Knowledge-Based Planning Model Aids Clinical Trial Outcomes

SAN DIEGO, CA — The utilization of a knowledge-based planning (KBP) model, developed by researchers at the University of Michigan in collaboration with NRG Oncology, was shown to impact plan quality on the clinical trial NRG Oncology/RTOG 0631. The abstract “Improving Quality and Consistency in Clinical Trials via Knowledge-Based Planning, NRG Oncology RTOG 0631” was presented at the American Society for Radiation Oncology (ASTRO) 59th Annual Meeting September 24-27th in San Diego, California and was the recipient of a “Best of ASTRO” award for 2017.

“We created this model in an effort to increase consistency and standardization of clinical trial radiotherapy plans without the added expense and logistical challenges of central reviews, nor the negative impact on the quality of trial results that emerges from the use of non-protocol compliant plans,” says Kelly Younge, Ph.D, of the Department of Physics at the University of Michigan and the abstract’s lead author. “This review of RTOG 0631 allowed us to determine that the incorporation of KBP models in clinical trials could produce high-quality, protocol-compliant treatment plans that improve the quality of trial results, even in a setting as complex as spine stereotactic body radiation therapy.”

The internally validated KBP model was applied to the external validation cohort, which included 22 cases submitted to NRG Oncology/RTOG 0631. The external and KBP plans were compared via protocol scores, target conformity and gradient index, dose to critical structures, and dose to surrounding normal tissues. The volume of the planning target volume receiving prescription dose increased when using the KBP model, whereas the high-dose spillage to surrounding normal tissues showed no significant differences. The use of the KBP model eliminated dosimetric outliers with large amounts of spillage.

This study was funded by grants from the National Cancer Institute and Varian Medical Systems, Inc.

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Citation:

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NRG Oncology conducts practice-changing, multi-institutional clinical and translational research to improve the lives of patients with cancer. Founded in 2012, NRG Oncology is a Pennsylvania-based nonprofit corporation that integrates the research of the NSABP Foundation, the Radiation Therapy Oncology Group (RTOG), and the Gynecologic Oncology Group (GOG). The research network seeks to carry out clinical trials with emphases on gender-specific malignancies, including gynecologic, breast, and prostate cancers, and on localized or locally advanced cancers of all types. NRG Oncology’s extensive research organization comprises multidisciplinary investigators, including medical oncologists, radiation oncologists, surgeons, physicists, pathologists, and statisticians, and encompasses more than 1,300 research sites located world-wide with predominance in the United States and Canada. NRG Oncology is supported primarily through grants from the National Cancer Institute (NCI) and is one of five research groups in the NCI’s National Clinical Trials Network.