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YOUR GUIDE TO HEALTHY LIVING

FALL 2003

Affinity HEALTH SYSTEM

Caring for health. Caring for life.

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Precision Radiation

Affinity Health System offers one of the latest, greatest technologies in the battle against cancer

By Ralph Fuller

Like the light and dark pixels that make up the image in a television picture, Intensity Modulated Radiation Therapy (IMRT) uses varying points of energy to control the shape and strength of its beam.

Except, instead of painting a picture on a video monitor, IMRT "paints" a malignant tumor with a precise radiation dose matched to its shape and depth, giving patients the most advanced option yet in radiation treatment for cancer.

"IMRT represents a powerful new way of controlling where the radiation goes and how it gets there," says Dotun I. Oyedijo, MD, Radiation Oncologist at Affinity Cancer Care Center, which began offering IMRT in February. "It holds the promise of allowing us to provide more intense treatment of cancerous tissue with minimal effect on surrounding normal tissue."

Old-School Radiation vs. IMRT

Radiation therapy has long been one of the standard options for treating many cancers, along with surgery and chemotherapy. Generated by giant machines called linear accelerators, radiation can kill cancer cells and make tumors shrink. Unfortunately, it also can kill or damage normal tissue surrounding the tumor.

To date, protecting healthy tissue has involved lead shields molded to patients' anatomy, machines that rotate to provide treatment from differing angles and computerized simulators to carefully plan treatments. "In conventional radiation treatment," says Scott D. Moon, MS, Medical Physicist at Affinity Cancer Care Center, "you're basically treating the site of disease with one beam shape. IMRT takes that beam, splits it into segments and varies or modulates the intensities within the beam to optimize the radiation to the patient."

Technically speaking, Affinity Health System's SmartBeam™ IMRT system (developed by Varian Medical Systems of Palo Alto, Calif.) utilizes new softwares that link CT and MRI scans into treatment planning and that calculate the number of beam angles, shapes and exposure times. And, it uses a multileaf collimator, a computer-controlled mechanical device with as many as 120 tungsten "leaves" that conform the radiation beam to the shape of the tumor.

The IMRT Advantage

A principal benefit of IMRT is that this tight targeting can allow an increase in the intensity of radiation used. Varian cites a study at Memorial Sloan-Kettering Cancer Center in New York that resulted in a 70 percent improvement in tumor control and a reduction of normal tissue complications from 10 percent to 2 percent. The technology is described as offering the prospect of improved treatment for cancers of the brain, breast, head and neck, liver, lungs, pancreas, prostate and uterus.

Affinity Health System is one of only about 100 medical institutions in the United States to acquire SmartBeam™ IMRT capabilities. It's based at the radiation oncology unit at Mercy Medical Center in Oshkosh.

As it has developed its program since February, Affinity has focused on prostate and head and neck cancers, providing conventional doses of radiation with the goal of improving normal tissue safety margins. "The prostate and head and neck are two areas that involve essential surrounding structures—the bladder and rectum with the prostate, and the spinal cord, optic nerve and major salivary glands with the head and neck," Dr. Oyedijo notes. "In addition to the brain, these are types of cases that are best served by this technology, in my opinion." ✤