

# Beaumont Hospitals — introducing Omnibeam

As published in [X-LOGY Magazine](#), A publication of Automation Alley, Summer '08

Radiation oncologist Dr. Alvaro Martinez was at a Dearborn, MI, hotel headed for a medical symposium when he stumbled on a meeting of automotive engineers. The car experts, who were using sophisticated imaging to detect defects in engine blocks, inspired an ah-ha! moment for Martinez.

Could he borrow an idea from the auto industry to help doctors administer cancer-killing radiation while minimizing exposure to surrounding healthy tissue and organs?

It took more than five years, but it turned out he and his team could. For the first time, they are treating patients with the next generation of radiation therapy that is painless, faster, more accurate and more precise than other treatments.

Beaumont doctors and physicists invented and patented the new treatment, Omnibeam. The \$3.3-million machine is manufactured and marketed around the world by Stockholm-based Elekta as Axesse.

Omnibeam, with its robotic technology, uses highly accurate, real-time CT imaging that automatically adjusts the radiation field during treatment to account for a patient's external movements — and the natural repositioning of internal organs — from day to day or even moment to moment. Omnibeam also uses robotic technology to adjust the treatment table on which a patient lies to provide pinpoint accuracy of treatment. Adjusting the radiation field and treatment table means the radiation treatment is precisely targeted to kill cancer cells, destroying them without harming surrounding healthy tissue or organs. The patient has better cancer control and fewer undesirable side effects as a result.

"You can make the radiation field adjustment manually, but it takes more time," says Martinez, corporate chairman of radiation oncology for Royal Oak, MI-based Beaumont Hospitals. "That means the patient is in the treatment room longer and increases the chances of patient movement and potentially reduces treatment accuracy.

The painless treatment takes about 20 minutes and requires no implants or invasive procedures to prepare for therapy. It can be used to treat cancer of the breast, prostate, lungs, head and neck, as well as other cancers. It is specially designed for the treatment of tumors deep within the body.

Beaumont doctors are researching whether Omnibeam, with its high degree of accuracy, will enable them to cut in half the typical 40-45 treatments administered for prostate cancer by almost doubling the dose per treatment. If successful, this would be a boon for many men, including those who have to take time off from work for their cancer treatments or travel long distances.

"We think Omnibeam is a dramatic new clinical advance in radiation therapy for cancer. The combination of improved imaging coupled with robotic technology is vastly better than other radiation machines for cancer therapy," says Martinez. "Omnibeam is an example of the ingenuity shown by Beaumont doctors when existing treatments are not good enough for their patients."

## **BEAUMONT'S BEST-KEPT SECRET**

Beaumont Hospitals' Commercialization Center offers complete services to help inventors turn their ideas into market-ready medical devices for original equipment manufacturers to acquire or license. The Center benefits from the experience of physicians and clinical staff at Beaumont Hospital in Royal Oak, MI, one of the highest-volume health care facilities in the nation, combined with the simulation capabilities of its Marcia & Eugene Applebaum Surgical Learning Center. Services consist of a turnkey process from invention concept to approval by the Food and Drug Administration, including: intellectual property creation, design and engineering, prototype development, usability testing, safety and efficacy assessment and regulatory approval preparation.