New ASTRO white paper recommends best practices to improve safety and effectiveness of image guided radiation therapy (IGRT)

Fairfax, Va., April 18, 2013 – The American Society for Radiation Oncology (ASTRO) has issued a new white paper, “Assuring Safety and Quality in Image Guided Delivery of Radiation Therapy,” that recommends best practices to improve the safety and effectiveness of image guided radiation therapy (IGRT), according to the manuscript published as an article in press online in Practical Radiation Oncology (PRO), the official clinical practice journal of ASTRO. The executive summary and supplemental material are available online immediately as open-access articles (www.practicalradonc.org) and will be published in a 2013 print edition of PRO.

Commissioned by ASTRO’s Board of Directors as part of ASTRO’s Target Safely campaign, the white paper recommends a set of 10 fundamental elements of IGRT safety in clinical programs and provides an additional list of recommended activities for the broader radiation oncology community to consider. IGRT is the use of dedicated devices for fraction-by-fraction imaging and guidance of radiation treatment delivery that localizes the target and normal structures to ensure precise and accurate placement of the radiation. IGRT-enabled accuracy and precision allows for highly conformal dose distributions, higher dose prescriptions and shorter fractionation schedules for patients. This requires a strong link between IGRT practices and planning target volume (PTV) design of a patient’s treatment protocol, which is central to high quality, safe radiation therapy.

The manuscript recommends the four major categories for consideration in assuring safe, high-quality radiation therapy using IGRT technologies as: 1) commissioning and continuing quality assurance (QA) of the systems; 2) protocols for image acquisition and interpretation; 3) the link
between image guidance practices and PTV margin; and 4) education, training and human resources.

The 10 foundational elements for safe and effective IGRT practices prescribed by the study are: 1) establish a multi-professional team responsible for IGRT activities; 2) establish and monitor a program of daily, monthly and annual QA for all new or existing IGRT sub-systems; 3) provide device- and process-specific training for all staff operating IGRT systems or responsible for IGRT delivery; 4) perform end-to-end testing for all new IGRT procedures and document performance prior to clinical release; 5) establish process-specific documentation and procedures for IGRT; 6) clearly identify who is responsible for approval of IGRT correction decisions and the process whereby the decision is made and documented; 7) establish and document site-specific planning procedures, specifically the procedure for defining PTV margins, and link these planning procedures to IGRT procedures; 8) multi-professional peer review of PTV volumes, and peer-review of gross tumor volume (GTV) / clinical target volume (CTV) by radiation oncologists; 9) verify proper creation and transfer of IGRT reference data (PTV, organs at risk (OARs), digitally reconstructed radiographs (DRRs), etc.) to IGRT system; and 10) establish a reporting mechanism for IGRT-related variances in the radiation treatment process.

“As technologies advance and we are able to provide patients with highly individualized radiation treatment, this white paper provides us with a thorough framework for delivering safe and effective IGRT,” said David A. Jaffray, PhD, of the Radiation Medicine Program at the Princess Margaret Cancer Centre in Toronto. “In addition, it emphasizes transparency between professions and increases the awareness of all parties regarding their responsibility in achieving and maintaining safe IGRT practice.”

The full text document (Supplemental Material) was approved by the ASTRO Board of Directors on June 23, 2012, and has been endorsed by the American Association of Physicists in Medicine (AAPM), American Association of Medical Dosimetrists (AAMD) and the American Society of Radiologic Technologists (ASRT). It has also been reviewed and accepted by the American College of Radiology’s (ACR) Commission on Radiation Oncology. This white paper is related to other published reports in the ASTRO white paper series on patient safety, including those about the peer...
review process, intensity modulated radiation therapy (IMRT) and stereotactic body radiation therapy (SBRT).

The study’s authors are David A. Jaffray, PhD, Katja M. Langen, PhD, Gikas Mageras, PhD, Laura A. Dawson, MD, Di Yan, DSc, Robert Adams, EdD, Arno J. Mundt, MD, FASTRO, and Benedick Frass, PhD. Disclosures are noted in the Executive Summary and in the Supplemental Material.

For the complete text and the supplemental material, contact Michelle Kirkwood, 703-286-1600, press@astro.org. To learn more about PRO, visit www.practicalradonc.org.

ABOUT ASTRO

ASTRO is the premier radiation oncology society in the world, with more than 10,000 members who are physicians, nurses, biologist, physicists, radiation therapists, dosimetrists and other health care professionals that specialize in treating patients with radiation therapies. As the leading organization in radiation oncology, the Society is dedicated to improving patient care through professional education and training, support for clinical practice and health policy standards, advancement of science and research, and advocacy. ASTRO publishes two medical journals, International Journal of Radiation Oncology, Biology, Physics (www.redjournal.org) and Practical Radiation Oncology (www.practicalradonc.org); developed and maintains an extensive patient website, www.rtanswers.org; and created the Radiation Oncology Institute (www.roinstitute.com), a non-profit foundation to support research and education efforts around the world that enhance and confirm the critical role of radiation therapy in improving cancer treatment. To learn more about ASTRO, visit www.astro.org.

###