2021 ESTRO Physics Workshop: Science in Development

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Clinical Translation of CT Innovations in Radiation Oncology: Opportunities, Requirements and Standardisation

Chairs: Patrick Wohlfahrt, Thomas Bortfeld & Vicki Trier Taasti

We organised an interactive gathering of computed tomography (CT) enthusiasts from clinics, research institutes and industrial partners to share their experiences, challenges and desires to facilitate the translation of CT innovations into the clinic. In total, 25 active participants joined our two-part online physics workshop, which was run by the European SocieTy for Radiotherapy and Oncology (ESTRO) and endorsed by the American Association of Physicists in Medicine (AAPM). The two parts took place in June and October. It was complemented by monthly meetings in smaller focus groups in the interim period to foster in-depth discussions and inter-institutional exchange on conventional and spectral CT for dose calculation and organ and tumour segmentation, as well as commissioning and quality assurance. To maximise the benefit that came from the inspiring momentum of our committed working group, we joined forces with the European Particle Therapy Network (EPTN) and the newly appointed AAPM task group 66U1 on dedicated topics related to CT in radiotherapy.

Since in-person meetings could not take place due to the pandemic, we had to rethink our concept and explore new, creative ways to come up with an interactive solution that encouraged active participation and knowledge exchange in a virtual environment. We began the workshop by forming buddy groups of three to four participants in a game-like fashion - we assigned tasks to identify their respective, mutual CT interests (according to motivational statements). This served as an excellent ice-breaker. Tailored keynote presentations, vision talks and expert statements were followed by panel discussions or topical deep-dive sessions. These stimulated brainstorming within the group. The use of pre-structured interactive whiteboards enabled all participants jointly to collect ideas, questions, comments and recommendations simultaneously. Online questionnaires and live polls were used to determine trends in real-time and to kick-off controversial discussions. The change in workshop structure from a one-time event to a self-evolving working group over months framed by two multi-day workshops helped to build close personal connections and has already led to much clinical collaboration among institutions.

We wanted to continue these joint efforts to establish a supportive framework among clinics to ease the widespread clinical translation of CT innovations. Therefore we decided to drive this initiative through formation of a CT working group in combination with a data-sharing hub and webcast series. Our workshop clearly unveiled participants' wishes to establish an open exchange of clinical CT experiences and commissioning data, supplemented with how-to recommendations and guidelines. While we are in the process of finetuning the overall concept of this initiative, we are finalising with the EPTN our work on a detailed how-to recommendation on CT calibration for proton therapy.

Patrick Wohlfahrt[1,2,*], Thomas Bortfeld[1,#] and Vicki Trier Taasti[3,$]

[1] Massachusetts General Hospital and Harvard Medical School, Department of Radiation Oncology, Boston, Massachusetts, USA
[2] Now with Siemens Healthineers, Forchheim, Germany
[3] Maastro Clinic, Maastricht, The Netherlands
[*] mpwohlfahrt@gmail.com
[#] tbortfeld@mgh.harvard.edu
[$] vicki.taasti@maastro.nl