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## **Standardizing Radiation Dose in 4D-CT Scans Can Reduce Lung Injury to Cancer Patients**

Los Angeles – A new method to standardize the reporting of radiation dose volumes in the use of four-dimensional computed tomography (4D-CT) can lead to a more accurate radiation dose to the lungs in lung cancers, thereby lowering the risk of lung injury, according to a study presented at the Plenary I session on October 29, 2007, at the American Society for Therapeutic Radiology and Oncology's 49<sup>th</sup> Annual Meeting in Los Angeles.

“This is the first study to evaluate the degree of differences that 4D-CT has on dose volumes and to propose a method to standardize them for more effective radiation treatment,” said Kara Bucci, M.D., author of the study and a radiation oncologist at the M.D. Anderson Cancer Center in Houston. “We believe standardized reporting can lead to better interpretation of existing data and more accurate reporting of future studies. This will lead to improved risk assessment in planning individualized patient care.”

4D-CT is a series of CT scans that measure how much a tumor moves when a patient breathes and allows radiation oncologists to personalize radiation treatment for this motion. However, radiation doses are measured by the volume of a person's lungs and lung volumes change during each phase of the breathing cycle. (For example, lung size is different when a person inhales, compared to when a person exhales.) Because of this, there is a substantial difference in the reporting of the amount of normal lung tissue that is exposed to radiation. The study sought to improve the accuracy of dose-volume reporting and, thus, lower the risk of lung injury to lung cancer patients.

The retrospective study involved 40 stage III/IV non-small cell lung cancer patients who received a 4D-CT and a fast free-breathing helical CT (FBCT) scan. The study shows large differences in reported dose-volume histogram values when different lung volume definitions were used. It also

found that population-based relationships among different lung volumes can be used to convert these values into a more standardized definition of dose-volume.

**For more information on radiation therapy for Lung Cancer, visit [www.rtanswers.org](http://www.rtanswers.org).**

The abstract, “*Which Lung Volumes to Use for Radiotherapy Planning of Lung Cancer: Inspiration, Expiration, Averaged, or Free-breathing?*,” will be presented in the Plenary I session at 2:00 p.m., Monday, October 29, 2007. To speak to the author of the study, Kara Bucci, M.D., please call Beth Bukata or Nicole Napoli, October 28-31, 2007, in the ASTRO Press Room at the Los Angeles Convention Center at 213-743-6222 or 213-743-6223. You may also e-mail them at [bethb@astro.org](mailto:bethb@astro.org) or [nicolen@astro.org](mailto:nicolen@astro.org).

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