

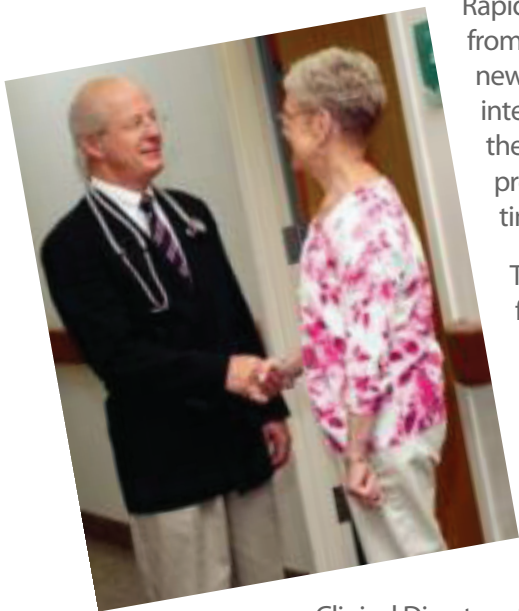
Clinical *Update*

from The Regional Cancer Center

In affiliation with
UPMC Cancer Centers

RapidArc™ is Here

Radiation Therapy two to eight times faster.



RapidArc radiotherapy technology from Varian Medical Systems is a new approach to image-guided, intensity-modulated radiation therapy (IG-IMRT) that delivers precise treatments in shorter times than conventional IMRT.

This technology is typically not found in communities our size. Area patients would otherwise have to travel to a metropolitan area for this level of precision and patient comfort in radiation therapy.

Clinical Director of Radiation Oncology, Conrad Stachelek, MD, PhD states, "We're not an academic cancer center, but we have the best equipment you'll find anywhere."

Rapid Arc is more comfortable for patients because they spend less time in daily treatments which require lying on hard surfaces, fixed with immobilization devices, and in rooms where the temperature must be kept cool. A fast,

precise RapidArc treatment takes less than two minutes. Patients can be in and out of treatment quickly and return to their daily routine.

RapidArc rotates 360 degrees around the patient, enabling the very small beams with varying intensity to be aimed at the tumor from multiple angles. Unlike helical IMRT treatments or other forms of radiation therapy, with RapidArc the radiation treatment being delivered to the patient can be modulated continuously throughout treatment. This means that higher doses of radiation are delivered to hit the tumor harder, and less radiation is delivered to surrounding healthy tissue.

At The RCC RapidArc treatments are delivered by a Trilogy® linear accelerator outfitted with imaging capabilities. The RapidArc imaging capabilities let

the clinician see the location of the tumor in three dimensions before treatment. If the cancer has moved due to physical changes, treatment can be adjusted so the patient receives a precise treatment. This treatment platform is the most widely used and reliable platform available. Over 75 percent of the leading U.S. hospitals and clinics use Varian technology.*

*1. Data based on the 2006 edition of "America's Best Hospitals" from U.S. News & World Report.



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Conrad J. Stachelek, MD, PhD
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How It Works

Using a Trilogy® linear accelerator, outfitted with an On-Board Imager® kV imaging system, images are used to guide patient placement and treatment delivery. The linear accelerator rotates around the patient to deliver radiation treatments from nearly any angle. During a RapidArc treatment, radiation is shaped and reshaped as it is delivered continuously from virtually every angle in a 360-degree revolution around the patient.

RapidArc Planning

Like other forms of radiation therapy, RapidArc treatments are planned using sophisticated computer programs that analyze diagnostic image data and calculate the best way of delivering the radiation dose to minimize impact on healthy tissues for each patient.

RapidArc Imaging

Immediately prior to treatment, the exact location, size, and shape of the patient's tumor is visually observed through a simple two-minute imaging procedure using the machine's On-Board Imager.

RapidArc Positioning

After imaging is completed, the images are reviewed by the therapist and the patient's position can be adjusted so that an accurate treatment can be delivered. The patient does not need to move off the treatment couch for this process—all adjustments are made automatically by the treatment couch.

Patient Benefits

- **Less time in daily treatments** which require lying on hard surfaces, fixed with immobilization devices, and in rooms where the temperature must be kept cool.
- The entire treatment is completed with a **single rotation of the machine.**
- On-Board imaging system provides high-resolution **X-ray images just before each daily treatment.**
- Image guidance improves tumor targeting, and IMRT shapes the radiation dose so that it conforms closely to the three-dimensional shape of the tumor. That means **more radiation is delivered to the tumor and less to surrounding healthy tissues.**
- The treatments are fast. Patients don't have to hold still for long, and are in and out in a matter of minutes each day. With RapidArc, IMRT **treatments that typically require at least 10 minutes can be completed in less than 2 minutes.**

RapidArc Treatment

A RapidArc radiotherapy treatment is delivered quickly—in less than two minutes and with just one turn of the machine around the patient. RapidArc shapes and modulates a highly focused treatment beam so that it targets the tumor precisely, sparing surrounding healthy tissues. It treats the entire tumor with pinpoint accuracy and is easier on the patient, who does not have to hold still for long periods of time.

During a RapidArc treatment, the treatment beam is continually shaped by a multileaf collimator (MLC), a device with 120 computer-controlled mechanical "leaves" or "fingers" that move to create apertures of different shapes and sizes.



For more information and to view a video on RapidArc technology visit www.trcc.org or scan the tag with your smart phone.