on our CT simulation solutions, please visit www.emimaging.com or call 1-866-EMI-SCAN or 1-866-364-7226.



ECLIPSE MEDICAL IMAGING, INC.

Ride to Conquer Cancer 2009

Dayna Bodensteiner, CIVCO Product Manager, participated in the Ride to Conquer Cancer over June 13-14, 2009. The Ride to Conquer Cancer was the second annual fundraiser for the Campbell Family Research Institute of the Princess Margaret Hospital in Toronto, Ontario, Canada. Over 3500 riders participated in the event, raising a staggering 14.5 million dollars to further cancer research and exemplifying the ride's theme, "Strength in Numbers."

United by a common cause, riders cycled from Toronto to Niagara Falls, a course over 200 km. Pictured here are Bodensteiner and Michael Sharpe, Ph.D. Sharpe is Associate Professor and Associate Head of Radiation Physics at Princess Margaret. Both Bodensteiner and Sharpe rode with the RMP (Radiation Medicine Physics) Accelerators; their team of 60 raised almost \$200,000, ranking 5th for fundraising.

"There was a point leaving Toronto, where as far as I could see in all directions, there were masses of yellow jerseys," Bodensteiner said. "I had an overwhelming feeling of being part of something big, and I was honored to be part of the RMP Accelerators team. The entire event was impeccably organized."

Registration for 2010 has already begun. For more information, visit www.conquercancer.ca.



Revenue Cycle, Inc. & CIVCO Form Partnership

CIVCO Medical Solutions recently announced a new partnership with Austin-based Revenue Cycle, Inc. RCI is a national oncology-specific consulting company specializing in the delivery of expert business-side solutions for progressive oncology practice groups, clinics and hospitals.

"We are extremely honored to enter into this relationship with CIVCO," Sally Eggleston, Director of Business Development for RCI, said. "Revenue Cycle, Inc. will incorporate its knowledge of billing and coding for radiation oncology equipment and procedures into its services for CIVCO customers."

The new agreement between CIVCO and RCI will provide CIVCO customers with up-to-the-minute information and training relative to changes in coding, billing and reimbursement. "CIVCO's latest innovations involve newer and more complex technologies," Dayna Bodensteiner, CIVCO Product Manager, said. "With the complex applications of products like Body Pro-Lok™ for SBRT and Acculoc® for IGRT, we want to provide our customers with the best billing resource available. RCI has extensive knowledge of radiation oncology and an understanding of the complexity of our products. They were the obvious choice for CIVCO."

The complex and sophisticated treatments involved in medical and radiation oncology lead to a complex and challenging reimbursement model. Revenue Cycle Inc. can now provide CIVCO customers with the expertise necessary to interpret and comply with ever-changing regulations and procedures, thus improving the operation and efficiency of their clinics.

"Our company's industry-wide experience and its unique insight into the evolving field of radiation oncology will give user clients the information and support they need to enhance utilization and revenue performance," Eggleston said. Revenue Cycle Inc. will provide customers with reimbursement expertise via telephone or a dedicated email address. "RCI has exceeded our expectations in every way," Bodensteiner said. "Their knowledge and assistance to our customers has been of the highest caliber."



Fur & Feathers



Surviving Canine Osteosarcoma

Joel and Cindy Sabenorio adopted Rottweiler/German Shepherd mix Stella in 2001 from a Northern California animal shelter. After just six months in their care, the spirited puppy had enough determination to win a tug-of-war battle, over a particularly choice stick, with a Bull Mastiff twice her size.



In June 2008, Joel and Cindy noticed Stella had developed a limp. Despite two months of rest and a splint, she continued to worsen, and was ultimately diagnosed with severe osteosarcoma (OSA) in the distal radius of her left foreleg. She was referred to the UC Davis School Of Veterinary Medicine. "Stella had a large, destructive bone lesion, and an early fracture running through the midline of the bone," explained Dr. Katherine Skorupski, DVM at UC Davis.

OSA is a rapidly growing, destructive neoplasm accounting for about 80% of all malignant bone tumors in dogs. Giant and large breed dogs, such as Rottweilers, are predisposed to OSA, and about 10,000 new cases are diagnosed every year. Ninety percent of dogs will have micrometastasis, and surgery is usually required. Surgery alone may add 4 to 5 months of life. In conjunction with chemotherapy, dogs often live for a year, and up to 20% will be alive at two years.

Stella was a great candidate for both surgery and chemotherapy. "We believed, and still believe, that Stella deserved a chance to fight the cancer," said Joel. Stella's amputation, including her entire left leg and some of her chest muscles, was performed on September 10, 2008. With the source of their pain removed, many OSA dogs recover from surgery quickly. "Stella literally ran across the parking lot when it was time to go home, just two days after surgery," commented Joel.

OSA also occurs, with similar progression but a much lower incidence, in human children. While first line treatments are fairly standardized, there are questions about how to treat advanced stage cases and relapses. For canine cases, there isn't a consensus on the most effective chemotherapy protocol. "If you ask 10 veterinary oncologists for the best chemotherapy protocol to treat this cancer, you'll get 5 to 10 different answers," said Skorupski. To this end, Joel and Cindy enrolled Stella into one of UC Davis' clinical trials to examine the effectiveness of alternating treatments of Carboplatin and Doxorubicin.

Stella recuperated from surgery at home for two weeks before IV chemotherapy. Her six doses were delivered at UC Davis. "Sometimes

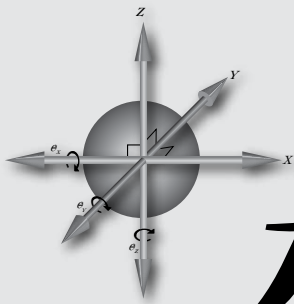
she would be lethargic for a couple of days after chemotherapy and wouldn't wag her tail," commented Cindy. "Otherwise, she tolerated the chemo extremely well, and experienced only one delay due to a significant reduction in her neutrophil count."

Skorupski emphasizes the importance of UC Davis' clinical trials. "As a teaching and research hospital, trials are among the most important things we do," said Skorupski. "I am very grateful to all the owners who enroll their pets in clinical trials." Stella's trial will not only help define future canine chemotherapy protocols, but may provide useful information for treatment of advanced stage or relapsed osteosarcoma in human children.

Stella's current prognosis is optimistic. At the completion of chemo, there was no evidence of new or recurrent tumors. "The experience reminded us that we can always choose to fight and hope for the best," commented Joel and Cindy. "In the end, our only expectation is that Stella continues to be a happy dog and loving member of our family. She has exceeded our expectations. We have no regrets."

*All photography courtesy of Joel Sabenorio





Protura™

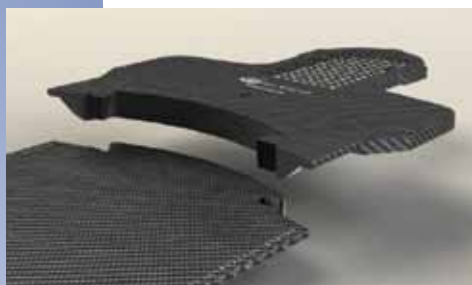
6DOF Robotic System and Universal Couchtop



Protura with Universal Couchtop



Protura Control Panel



Universal Couchtop with Type-S Extension

CIVCO's Protura 6 Degree of Freedom couch is the next generation in robotic patient motion management. Sleek and elegant, Protura combines with CIVCO's Universal Couchtop and SBRT Body Pro-Lok™ to become an all-in-one motion management solution. Protura will work with most linear accelerators and features unmatched flexibility. The new Universal Couchtop is a strong, lightweight couchtop with low attenuation, ideal for IGRT tracking. The Universal Couchtop will also be available in a dosimetrically matching CT overlay, to assist in dose accuracy between planning and treatment.

Protura Features

- Virtual pivot point always at isocenter allows for accurate adjustment
- In-room touch screen controls
- Control panel with indicator lights on the couch
- Supports patients up to 200kg
- 15cm height for easy patient loading
- Compatible with all IGRT coordinate systems
- Next generation treatment top with low attenuation and excellent image quality
- Support for CIVCO's SBRT Body Pro-Lok attachments

Protura Technical Specifications

- +/- 5cm travel in X & Y directions, +/- 2.5cm travel in Z direction
- +/- 3° rotation in pitch, roll and yaw
- Adjustable speed from 4-16mm/second

Universal Couchtop

- Homogeneous, lightweight and rigid with low attenuation
- Unique profile allows SBRT Body Pro-Lok bridges attach directly to the Couchtop
- Metal-free extension seam with three extension choices; rectangular extension, Type-S™ Extension and Varian end plate
- Compatible with Posifix® baseplates via the Varian end plate
- Accompanies the Protura system and is capable of being installed on Linacs from Varian, Elekta and Siemens

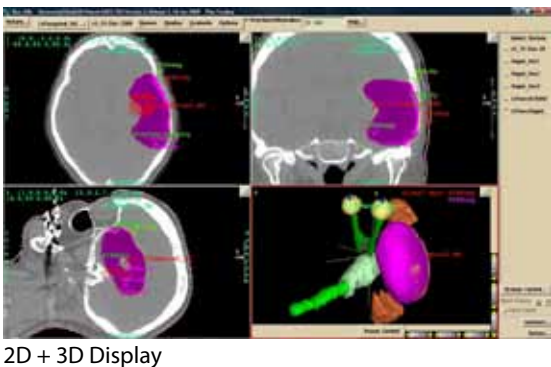
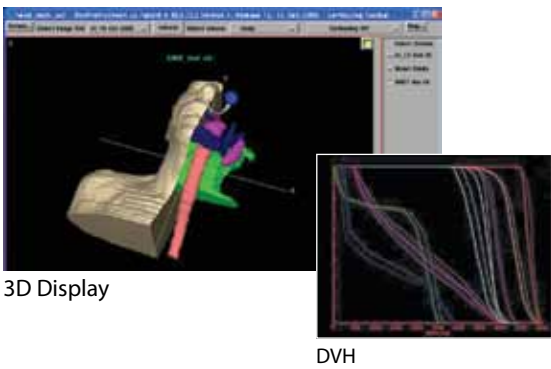


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