



SCHOOL

Course Report

In-room MRI-guided RT

6 October - 8 November 2022, Amsterdam, The Netherlands

Could you please briefly introduce yourself?

Hello everyone. I am Emilie Alvarez-Andres, and I work as a postdoctoral researcher in Dresden (Germany). My main project consists of deriving biomarkers from magnetic resonance imaging (MRI) to predict tumour response and the radiotoxicity caused to healthy tissues for abdominal tumours treated with an MRI-linear accelerator (linac).

Why did you choose to attend this course? (please mention if it's your ESTRO course)

The in-room MRI-guided radiotherapy course was the first I had attended under the auspices of the European Society for Radiotherapy and Oncology (ESTRO). My main goal in attending was to consolidate my skills in MRI acquisition and processing. Since this technology is complex and rapidly evolving, one could spend a whole life learning about it! It was also a good opportunity to undertake my first study of current clinical practices with an MRI-linac.

What aspects of the course were the most interesting and why?

First, the course followed a combination of various formats: formal lectures, clinical-case examples, student presentations and visits to different MRI-linacs.

Second, the lectures were not vendor-influenced, which enabled attendees to learn about both the Elekta Unity and the ViewRay MRIdian MRI-linac workflows.

Did the course activities improve your knowledge and skills in the relevant subject?

The course activities took place in small interdisciplinary groups, which comprised radiation oncologists, medical physicists, radiation therapy technologists and industrial partners. This system led to productive discussions, which improved my knowledge and skills.

Did the course meet your expectations? If so, how?

I had the opportunity to learn about the MRI-linac theory and clinical practices mainly through online presentations and discussions with organisers/participants, all of whom were experts in their domains. I especially appreciated the availability of the course organisers to answer participants' questions during the on-site course. So, I was entirely satisfied with the course.

List three important 'takeaways' following the course.

- MRI-linac advantages:
 - high soft-tissue contrast;
 - no additional dose due to imaging;
 - intra-fraction changes can be monitored; and
 - there is the possibility to adapt online treatments.

- Factors that influence the eligibility of use of the MRI-linac for treatment:
 - the patient;
 - the imaging; and
 - the treatment required.
- Main current motion monitoring approaches:
 - real-time MRI with 1D navigator echo or 2D cine MRI; or
 - 4D MRI based on 2D/3D imaging, which enables mid-position treatments.

How will what you have learnt be implemented in your daily job/ clinical practice? (if applicable)

During the quantitative MRI course, I realised how different the MRI scanners that are used in diagnostics are from MRI-linacs, which hampers the direct transfer of protocols from one system to another. Thus, I will have to adjust the MRI sequence parameters of my main project to consider these differences (e.g., I need to lower the gradient strength with the MRI-linac).

How would you encourage someone who has never been to an ESTRO course to join this course next year/ in two years?

Attendance of this course presents two main opportunities: learning and meeting. The former mainly refers to all the educational content available online and to fruitful on-site discussions. The latter enables attendees to boost their networks effectively, which could lead to collaborations for new studies or support for existing projects.



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