

Implementing Next-Generation Radiation Therapy Today

The Department of Radiation Oncology at the David Geffen School of Medicine at UCLA opted for a complete radiation therapy solution from Siemens. UCLA staff share their criteria – and more importantly their vision.

By Amy Cook

Imaging equipment is a very large capital expenditure for any healthcare center, whether it is a large university teaching institution or a community hospital. The imaging technologies that make the most sense these days are the ones that enable the healthcare center to streamline processes and workflow, allowing the center to maximize patient volume, schedule exams in a timely fashion, improve patient throughput, and offer centralized digital patient data input, review, and reporting.

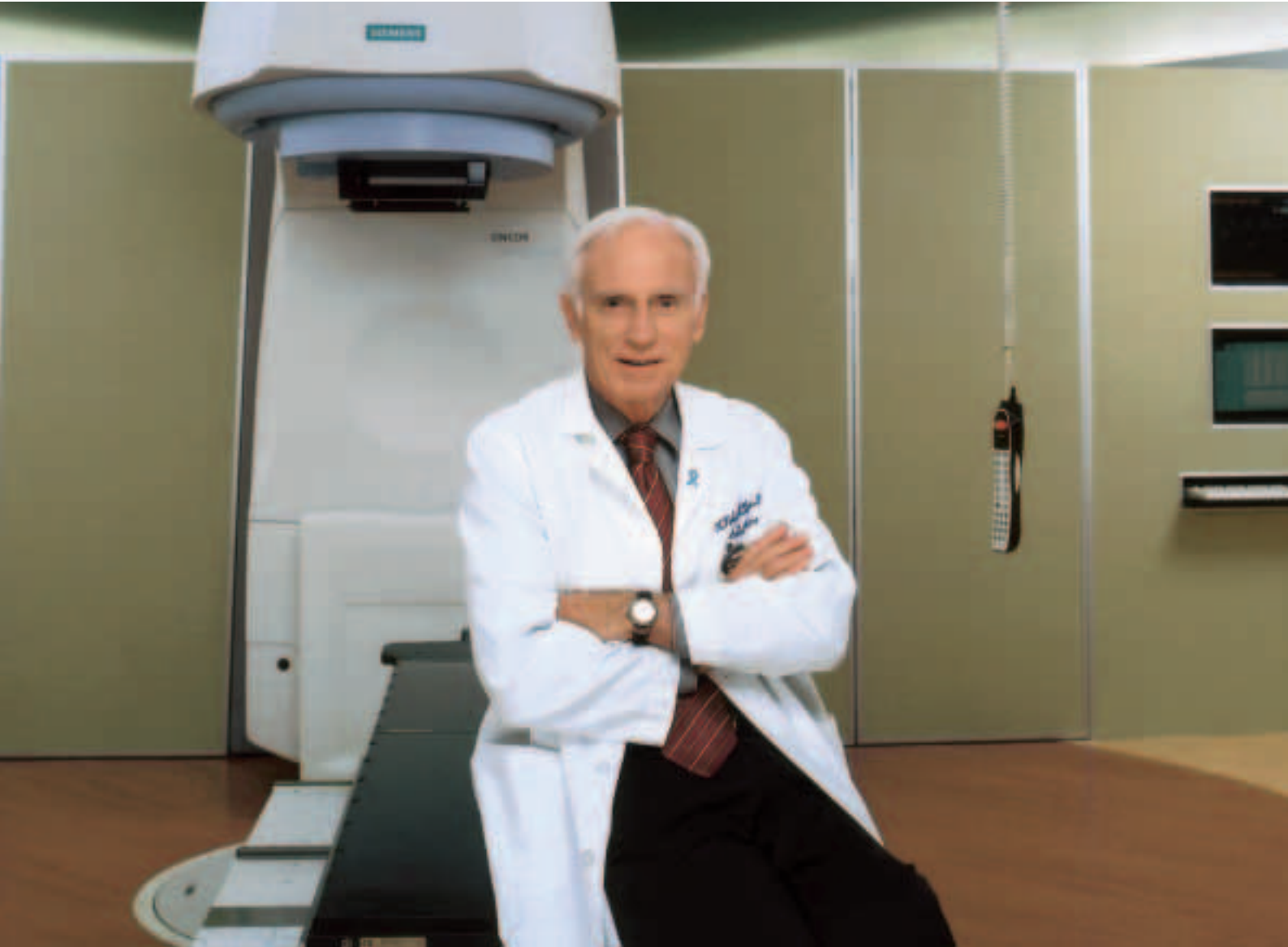
The Department of Radiation Oncology at the David Geffen School of Medicine at UCLA in Los Angeles, CA, replaced its existing linear accelerators after a thorough, 12-month search and selection process. Their overall goal was to equip the department with the latest in radiotherapy technology, and ensure a continuous upgrade path concurrent with continued technology evolution.

In August 2003, the first of three Siemens ONCOR linear accelerators and the syngo-based COHERENCE Oncology Workspaces platform, including the LANTIS Oncology Information Management System, were successfully installed in the healthcare center's

department of radiation oncology. Two of the ONCOR linear accelerators are now treating patients, and the third is expected to be installed and clinical before the end of this year.

Vision for Next-Generation Radiotherapy Technologies and Processes

The search committee, charged with the task of selecting new radiotherapy technology which would meet the demands of today's busy radiation oncology department and have an upgrade path that will evolve in the direction of future healthcare needs, created a priority list of technology characteristics. These technology essentials included a next-generation linear accelerator and Multileaf Collimator (MLC) technology with accurate and efficient Intensity-Modulated Radiotherapy (IMRT) and motion compensation capabilities as well as a large format flat panel for electronic portal imaging. Additionally, information technology systems that facilitated the elimination of hard-copy patient records and films, including a record and verify system that was powerful, expandable, and very



DR. H. RODNEY WITHERS found that the Siemens solution fitted best to his medical center's vision of healthcare.

easy to use, were of paramount importance to the department. It was imperative that the department no longer be an isolated field or modality, but rather become integrated with the healthcare center's diagnostic radiology departments.

"Our fundamental requirement was equipment and processes that would serve our current and future needs," says Timothy D. Solberg, Ph.D., professor and vice chair, Director of medical physics, Department of Radiation Oncology and a researcher at UCLA's Jonsson Cancer Center. "Clearly IMRT was a primary clinical capability, and upgrade paths were essential as we could not afford to go out and spend six million dollars every three or four years as equipment evolved. Additionally, a key question we continually asked during the vendor evaluation process was whether or not the systems we were

reviewing would facilitate a paradigm in image-guided therapy, and in the greater diagnose, image, treat, and follow-up process."

As a result, it was necessary for vendors to demonstrate core competencies in imaging, and to formulate a vision for the next generation of radiotherapy technologies and processes. To improve overall workflow and patient treatment, this new technology needed to be integrated with existing imaging technology throughout the institution, and with treatment-planning systems.

The ONCOR linear accelerator is a key component in Siemens' Oncology Workflow Solutions portfolio and the COHERENCE Suite of Oncology Workspaces. The linear accelerator brings together autosequencing and OPTIFOCUS MLC with automated portal imaging in order to provide maximum effi-



DANIELLE DI ANGELO, radiation technician, finds full digital integration of processes convenient.

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H. Rodney Withers, M.D., D.Sc.,
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ciency of treatment delivery. The technologies are integrated with the COHERENCE Therapist Workspace to optimize workflow by increasing treatment efficiency and overall quality. With the LANTIS Oncology Information Management System, a patient’s entire therapy process is centralized and data can be accessed easily. This provides therapists and caregivers with full digital integration of information management, imaging, treatment, and follow-up processes, with the results empowering all members of the oncology team to set a new standard in the delivery of oncology care.

syngo Addresses Digital Data Eruption

All of these new developments have led to an eruption of digital data and images that must be managed and made useful for every step in the process – from imaging to planning, simulating, verifying, and delivering treatments to patients. To help address technology integration, Siemens’ common workstation interface, *syngo*, is built into the imaging product lines and integrates existing networks and hospital information systems. “The *syngo* platform is crucial to the future of the radiotherapy process because it opens up so many opportunities,” comments Dr. Solberg. “The crucial missing link at present is how one uses images to adapt therapy. This is a software-driven process that *syngo* is best suited to facilitate.”

Optimizing Workflow

After the first ONCOR treatment delivery system became clinical in October 2003,

the department immediately adopted the LANTIS system to integrate and consolidate all the information critical to the delivery of treatment to patients.

“We were able to start using the quality checklists as a means of tracking the progress of patients through the process, which immediately became invaluable to us. We can track exactly where each patient is in his or her process of treatment, and also prepare for the next step in a patient’s treatment well in advance,” continues Solberg.

And, because of the electronic portal imaging capabilities, the department will be able to completely replace film with electronic images. The requirement for staff to move and retrieve charts and images from one area to another, or “play messenger”, will be eliminated. Dr. Solberg says the department is also benefiting from cost savings in more tangible items as well, including reduced material costs in charts, film, and other supplies.

Improving Treatment Delivery

With the many requirements of maintaining a busy cancer center while providing very precise and complex treatments, the department’s cutting-edge equipment also means that patients are treated more rapidly, and with less inconvenience. The new innovations of the ONCOR linear accelerator enable therapists to efficiently deliver treatment while patient safety is enhanced simultaneously.

“Since two of the three ONCOR Linear Accelerators have been clinical, there are many features that have improved treatment delivery, especially the auto-sequencing,” says Ruben Gomez, Chief Therapist, Department of Radiation Oncology. “Because it automatically delivers the treatments, there is no need to repeatedly pause the machine to go in and move the gantry into a different position. Additionally, we no longer need to go in and get the X-ray, then turn around and go back out again. This has resulted in great time savings for us.”

According to Gomez, all of these benefits will really translate into more time available to spend with patients and less time setting up or

monitoring the process. Because of its speed, ease, and precision, IMRT will be routine for the cancer center, and the radiation oncology staff will be able to treat a wider base of patients more quickly and efficiently with the new ONCOR systems.

Big Picture

For H. Rodney Withers, M.D., D.Sc., professor and chair, Department of Radiation Oncology, the decision to go with Siemens radiation therapy technology entailed a critical look at future needs. With Siemens, not only does the treatment technology complement the direction of the medical center's vision for healthcare, but the *syngo*-based COHERENCE Oncology Workspaces and information technology help streamline processes and optimize workflows, which are increasingly relevant considerations.

His view is one of a grander picture for the healthcare system and what the future will bring. Dr. Withers comments, "Once the three Siemens ONCOR Linear Accelerators, the *syngo*-based workspaces, and information management are all up and running, the department will be able to very quickly and efficiently coordinate all of the aspects involved in treating cancer patients with radiation."

And he continues, "from the overall perspective of providing the patient with high-quality, technologically sophisticated medical care, the total Siemens concept will link a versatile range of information and imaging facilities distributed across the medical center with a cutting-edge radiation therapy capacity, ensuring efficient and effective care for people with cancer."

With the integrated Siemens oncology solution, an easy-to-use and comprehensive system throughout the healthcare center has freed up radiotherapy staff to streamline and refine processes. Workflow, as a result, is optimized and, most importantly, patient treatment is improved on all levels. The Department of Radiation Oncology is already reaping the benefits of improved efficiencies in workflow and patient treatment.



TIMOTHY D. SOLBERG, PH.D., Director of Medical Physics at UCLA, wanted equipment that would serve current and future needs.

The David Geffen School of Medicine at UCLA

People who come to UCLA for cancer care benefit from the most advanced forms of therapy available, and from a variety of supportive services. UCLA's Jonsson Cancer Center has been designated a "comprehensive cancer center" by the National Cancer Institute in recognition of its exemplary interdisciplinary programs and in cancer research, patient care, professional education and community outreach in cancer prevention. According to a 2004 US News and World Report survey, the UCLA Medical Center is considered the best healthcare center in the Western United States and was ranked fifth overall in the nation. US News also ranked the Jonsson Cancer Center the best cancer center in the Western United States for the fifth consecutive year. The David Geffen School of Medicine at UCLA is considered one of the nation's elite medical schools, and among the best in the world.