

PHOENIX — A new era in radiation therapy for cancer patients is coming to the desert Southwest, including Yuma-area residents, through a major construction project at the Phoenix campus of Mayo Clinic.

With an investment of hundreds of millions of dollars, a new cancer facility is under construction next to the Mayo Clinic Hospital that will house the clinic's state-of-the-art proton beam therapy program as well as consolidate its cancer programs under one roof.

Proton beam therapy is a highly targeted and precise way to administer radiation therapy, explained Dr. Steven Schild, radiation oncologist with Mayo Clinic in Arizona. It allows delivery of higher doses of radiation to tumors while minimizing the exposure and damage to surrounding healthy tissue and organs.

Radiation energy into cancer cells snaps them into little pieces and breaks up their DNA so they can't reproduce, he said.

X-ray therapy and proton therapy are both radiotherapy techniques, but the former uses photons to irradiate diseased tissues while the latter uses beams of energetic protons (subatomic particles with a positive electric charge), which have very different physical properties.

The advantage of the proton beam is that its energy and depth can be designated so it doesn't come out the back side of the tumor and damage surrounding parts of the body, Schild said. "It gives all its energy to the tumor so that everything behind it is spared."

Another advantage to the proton beam therapy that will be used at Mayo is that it will feature "pencil beam scanning" that will "paint" small groups of protons back and forth through a tumor. It will be the first to use such technology in the Southwest.

Schild said proton beam therapy is particularly desirable for cancers with limited treatment options and those where conventional X-ray radiotherapy presents an unacceptable risk to

the patient, such as prostate cancer, eye or brain tumors and tumors close to the brain stem or spinal cord.

Proton beam therapy will be especially useful for treatment of children and young adults to spare them damage to surrounding parts of the body, he said. "You want to treat as little of the body as possible to reduce the risk of tumors later in life."

The goals of proton beam therapy are less toxicity, better quality of life for patients during and after treatment and fewer secondary tumors, Schild said. That will translate into longer lives.

However, the cutting-edge treatment is expensive, he acknowledged.

The Mayo Clinic's proton beam facility will serve Arizona, Nevada, Colorado, Utah and perhaps Mexico, he said.

That will include cancer patients in the Yuma area. Yuma Regional Medical Center recently became a member of the Mayo Clinic Care Network through which patients here will have access to difficult procedures in Phoenix but receive much of their care in Yuma.

A similar proton beam facility is under construction at the Mayo Clinic campus in Rochester, Minn., to serve the Midwest.

Ground was broken for the Arizona facility in late 2011, and it is expected to be operational by 2016.

On a recent morning, Cheryl Lisiewski, director of the facilities project construction management, looked over the construction site that spans 23 acres. She explained that the facility's concourse level that will hold the proton beam therapy program will have a footprint of 100,000 square feet. It will have thick walls of 6 to 12 feet of high-density concrete

because of the high level of energy from the beam that will be the length of a football field as it is directed into four treatment rooms.

Cost of the construction and equipment for the proton beam facility is \$181.5 million. An additional \$130 million is being invested in the project to add three floors to consolidate the clinic's cancer center.

The building is designed to eventually be built out to 15 stories as the Mayo Clinic in Arizona continues to grow and expand, Lisiewski said. To provide for that, the building is sitting on massive support structures to support its weight in the area's desert sand.

She noted that the project included digging down 33 feet for the utility level, in the process excavating 150,000 cubic yards of dirt. Of that, 110,000 cubic yards was donated to the city of Phoenix for construction of a new 101 Freeway off-ramp nearby. The remainder of the dirt was going back into the construction site as infill.

Lisiewski also noted that 38,000 cubic yards of concrete was poured, equal to 3,800 truckloads. Obtaining the right materials for the high-density concrete that was required was a challenge, she added.

"Rock in Arizona isn't dense enough. It's like cake mix. We went through a number of mixes to find the right one. We had to go to the East Coast to find rocks that were dense enough."

And to provide the power that will be needed, there's a new Arizona Public Service Co. substation nearby to serve Mayo Clinic and the area.

The world's first hospital-based proton beam therapy center was developed in 1990 at Loma Linda University Medical Center, and work is finishing up on one at Scripps in San Diego. Another one has been in operation for two years at MD Anderson in Texas.



High-density concrete key to building Mayo Clinic's Ariz. facility

Source: www.yumasun.com