

# EuroSafe Imaging Stars: Erasmus Medical Center in Rotterdam



*Dr. Marcel van Straten is a medical physicist. He has more than 15 years of experience in the optimisation and dosimetry of x-ray computed tomography.*

EuroSafe Imaging Stars is EuroSafe Imaging's latest initiative to promote quality and safety in medical imaging. By recruiting a network of imaging departments

committed to best practice in radiation protection, the Stars initiative will give radiation protection efforts greater visibility, have a direct impact on clinical practice and enable the European Society of Radiology to collect data for analysis and benchmarking.

One of the EuroSafe Imaging Stars institutions is the department of radiology & nuclear medicine, headed by Professor Gabriel P. Krestin, part of the Erasmus Medical Center in Rotterdam. The EMC is the Netherlands' largest university medical centre, committed to a healthy population and excellence in healthcare through research and education.

Please read below an interview with Dr. Marcel van Straten from the department of radiology & nuclear medicine of the EMC, which is a five-star facility.

**ECR Today: Your radiology department joined the EuroSafe**

**Imaging Stars network. Why did you apply and what are your thoughts on this initiative?**

**Marcel van Straten:** We applied for the Imaging Stars network because it allows us to share our experience in medical radiation protection with others and to share it with our patients. This initiative reflects our own efforts on this topic within our department.

**ECRT: One important contribution EuroSafe Imaging Stars are expected to make is to participate in the data collection initiatives through the 'Is your Imaging EuroSafe?' surveys on CT dose. What is your opinion on these surveys and how useful do you think the EuroSafe Imaging survey findings will be for your daily clinical activity?**

**MvS:** Like all surveys, these surveys try to grasp the complex daily practice in a few simple questions. Filling in these surveys forces you

to at least have a close look at your routine protocols and rethink the rationale behind them.

**ECRT: What are your suggestions for improving the EuroSafe Imaging Stars initiative?**

**MvS:** The self-evaluation comprises 26 criteria, and we would like to have more background information on the topics mentioned in this self-evaluation.

**ECRT: Which future cooperation and activities within the network of Stars would you like to see?**

**MvS:** It would be nice to see how other departments throughout Europe deal with the implementation of the new Basic Safety Standards Directive, which has to be transposed by February 2018.

**ECRT: Would you recommend other facilities to become EuroSafe Imaging Stars? If so, what arguments would you use to convince them?**

**MvS:** Yes, we would absolutely recommend this: Don't reinvent the wheel! Use best practice instead!



BY BOEL HANSSON

## Short-term effects during examinations in an actively shielded 7T MR



*Information and support is provided before entering the 7T magnet.*

The number of magnetic resonance (MR) examinations in clinical routine and research are increasing rapidly along with the range of indications and body parts to be examined. Technical advances have allowed an increase in MR field strengths to ultra-high fields (UHF; above 4 Tesla), homogenous enough to create images of very high quality, and opening up new insights into disease pathophysiology. Increasing field strength, new technical advances, such as actively shielded UHF scanners, and the urge to move to diagnostic clinical scanning at UHF, justify taking another look at nursing care factors related to possible short-term effects experienced during MR examinations.

The purposes of our study are to collect information on frequency and quality of short-term effects (reported by 124 research persons after examinations (n=154) per-

formed during a 14-month period in an actively shielded UHF 7T MR), to extract knowledge from the data that allows us to design patient-oriented and personalised care models and to facilitate future examinations that are both as comfortable as possible and of the highest diagnostic quality.

Special focus is set on the occurrence and strength of short-term effects, their dependence on spatial position and motion in the scanner in relation to isocenter, and the comparison to published data from passively shielded magnets. Research subjects undergoing 7T MR examinations answered a web-based questionnaire on occurrence (n) and strength (VAS, visual-analogue scale) of inconsistent movement, dizziness, nausea, headache, metallic taste, twitches and light flashes, and regarding temperature, noise, communication system,



*After the examination the 7T experience is thoroughly recorded in a web-based questionnaire.*

information status, motion sickness and willingness to repeat a scan. Scanner output on predicted peripheral nerve stimulation (PNS) values was recorded in a subcohort.

The short-term effects reported were dizziness (84% of examinations), inconsistent movement (70%), nausea (53%), headache (53%) and metallic taste (43%). Although short-term effects are common, median VAS values for strength are in general very low: 22 for dizziness while entering the scanner, fewer than 10 for dizziness and inconsistent movement at all other spatial locations and none for nausea, headache and metallic taste. As expected, a scan position with the head first (used for examinations of the brain for example) showed higher VAS values for inconsistent movement ( $p < 0.001$ ) and dizziness ( $p < 0.002$ ) compared to feet first, but no significant differences for nau-

sea, headache and metallic taste. Twitches, an expression of PNS, were reported in 67% of examinations, occurring primarily in torso, hands and arms, and tended to increase with higher predicted PNS values. Furthermore, 23% of the research subjects experienced light flashes, scanner noise levels were well tolerated and the communication system was well perceived.

Willingness to undergo a future 7T MR was high both as research subject and patient (90%, 96%).

Actively shielded 7T MR examinations are well tolerated although short-term effects such as inconsistent movement, dizziness and twitches are more commonly reported compared to literature on passively shielded UHF systems. Healthcare strategies assuring patient compliance with UHF MR could preferably focus on increasing acceptance of short-term effects by means of cognitive and behavioural methods to cope with short-term effects combined with practical measures facilitating an examination for patients – such as increased comfort, balanced information and instructions, reassurance during examinations and empathic care.

*Boel Hansson is a 7T research radiographer at the department of diagnostic radiology, Skåne University Hospital in Lund, Sweden.*

### Scientific Session

**Wednesday, March 1, 14:00-15:30, Room K  
SS 314 MR imaging**

**Moderators:** L. Natale; Rome/IT  
K. Taylor; Cambridge/UK

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