

## Medical Physicists Study Treatment of Shallow Cancer with TomoTherapy

Often cancers of the head and neck and the chest wall are shallow meaning that they lay close to the surface – within 6 cm. These cancers are often treated with electron beams. However, it is not unusual for some portion of the shallow cancer to lie greater than 6 cm deep, requiring that portion to be treated with X-ray therapy. The combination of using electron beam therapy and X-ray therapy is referred to as mixed-beam therapy. TomoTherapy offers an alternative to mixed-beam therapy in the treatment of shallow cancer sites, offering the potential to preserve greater amounts of healthy tissues.

Intensity modulated radiation therapy (IMRT) can shape the radiation to the shape of the tumor. TomoTherapy is a unique form of IMRT that delivers radiation continuously as the X-ray beam rotates around the patient. This form of delivery is presently not feasible with non-tomotherapy IMRT machines. Hence the Center's TomoTherapy Hi-Art system offers the ability to shape the radiation to shallow cancers -- even if part lies deeper than 6 cm from the surface -- with the potential for improved sparing of healthy tissues.

TomoTherapy, Inc. has a three-year research agreement through 2008 with Mary Bird Perkins Cancer Center to study for which patients with shallow cancer TomoTherapy can provide a therapeutic advantage and how to best deliver the dose. The research agreement consists of two studies, one to study the dose properties to shallow cancer using TomoTherapy and one to compare electron therapy and mixed-beam therapy with TomoTherapy.



*Dr. John Gibbons, forefront, with Dr. Dennis Cheek and Koren Smith, left, discuss the TomoTherapy research project being conducted with phantom devices.*

The treatment of shallow cancer requires that TomoTherapy deliver a significant fraction of its dose to the patient using X-ray beams that actually graze the patient's surface. Therefore, the first objective in this study is to understand the distribution of dose delivered to the patient from a single grazing TomoTherapy Hi-Art beam. This is being studied by LSU graduate student Koren Smith under the supervision of Chief of Clinical Physics and Adjunct Associate Professor John Gibbons. The results of her study will comprise her research thesis, one of the requisites for a MS in Medical Physics and Health Physics. The second objective is to study the total dose distribution that results from many grazing beams used to treat shallow cancer. Medical physicist Dr. Dennis Cheek is collaborating with Chief of Physics and Professor Kenneth Hogstrom for this study. Preliminary data were gathered this past summer by Dr. Cheek and summer undergraduate fellow Ryan Grant from the University of Texas. The results of these two objectives will educate MBPCC and other TomoTherapy users on how to best deliver radiation treatment to shallow cancers. This should translate into improved sparing of healthy tissues for select patients and offer the potential for reduced side effects.

## MBPCC Continues To Build Medical Physics Team Ninth Physicist Added

Former LSU-MBPCC medical physics student Scott Alleman recently joined the staff full-time at Mary Bird Perkins. "We were excited about the possibility of recruiting Scott and had been talking with him since early July. We scheduled an official interview the week Katrina hit," said Dr. John Gibbons, the Center's chief of clinical physics. "He was working at Tulane, but was also very interested in the opportunities available at Mary Bird Perkins." The Center's need for another physicist, coupled with the closures of Tulane University's Health Sciences Center and Charity Hospital, opened the door for Alleman. Alleman has previously worked at Arizona State University Medical Center and Willis-Knighton Cancer Center in Shreveport, LA.

## Patient Satisfaction (Continued from page 1...)

Todd Stevens, president and CEO of Mary Bird Perkins Cancer Center, is proud of the Center's staff. "We have an incredibly caring staff at Mary Bird Perkins and are always focused on the patient having a good experience," said Stevens. "But there is always room for improvement making the questionnaires critical. They let us know how we can rectify problem areas. The staff at Mary Bird Perkins wants to offer the best care and service possible, bar none."



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