Data presentations at AAPM 2016 highlight potential of Elekta's high-field MR-linac to enable real-time treatment adaptation

Transformative technology featured in 27 abstracts, reflecting growing interest in MR-linac and robust progress of consortium researchers

WASHINGTON, DC, August 5, 2016 – Elekta (EKTA-B.ST) today announced that its high-field MR-linac was featured in 27 abstracts presented at the 58th American Association of Physicists in Medicine (AAPM) Annual Meeting & Exhibition, July 31 - August 4 in Washington, DC.

Elekta's MR-linac fully integrates three subsystems to achieve unparalleled precision and accuracy in radiotherapy: an advanced linear accelerator, a 1.5 Tesla magnetic resonance imaging (MRI) system and online adaptive workflow software. Combined, these systems allow for simultaneous radiation therapy delivery and high-field MR tumor monitoring, enabling online treatment adaptions in response to changes in the targeted tumor position.

Three abstracts highlight the changing environment during radiotherapy treatment resulting from breathing, digestion and other physiologic activity, and demonstrate how MR-linac can be used to respond to these changes and to ensure accurate dosing of target tissue:

- Abstract SU-D-207A-7: "The effects of inter-cycle respiratory motion variation on dose accumulation in single fraction MR-guided SBRT treatment of renal cell carcinoma"; Bjorn Stemkens, doctoral candidate in the Department of Radiotherapy at the University of Utrecht Medical Center. July 31, 2:05 p.m. - 3:00 p.m. This presentation evaluated three models used to characterize and adapt to the impact of respiratory motion on radiation dosing to the kidney during linac-based RT: static anatomy (STATIC), adjusting for motion based on timing of the respiratory cycle (AVG-RESP) and detection of motion using 3D images (PCA model). Results showing different dose observances among the models found the PCA model more effectively captured inter-cycle random motion. This allowed for mitigation of erroneous dosing that would have occurred with the AVG-RESP model. Such mitigation is essential for delivering the planned RT dose to the tumor while minimizing exposure of healthy tissue.

- Abstract MO-E-BRC-0: "Fast online replanning techniques"; X. Allen Li, PhD, Professor and Chief of Medical Physics at the Medical College of Wisconsin. August 1, 3:25 p.m. – 3:45 p.m. This invited presentation was part of an education session titled "Online adaptive radiotherapy – Considerations for Practical Clinical Implementation." Dr. Li focused on the importance of speed and high-quality imaging in online treatment replanning. High-field MR images, such as those provided by the MR-linac's 1.5T imaging system, are ideal for replanning because they provide excellent soft tissue contrast and/or physiological information, which differentiates the tumor site from healthy tissue. High-field images also eliminate contouring uncertainties from low signal-to-noise ratio that occur with low-field images. Dr. Li shared examples of how online replanning was used to improve coverage and/or sparing using smaller margins in both the prostate and pancreas.

- Abstract TH-CD-202-12: "Online inter-beam replanning based on real-time dose reconstruction"; Cornelis P. Kamerling, post doctoral training fellow in the Division of Radiotherapy and Imaging at the Institute for Cancer Research in London. August 4, 10:00 a.m. – 12:00 p.m. This presentation discussed the development and implementation of an online replanning workflow used to create and deliver conventional

and reduced margin treatment plans for a patient with prostate cancer. Results demonstrated that replanning is technically feasible and has the potential for margin reduction. The data also suggest that replanning can be used to reduce radiation exposure to nearby organs.

“Establishing online treatment replanning is essential to reduce margins and optimize care for cancer patients,” said Dr. Li. “Image speed and quality are critical to effective replanning, and both require the high-field MR imaging that can be achieved with MR-linac. A growing body of evidence demonstrates that MR-linac supports margin reductions in the prostate and pancreas. Additional forthcoming research from the MR-linac consortium will provide further clinical validation, paving the way to integrate this transformative technology into the treatment paradigms for prostate, pancreatic and a variety of other cancers.”

An additional 24 abstracts were presented during the conference, comprising 15 oral presentations and nine poster presentations. Of these, several describe novel tools, devices and algorithms for assessing and adjusting dose delivery for the MR-linac platform. Findings from these studies indicate that a variety of dosimeters function effectively in the presence of a magnetic field, and that appropriate computer algorithms can be used to adapt additional dosimeters for use with MR-linac. The availability of multiple dosimetry approaches is important for ensuring development of the MR-linac technology in a manner that allows optimized and accurate radiotherapy treatment.

“MR-linac has the potential to fundamentally transform radiotherapy by enabling radiation oncologists to see the treatment target in real time, and to rapidly adjust dosing in response to diagnostic quality MR images,” says Kevin Brown, Elekta’s Global Vice President of Scientific Research. “The data presented at this conference support the use of online adaptive workflow to compensate for intra-session motion, increasing the likelihood that radiation dosing is delivered as planned. We believe that MR-linac is a potentially transformative technology and are encouraged by the significant progress of our consortium researchers and widespread interest in the radiation oncology community.”

About MR-linac
Elekta’s MR-linac combines a linear accelerator and an MRI scanner with sophisticated software that allows a physician to see the target tumor in real time. MR-linac is designed to improve targeting of tumor tissue while reducing exposure of normal tissue to radiation beams, which may enable use of higher radiation doses without increased side effects. MR-linac will allow physicians to precisely locate tumors, and to accurately deliver doses of radiation even when tumor tissue is moving during treatment or changes shape, location, or size between treatment sessions.

Elekta’s MR-linac is a work in progress and not available for sale or distribution.

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The above information is such that Elekta AB (publ) shall make public in accordance with the Securities Market Act and/or the Financial Instruments Trading Act. The information was published at 07:30 CET on August 5, 2016.

About Elekta
Elekta is a human care company pioneering significant innovations and clinical solutions for treating cancer and brain disorders. The company develops sophisticated, state-of-the-art tools and treatment planning systems for radiation therapy, radiosurgery and brachytherapy, as well as workflow enhancing software systems across the spectrum of cancer care. Stretching the boundaries of science and technology, providing intelligent and resource-efficient solutions that offer confidence to both health care providers and patients, Elekta aims to improve, prolong and even save patient lives.

Today, Elekta solutions in oncology and neurosurgery are used in over 6,000 hospitals worldwide. Elekta employs around 3,800 employees globally. The corporate headquarters is located in Stockholm, Sweden, and the company is listed on NASDAQ Stockholm. Website: www.elekta.com.