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Results from the largest study of men with [prostate cancer](#) treated with high-dose, intensity modulated radiation therapy (IMRT) show that the majority of patients remain alive with no evidence of disease after an average follow-up period of eight years. The 561 prostate cancer patients treated with IMRT at Memorial Sloan Kettering Cancer Center were classified into prognostic risk groups. After an average of eight years, 89 percent of the men in the favorable risk group were disease-free and none of the men in any group developed secondary cancers as a result of the radiation therapy. This report, published in the October 2006 issue of *The Journal of Urology*, is the first description of long-term outcomes for prostate cancer patients using IMRT.

“Our results suggest that IMRT should be the treatment of choice for delivering high-dose, external beam radiotherapy for patients with localized prostate

cancer,” said Dr. Michael J. Zelefsky, Chief of the Brachytherapy Service at Memorial Sloan Kettering. “We were able to show long-term safety and long-term efficacy in a very diverse group of prostate cancer patients that we followed - many for as long as ten years. Despite the fact that some patients had an aggressive form of their disease with high Gleason scores and PSA (prostate specific antigen) levels, the overwhelming majority of patients had good tumor control with neither recurrence of their original cancer nor development of second cancers, which one might have expected from the high doses of radiation,” he added.

Pre-treatment diagnostic evaluations were performed for all of the patients to better define their clinically localized prostate cancer. They were classified into prognostic risk groups as defined by the National Comprehensive Cancer Network guidelines ([www.nccn.org](http://www.nccn.org)). These are based on clinical characteristics including age, T stage, Gleason score, PSA level, and pre-treatment with neoadjuvant androgen deprivation.

Between April 1996 and January 2000, 561 patients with a median age of 68 (ranging from 46 to 86 years old) were treated with IMRT, an improved form of three-dimensional conformal radiation therapy (3D-CRT), also used in radiotherapy. IMRT uses enhanced planning treatment software that more precisely targets the prostate, allowing the beam of radiation to deliver a high dose (81 Gy) to the tumor target while sparing the adjacent bladder and rectum from exposure to the higher amounts of radiation. Perhaps because of this, the eight-year results show urinary continence was maintained for all patients, and only 1.6 percent of the five hundred sixty-one patients experienced rectal bleeding. The high-dose radiotherapy was curative for the majority of the patients in all three prognostic risk groups, with 89 percent of the favorable, 78 percent of the intermediate, and 67 percent of the unfavorable group alive after an average period of eight years. Of those men who were potent prior to IMRT, erectile dysfunction developed in 49 percent.

“This study confirms that we can improve patients’ quality of life by reducing the side effects of radiotherapy while maintaining disease-free survival,” said Dr. Zelefsky. “However, there is still room for improvement. We are incorporating image-guided approaches that may continue the excellent tumor control but further limit the area we are irradiating and reduce side-effects.”

The study’s co-authors are Heather Chan, Margie Hunt, [Yoshiya Yamada, MD](#), Alison M. Shippy, and Howard Amols, PhD, of Memorial Sloan Kettering.

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