

HOME

Two proton therapy centers planned for northern Illinois

Nov 16, 2007 @ 05:15 PM By Aaron Chambers RRSTAR.COM SPRINGFIELD -

X-rays can beat a cancerous tumor, but they can take down surrounding tissue, too. They blast through healthy tissue on their path to the tumor, then blast through more on their way out.

Protons are precise. They make little impact on the way to the tumor, then explode their energy directly on site. They don't continue traveling into the patient's body.

With harm to surrounding tissue kept to a minimum, the intensity of the radiation may be stepped up — doubling the benefit of the blast.

It's the cutting edge of cancer treatment. And by 2010, proton therapy may be available in northern Illinois.

Northern Illinois University and Central DuPage Hospital are separately planning to build proton therapy centers in western DuPage County. Illinois — now with no sites of proton therapy — might get two of them practically next to each other.

Economic consequences are vast. NIU has contacted hospitals around Illinois about possible involvement with <u>its proton</u> <u>center</u>. NIU President John Peters wants the proton center to be an anchor of medical research at DuPage National Technology Park, where it would be based.

"There are a lot of secondary and tertiary activities as a result of this," Peters said. "You have to have places for patients to stay from out of town. You need therapists. You need some conventional treatment. It has more potential than just the treatment of proton therapy."

Dr. Bill Hartsell, president of Radiation Oncology Consultants Ltd., a partner of Central DuPage in its proton venture, said his physician group is working to include others with similar interests.

"Once everything is set, there will be not only our group practicing there, but other groups of radiation oncologists, as well," he said.

Protons and photons

Protons have a physical advantage over photons, the basic energy of a conventional X-ray beam. Photons generally produce the strongest radiation near the surface of the body and, as they penetrate more deeply, gradually lose energy. They can radiate healthy tissue in the course of radiating a tumor.

Protons lose little energy as they enter the body. But when they hit the end of their range, which is manipulated by adjusting the force of the beam, they rapidly release most of their energy in a phenomenon known as the Bragg peak.

The beam is adjusted to match the size and shape of the target. Tissue before or beyond the target gets little or no radiation.

"When you point an X-ray at something, it keeps going until it hits something," Hartsell said. "Some of the X-rays will cause damage on the way in. Some of them will cause damage where you want — at the tumor. And some of them keep on going through and cause damage deeper in the patient."

Protons, he said, "cause a lot fewer problems."

NIU President Peters agreed, saying it's about "delivering the jolt right at the tumor."

The precision makes proton therapy well suited for localized tumors — those that haven't spread — and cancers near vital organs such as the brain or spine or at the prostate gland. Proponents say protons are especially effective in treating children because radiation stays clear of bones and tissues necessary for growth.

"For pediatric cancers, this is a very good therapy because when kids have these tumors, their muscle and bone structures are not developed," Peters said. "Conventional therapy will destroy surrounding tissue and it creates development issues then."

Both NIU and Central DuPage say their centers could handle up to 1,500 patients a year. As with traditional radiation, proton therapy often is used in combination with surgery and/or chemotherapy.

Under review

The Illinois Health Facilities Planning Board, which regulates hospital expansion projects, will review both proposals. NIU filed its application in August, and Central DuPage planned to file late last week. It's unclear how long the board will take to review the proposals, which are unprecedented.

NIU intends to break ground on its \$159.5 million facility, called the Northern Illinois Proton Treatment and Research Center LLC, in 2008. The corporation secured a site at the technology park, which is couched between Fermi National Accelerator Laboratory and the DuPage County Airport. University officials hope to accept their first patient in 2010.

"The timeline seems long, but the real backlog in the timeline is the equipment," said John Lewis, a health care economist at NIU and manager of the university's not-for-profit corporation. "From the time you order equipment to the time they actually deliver it is usually a 12-month process."

Each proton therapy center must be equipped with its own accelerator, which energizes positively charged protons once they're divided from negatively charged electrons. An accelerator, together with related equipment, can cost upwards of \$70 million.

NIU plans to secure \$94.2 million in bond proceeds, \$33.3 million in government support, \$27 million in grant funding and \$5 million in lease revenue, according to its application. The federal government has granted \$8 million and the university asked the state for another \$20 million, Lewis said.

For NIU, a state university with no medical school, there also is the promise of greater prestige. Officials said their interest grew from work that NIU's physicists did with Fermilab and Argonne National Laboratory.

"Other proton therapy centers are building upon medical schools," Lewis said. "But since all the science behind the accelerator — the beam line and the dose delivery — is all physics, we have arguably the best academic program for accelerator and high-energy physics in the state."

About 10 miles to the east, Central DuPage also would like to see its first patient by 2010. Jim Spear, the hospital's

executive vice president and chief financial officer, said it's ready to break ground on its Winfield campus "the very day" of board approval.

The hospital plans to spend about \$140 million on its facility.

"We have everything else in place," he said. "All our financing is secured (from private investors). All our architectural plans for building the building are secured. We have equipment on order. So we're technically in good shape to start. All we need is the proper approval by the planning board."

Central DuPage also is partnered with ProCure Treatment Centers Inc., a Bloomington, Ind.-based firm that specializes in developing proton therapy centers.

Growing national interest

National attention to proton therapy is gaining. The science evolved over the second half of the last century, as Harvard and other universities used protons to treat cancer. Interest grew after 1990, when the first hospital-based treatment facility opened in Loma Linda, Calif., and Medicare began covering the treatment.

There are now five centers nationwide, including Loma Linda. Two more, at the University of Pennsylvania and in Oklahoma City, are under construction. Several more, such as the two planned for DuPage County, are under consideration. The center closest to Illinois is in Bloomington, Ind.

Both NIU and Central DuPage insist there is room for both of them. They note the density of population nearby — roughly 8.5 million people live in and around Chicago — and their desire to draw patients from around the Midwest.

"Just given the largeness of the Chicago metropolitan area, we think that this area could actually support as many as five to seven centers," said Spear, the Central DuPage executive.

"If you take a look at the number of people in the region who can benefit from proton therapy, I think there is room for multiple facilities," Lewis said.

Still, Lewis added, "If you have two (centers) enter the market at the beginning, then getting the word out, informing people about the benefits of proton therapy, and being able to do that fast enough and effective enough to maintain a reasonable pace and flow for the two facilities, I think will be challenging."