Press release: July 23, 2021

Data from 14 leading cancer centers presented at AAPM highlight global adoption of Elekta Unity MR-Linac

Presentation of 36 abstracts underscore the potential of Elekta Unity to advance precision radiation medicine

ATLANTA – Elekta (EKTA-B.ST) today announced the presentation of 36 abstracts demonstrating the technical capabilities and clinical utility of the Elekta Unity MR-Linac. The research described in the abstracts was conducted at 14 leading cancer centers in North America, Europe, Asia and Australia, reflecting the broad global adoption of the system. The abstracts are being reported at the 63rd Annual Meeting & Exhibition of the American Association of Physicists in Medicine (AAPM), which is being held virtually July 25-29, 2021.

"The Elekta Unity data presented at AAPM clearly validate the benefits of its scan, plan and treat capabilities to enable personalized radiation therapy," said Kevin Brown, Distinguished Scientist at Elekta. "These abstracts also reflect the power of the Elekta MR-Linac Consortium, which played a critical role in developing the technology behind the first high-field MR-Linac, to generate robust data that drives evidence-based clinical decision making. We continue to expand the Consortium to build the collection of data from around the world and make advanced radiation medicine available to all cancer patients, regardless of where they are treated."

Mr. Brown highlighted several abstracts that exemplify the benefits that Elekta Unity can provide to patients and care centers.

Comparison of CT-Guided and MR-Guided Adaptive Radiotherapy for Intramuscular Metastasis
Intramuscular tumors are not visible on CT scans but can be imaged on MR scans. This abstract describes data from a patient with an intramuscular tumor treated with MR-guided radiation therapy (MRgRT) using Elekta Unity. MR images were captured at the start of each treatment session and used to adapt the delivered dose to the size and shape of the tumor at the time of therapy. An algorithm was also developed to simulate the changes in daily doses that would have occurred using CT-guided radiation therapy (CTgRT). Results show that the use of CTgRT to treat intramuscular tumors can result in significant under-dosing and failure to treat the entire tumor. The authors conclude that MRgRT is ideal for treating tumors that are not visible on CT.

Real-Time Motion Tracking Based On Orthogonal Cine MRI for Abdominal Tumors On 1.5T MR-Linac
A key challenge in the use of radiation therapy to treat tumors within the abdomen is the movement of these tumors and nearby organs as the patient breathes. Real- time motion tracking (RMT) has the potential to adjust for breathing-related intra-abdominal motion and enable more precise delivery of radiation to the tumor while sparing surrounding healthy tissue and organs at risk of exposure. This abstract validates a motion tracking algorithm based on MR images captured with Elekta Unity. The algorithm was qualitatively and quantitatively validated on nine sets of abdominal MR images from eight patients with pancreatic or renal tumors and showed robust performance for real-time motion tracking, even in cases with implant-induced image artefacts or a suboptimal imaging plane.

Quantitative Relaxometry for Ultra-Hypofractionated MR-Guided Radiotherapy to the Prostate and DIL: A Feasibility Study
This study shows how T1 and T2 relaxation times (known as quantitative relaxometry) can be reliably acquired on Unity. Data was acquired in eight patients with prostate cancer while being treated with an integrated boost to the dominant intra-prostatic lesion (DIL) using ultra-hypofractionated radiotherapy on Unity. Results suggest that quantitative relaxometry may have clinical utility as an imaging biomarker to assess how tumors are responding to treatment, potentially enabling changes to the treatment plan that could improve patient outcomes.

Mr. Brown also congratulates T. Bruijnen and the team of Prof. Bas Raaymakers at University Medical Center Utrecht on the designation of their abstract, *Parallel Imaging Stream for Multi-Purpose Real-Time Adaptive MRI-Guided Prostate Radiotherapy*, as Best in Physics (Imaging). This abstract describes the UMCU team's successful simultaneous generation of three temporally different 3D image streams. This parallel imaging stream approach is designed to improve motion detection, thus enabling more precise real-time MRgRT of prostate tumors. The team is now focusing on integrating this multiple image stream approach to facilitate start-and-stop real-time adaptive prostate radiation therapy.

To learn more about Elekta Unity, visit elekta.com/Unity.

Elekta Unity has CE mark and 510(k) clearance but is not available in all markets.

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About Elekta
For almost five decades, Elekta has been a leader in precision radiation medicine. Our more than 4,000 employees worldwide are committed to ensuring everyone in the world with cancer has access to – and benefits from – more precise, personalized radiotherapy treatments. Headquartered in Stockholm, Sweden, Elekta is listed on NASDAQ Stockholm Exchange.
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