

TARGETING TUMORS

New device added to Cancer Center of Santa Barbara's arsenal

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Officials at the Cancer Center of Santa Barbara say the facility's patients now have a key new piece of medical technology on their side.

On Tuesday, the center unveiled a state-of-the-art machine which will account for significant advancements in image-guided radiosurgery.

The Novalis Tx is a type of linear accelerator which was introduced to the medical community in 2007. It rotates around the body, administering radiation beams to localized areas of the body from any angle. The machine's precision in targeting and eliminating tumors has established a new standard of treatment. Cancer Center of Santa Barbara joins UCLA, UC San Diego and Stanford as the only facilities in California with this technology.

The arrival of the Novalis Tx coincides with the center's 60th anniversary. Preparations began at the beginning of the year as the room where it was to be housed was received a seismic retrofit.

Since its delivery five months ago, chief physicist Dr. Don James has been measuring radiation beams and other components to ensure optimum functionality. The center is waiting on final approval from the state and expects to begin treatments at the end of this month. The \$3 million price tag for the Novalis Tx and room renovation was paid for by a state bond issue and accumulated donations.

The Center had been using a 14-year-old accelerator. It was frequently upgraded but it is now out of service. A smaller device is still in active use.

The design of the Novalis Tx is a collaboration between a German company -- Brainlab, and a California firm -- Varian. It boasts 21 million volts of power; three million more than the accelerator it is replacing.



Dr. Thomas Weisenburger, radiology oncologist at the Cancer Center of Santa Barbara, shows off the newly-acquired Novalis Tx, which targets therapeutic radiation onto tumors.
MIKE ELIASON/NEWS-PRESS

When treating cancer, doctors strive to attack tumors while sparing as much normal tissue as possible. The Novalis Tx allows for adjustments within less than a millimeter, which makes it especially applicable for sensitive regions like the head, neck and spine.

After a brief conference, Cancer Center of Santa Barbara staff members led a tour of the room where the Novalis Tx resides. The shiny, cream-colored machine is about 8 feet by 12 feet, with a hard plastic exterior and an interior composed largely of lead and tungsten. "This is quite amazing for a community of our size," declared CEO Jim Shattuck.

Following a ribbon-cutting ceremony, the center's medical staff director, Dr. Tom Weisenburger went into greater detail about the machine's capabilities.

He pointed out two inset bases on the floor which will send x-rays to image intensifiers, thus allowing software to determine how to position the patient. The robotic couch on which the patient rests offers six degrees of movement, which is unique to the Novalis Tx. A device called a collimator will sculpt the shape of radiation beams to account for irregularly-shaped tumors.

"This will allow us to do surgery anywhere in the body," he explained. It also will enable doctors to treat patients with stage four cancer.

Another benefit is the machine's ability to perform limited CT scans on the spot. Patients will now be able to have CT scans prior to every treatment. "You have to account for organ motion and patient movement," said Dr. Weisenburger. Previously, the center used ultrasound to locate organs. Patients were required to wear a frame screwed onto their skull throughout the day. "This will be a lot more comfortable," promised the doctor. It will also be faster with procedures lasting just 15 to 20 minutes.

Focused radiation, studies have revealed, decreases side effects for patients undergoing this kind of treatment. According to Cancer Center president Rick Scott, "The world of radiation has evolved from two dimensional to a four dimensional world. On board imaging is the main difference. Patients had to take more radiation before. Now they know exactly where it is."

This might have particular appeal to those with benign tumors who in the past have been subjected to side effects despite an absence of cancer. According to Dr. Weisenburger, a few such patients are among the first scheduled to be treated with the machine.

Another benefit of the acquisition will be the convenience for patients. Previously they've had to travel to other facilities when advanced image-guidance was necessary. Studies show that when patients live more than 20 miles from treatment facilities, they are less likely to pursue recommended treatment. Mr. Scott hopes the Cancer Center will be a hub for Central Coast patients.

This new treatment technology won't be suitable for everyone. It is especially applicable for those with head and neck cancer

In 2008, the center performed 13,350 radiation treatments. It has achieved a 70 percent survival rate amongst its patients, which, according to Mr. Scott, exceeds state averages.

Learning how to operate the Novalis Tx has not been difficult for Dr. Weisenburger and the rest of the staff as they were able to apply their familiarity with the old machine. The staff received a boost earlier this month with the addition of Dr. Warren Suh from Harvard University's Cancer Center as he is already experienced with the Novalis Tx.

"I hope this is the last time you ever see this machine," Dr. Weisenburger said. He couldn't contain his enthusiasm, however, when contemplating the possibilities it holds.

"It's a dream for someone like me who has been in radiology for 40 years," he said. "I'm very excited about it and it keeps me coming to work everyday."

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