

Adams Cancer Center Installs Advanced Cancer Fighting Tool

When it comes to treating cancer with radiation, the key word is precision.

“You want to hit the tumor – the bull’s-eye if you will – as precisely as possible and avoid the healthy tissue surrounding it,” says Dr. Sherif Yacoub, medical director of Radiation Oncology at the new Adams Cancer Center in Gettysburg. “With radiation therapy, the better your aim, the higher the dose of radiation you can give and the better the cure rate.”

Hitting the bull’s-eye just got a lot easier thanks to the Cancer Center’s new Varian iX linear accelerator – a \$2.5 million, top-of-the-line cancer-fighting machine that became operational in February.

More rapid and precise than most accelerators, the Varian iX allows doctors to provide area patients with a treatment option called Intensity-Modulated Radiation Therapy (IMRT).

IMRT delivers high doses of radiation directly to cancer cells in a very targeted way, much more precisely than is possible with conventional radiotherapy. Thanks to the Varian iX, the Adams Cancer Center now offers the same technology and treatment options found at the nation’s top cancer centers “right here in our own backyard,” says Yacoub.

“In the future, all patients will be treated with the methods we are using today.”

Part of what makes the Varian iX so accurate is its array of built-in “gadgets.” Take, for example, the machine’s on-board imaging capabilities, which make it possible for clinicians to take detailed images of tumors *and* perform treatments on the same machine.

Using this combined technology, clinicians can “paint” a precise radiation dose to the tumor – even irregularly shaped tumors – and adjust treatments to increase the chances of eradicating the tumor and minimizing side effects.

Another important component of the Varian iX is its use of 120 computer-controlled metal plates to create radiation beams that conform to the exact shape of tumors. This gives doctors very fine control over how and where the radiation dose is given.

“Conventional therapy radiates tissue a half-inch to an inch around a tumor to make sure we are hitting the whole thing,” says Yacoub. “With the Varian iX, the margin can be reduced to 1/10 of an inch.”

The Varian iX can also create high-resolution images to verify a patient’s treatment position. These images, which are taken for every patient, are used to ensure the best patient positioning and the most accurate treatments.

“Body parts such as the prostate can shift position between treatments and even during treatments,” says Yacoub. “Now we can produce high-resolution images of the tumor and track changes in tumor shape, size or position over the course of treatment.

“The Varian iX even lets us track and adjust for tumor motion caused by a patient’s breathing,” he continues. “This is especially important when treating lung

cancer and other cancers of the chest and abdomen, where the motion caused by breathing is an issue.”

Although radiation has been used to treat cancer for years, says Yacoub, it wasn't until fairly recently that doctors were able to deliver this kind of precise treatment.

“If cancer cells came in Petri dishes this level of precision wouldn't be an issue because we could just radiate the entire dish,” says Yacoub. “But cancer occurs in the human body, and we want to do everything possible to spare healthy tissue.”