

Fermilab back in business of zapping cancer

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BY [JIM RITTER](#) Science Reporter

An unusual cancer center for patients who don't respond to conventional radiation is reopening at west suburban Fermilab, best known for unlocking secrets of the universe by smashing together high-speed subatomic particles.

It turns out that subatomic neutrons also are good for zapping some slow-growing cancers, including locally advanced prostate, head and neck tumors, inoperable sarcomas and cancer of the salivary glands.

For 27 years, the Neutron Therapy Facility operated as a little-known sideline to Fermilab. More than 3,000 patients were treated before the center closed in May 2003 because it was losing money.

Northern Illinois University today will announce it has secured a \$900,000 federal grant to reopen what will be called the NIU Institute for Neutron Therapy at Fermilab. It will be one of three neutron cancer centers in the United States.

The institute will treat between 100 and 120 patients a year, said medical director Dr. Aidnag Diaz.

'I feel excellent'

Conventional radiation damages DNA, preventing cells from dividing and growing. But in certain slow-growing cancers, this radiation doesn't work very well because cancer cells have sufficient time to repair the damage. By contrast, cancer cells generally can't repair DNA damage caused by neutron therapy.

For example, neutron therapy is effective in prostate cancer that has reached an advanced stage but hasn't spread beyond the prostate. A 1993 study of 91 patients found that after 10 years, 70 percent of those receiving neutron therapy were cancer free, compared with 58 percent who had conventional radiation.

Don Young, 82, of Downers Grove, has been in remission since receiving neutron therapy for advanced prostate cancer four years ago at Fermilab.

"I feel excellent," Young said.

Side effects from conventional and neutron radiation are similar, Diaz said. Because neutrons pack more punch, patients need only 12 treatments over four weeks. Conventional radiation requires 30 to 40 sessions over six to eight weeks.

While neutron therapy requires fewer treatments, those sessions are much more expensive. Each neutron treatment costs at least \$1,000. By comparison, Medicare pays \$120 for one session of conventional radiation, said Fermilab medical physicist Arlene Lennox.

Machine would cost \$15 million

At Fermilab, subatomic protons are speeded up in a series of accelerators. After reaching nearly the speed of light, they are inserted into a four-mile racetrack, where they rotate in opposite directions and smash into one another. Before they reach top speed, some protons are diverted and smashed into atoms of beryllium metal. The neutrons that speed away from these collisions are used to treat cancer patients.

It would cost about \$15 million to make a neutron therapy machine from scratch, Lennox said.

For more information, call Fermilab at (630) 840-3865.