

BY GUY FRIJA, CHAIR OF THE EUROS SAFE IMAGING STEERING COMMITTEE

ESR's EuroSafe Imaging campaign celebrates five years of medical radiation protection



Today at ECR 2019, the European Society of Radiology's (ESR) EuroSafe Imaging campaign is celebrating its fifth anniversary. Launched at ECR 2014, the ESR's EuroSafe Imaging campaign has attracted more than 51,500 'Friends' supporting its activities, including dozens of institutional supporters around the world.

Below is a rundown of the last five years' highlights.

The first **EuroSafe Imaging Call for Action** was published in 2014. It was updated in 2018, becoming a 13-point action plan for achieving EuroSafe Imaging's objectives of promoting appropriateness in radiological imaging, maintaining radiation doses within diagnostic reference levels, promoting the use of up-to-date equipment, empowering patients, joining forces with various stakeholders, and contributing to a global safety culture in medical imaging.

The **EuroSafe Imaging Stars** initiative was launched in 2016 with the goal of establishing a worldwide network of imaging departments committed to best practice in radiation protection. To participate in this initiative, imaging facilities have to perform a simple self-assessment according to a list of 21 criteria on the topics optimisation, justification, quality and safety, education, research, and regulatory compliance. After successful evaluation, applicant facilities are awarded a number of stars from one to five, depending on the criteria fulfilled. Over 100 facilities have joined the network of EuroSafe Imaging Stars so far. Efforts are underway to expand the network of Stars across other continents. In particular, a collaboration with the AfroSafe campaign has been started to help develop the concept and facilitate dissemination in Africa.

The past five years also saw the establishment of different multidisciplinary **EuroSafe Imaging Working Groups** focusing on appropriate image quality, CT dose repositories, clinical diagnostic reference levels, paediatric imaging, and the dissemination and promotion of the ESR iGuide. A new working group on dosimetry for imaging in clinical practice will be officially launched at ECR 2019.

EuroSafe Imaging has developed different **education and training** initiatives. In 2015, the **'Ask EuroSafe Imaging'** initiative was launched: three working groups, focusing on CT, paediatric imaging and interventional radiology, each composed of one expert in radiology, medical physics and radiography, regularly publish short educational material called 'Tips and Tricks' on the EuroSafe Imaging website. These are aimed at providing professionals, patients, and carers with concise educational material on a specific issue related to CT, paediatric imaging and interventional radiology. So far, almost 50 Tips & Tricks editions have been produced. All material is freely accessible at www.eurosafeimaging.org and is also published on the ESR's e-learning platform, Education on Demand.

EuroSafe Imaging also prepared the checklist 'Managing a Safe CT Service', which is available in English, Portuguese and Spanish. The initiative supports the development and dissemination of the ESR eGuide, which is a new ESR e-learning project utilising the ESR iGuide decision support portal for training purposes.

EuroSafe Imaging is very pleased to collaborate closely on education and training in medical radiation protection with the IAEA Radiation Protection of Patients Unit. In this regard, free **webinars** have been organised jointly since 2017, e.g. on the topics Clinical Decision Support, Tips & Tricks in CT, DRLs, Clinical Hybrid Imaging and Justification and Guidelines. Recordings of the webinars are freely available at both the EuroSafe Imaging and IAEA websites.

Currently, EuroSafe Imaging is developing an on-line course focusing on radiation protection in medical imaging.

EuroSafe Imaging ensures a **multi-disciplinary approach** to medical radiation protection and, in accordance with the EuroSafe Imaging Call for Action's latest key objective, Action 13, EuroSafe Imaging engages with stakeholders and collaborates



Prof. Guy Frija with ISRQSA member organisations and others at the IAEA International Conference on Radiation Protection in Medicine 2017.

with related initiatives and regulatory authorities in Europe and beyond to contribute to a global safety culture in medical imaging. Therefore, all EuroSafe Imaging activities are directed by a Steering Committee composed by representatives of the ESR, chairs of the Working Groups, and nominees of the European Federation of Radiographer Societies (EFRS), the European Federation of Organisations for Medical Physics (EFOMP), the Cardiovascular and Interventional Radiological Society of Europe (CIRSE), and the European Society of Paediatric Radiology (ESPR). Additionally, the ESR's Patient Advisory Group and the European Coordination Committee of the Radiological Electromedical and Healthcare IT Industry (COCIR) also serve on the Steering Committee. The European Commission (EC) and the International Commission on Radiological Protection (ICRP) are invited as observers.

EuroSafe Imaging promotes medical radiation protection at over 50 meetings and conferences around the world annually to raise awareness about patient safety topics and support the development of new regional campaigns. EuroSafe Imaging is proud to be a role model for other safe imaging campaigns worldwide. They are coordinated by the **International Society of Radiology Quality & Safety Alliance (ISRQSA)** under

the co-chairmanship of the EuroSafe Imaging chair. Current members of ISRQSA are: AFROSAFE (E-Afrosafe and F-Afrosafe), ArabSafe, Canada Safe Imaging, EuroSafe Imaging, Image Gently, Image Wisely, Japan Safe Imaging, and LatinSafe.

To celebrate its fifth anniversary, EuroSafe Imaging has many activities in store for ECR 2019. EuroSafe Imaging will again have a dedicated **EuroSafe Imaging Lounge** on the 1st floor in Foyer N, which will feature a café, a photo booth and a stand providing information on patient safety topics. Moreover, seven Scientific Sessions, eight Coffee & Talk Sessions and three Voice of EPOS poster presentation sessions are organised. Furthermore, an electronic poster exhibition with over 120 submissions from experts around the world will be displayed.

For further information on the EuroSafe Imaging campaign **visit the EuroSafe Imaging Lounge and take your souvenir photo**, or go to www.eurosafeimaging.org.

Guy Frija is chair of the EuroSafe Imaging Steering Committee. He is Professor Emeritus at Université Paris Descartes (FR), Professor at McMaster University (CA), and radiologist consultant at the Paris Georges Pompidou European Hospital (FR).

>51,500 friends	Role model for 5 'safe' campaigns	400 posters	41 ECR sessions	46 Tips & Tricks with e-learning content
6 EC-funded projects on quality/safety	On tour for world-wide invitations, >150 events	> 100 Star institutions	Hand in hand with other disciplines: physicians, radiographers, industry, etc.	Consulted and valued by int. organisations & regulators - WHO, IAEA, EC, HERCA, ICRP, etc.
Profound collaboration with patients	Pioneer in RP research - EURAMED, MEDIRAD, etc.	High media impact & visibility, >120 newsletters, articles etc.	Marketing for ESR's projects - CDS, DIAM, clinical audit	Expert working groups on hot topics in RP

EuroSafe Imaging's achievements

Be a Star for your Patients

Join the EuroSafe Imaging Stars network of radiology departments - be committed to best practice in radiation protection!

Find out if your department has Star potential and apply online at www.eurosafeimaging.org

EuroSafe Imaging Lounge
1st floor - Foyer N

STAR

BY ANNE CRIJNS

Cardiovascular effects after radiotherapy for breast cancer: the European MEDIRAD Project

Identification of imaging-derived cardiovascular effects after breast cancer radiotherapy: towards preventive strategies for radiation-induced major cardiac events

MEDIRAD

Radiation-induced major cardiac events (MCEs) are a growing problem for breast cancer patients, affecting quality of life and increasing morbidity and mortality. It is crucial to unravel the relationship between radiation dose to cardiac substructures and MCEs and their early subclinical precursor cardiovascular effects to develop preventive strategies. Today's EuroSafe Imaging session will focus on cardiovascular effects after radiotherapy for breast cancer, which are being studied as part of the European MEDIRAD Project (www.medirad-project.eu).

The MEDIRAD project, launched in June 2017, is the first EURATOM project dedicated to researching the implications of medical low dose radiation. Thirty-three partner organisations from 14 countries across Europe are participating in this ambitious four-year project, which was awarded €10 million under the EURATOM research and training programme of Horizon 2020. Prof. Elisabeth Cardis (ISGlobal, Spain) is the scientific coordinator of MEDIRAD and Prof. Guy Frija (UPDescartes, France) is responsible for the clinical management. The European Institute for Biomedical Imaging Research (EIBIR, Austria) is in charge of overall project management, as well as communication and dissemination activities.

The consortium brings together a wide range of expertise, including research groups that focus on radiology, nuclear medicine, radiotherapy, dosimetry, epidemiology, biology, bioinformatics, modelling, radiation protection, and public health.

MEDIRAD has three major operational objectives:

- 1) improving organ dose estimation and registration;
- 2) evaluating and understanding the mechanisms of the effects of medical radiation exposure, focusing on two outcomes of public health relevance (cardiovascular effects after radiotherapy for

breast cancer and cancer risk following CT scanning of children and adolescents); and,

3) developing science-based recommendations for the effective protection of patients, workers, and the general public.

Development of prediction models of early and late cardiovascular effects after radiotherapy for breast cancer take centre stage in this session about the MEDIRAD project. These prediction models will be used to describe the relationships between dose to cardiac substructures and cardiovascular effects and to select patients already treated with radiotherapy who have a high risk of future treatment-related MCEs for secondary preventive strategies. How these models can be used to optimise radiation dose distributions as a primary preventive strategy shall be explained in this session.

In addition, the large retrospective multicentre study on radiation related BReast cancer Acute Coronary Events (BRACE) will be presented in this session. At this moment, great efforts are being put into collecting all patient, clinical, treatment, follow up, and cardiac dose-distribution data from 7000 female breast cancer patients to develop validated prediction models for MCEs. Based on preliminary data, it will be shown that dose-volume parameters of cardiac substructures, like the left ventricle or left anterior descending coronary artery, may be more predictive of MCEs than mean dose to the heart.

In parallel with the BRACE study, the session will present the on-going unique prospective multicentre EARLY-HEART study. This aims to identify imaging-derived early subclinical cardiovascular effects in 250 breast cancer patients after radiotherapy. Echocardiography, cardiac MRI and CT are performed before radiotherapy and 6 and 24 months after radiotherapy. Currently, imaging data are being collected at the 6-month follow-up.

The session will conclude with an in-depth presentation of new cardiac MRI and CT techniques for identifying early signs of radiotherapy-related cardiovascular effects.

It is envisioned that, with the BRACE and EARLY-HEART studies,

it will be possible to identify breast cancer patients at high risk of developing cardiovascular effects after radiotherapy. In the future, this information will help in the development of individualised strategies of primary and secondary preventive measures.

The MEDIRAD project has received funding from the Euratom research and training programme 2014–2018 under grant agreement No 755523.

Dr. Anne Crijns is a radiation-oncologist with a specialty in the areas of breast cancer and haematologic cancer at the Department of Radiation-Oncology of the University Medical Centre Groningen (UMCG), the Netherlands. She combines her clinical work with research on radiation-induced cardiac toxicity in breast cancer patients. She is project coordinator of the European multicentre MEDIRAD-BRACE and MEDIRAD-EARLY HEART studies at the UMCG.

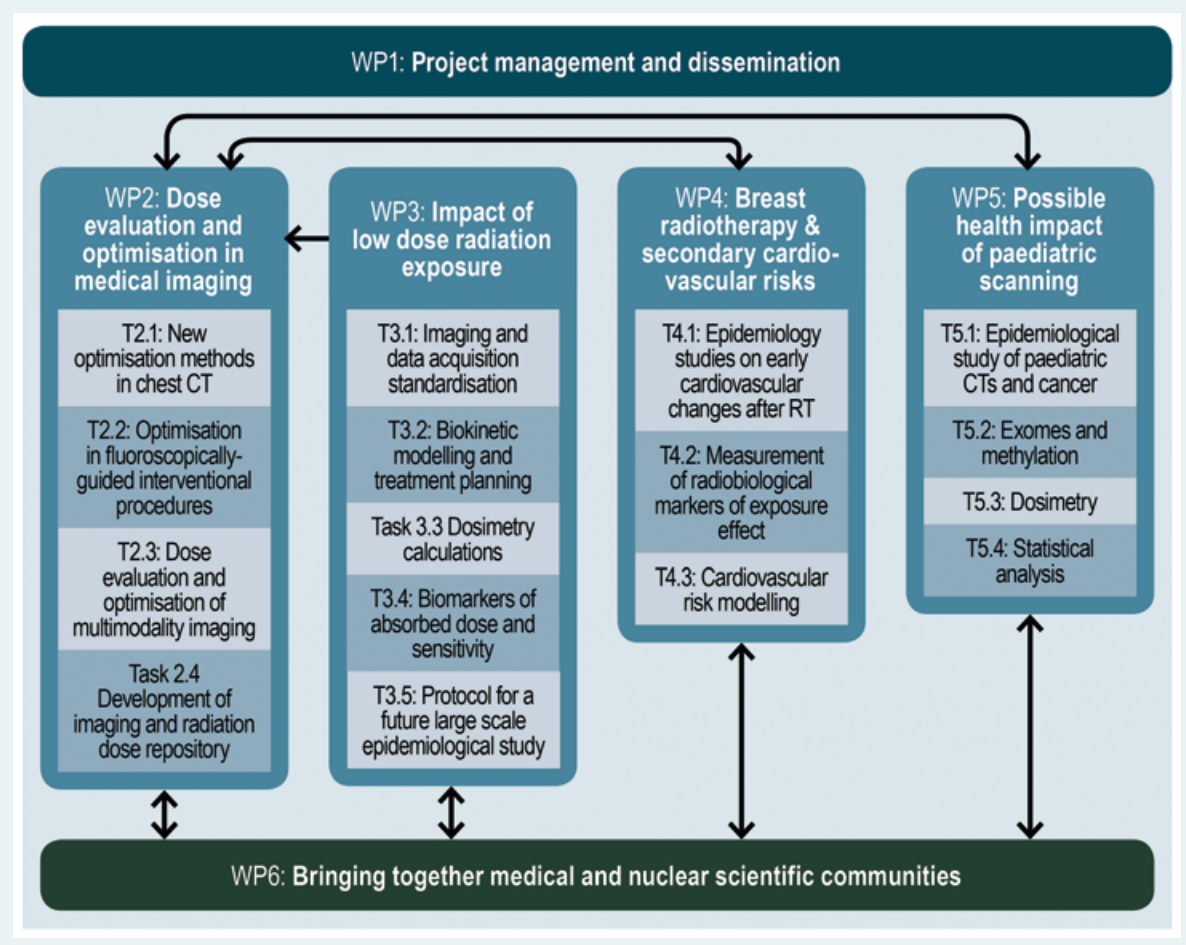
EuroSafe Imaging Session

Wednesday, February 27, 08:30–10:00, Room N

EU 1 Cardiovascular effects after radiotherapy for breast cancer: the European MEDIRAD Project

- » Chairpersons' introduction
A. Crijns; Groningen/NL
G. Frija; Paris/FR
- » Overview of dose-effect relationships and their use in strategies for prevention of cardiovascular effects after radiotherapy for breast cancer
A. Crijns; Groningen/NL
- » Discussion
- » Optimisation of multivariable prediction models for major cardiac events after radiotherapy for breast cancer
D.S. Spoor; Groningen/NL
- » Discussion
- » The MEDIRAD Early-Heart study
S. Jacob; Fontenay aux Roses/FR
- » Discussion
- » Imaging biomarkers of cardiovascular effects of incidental cardiac radiation
E. Mousseaux; Paris/FR
- » Discussion

This session is part of the EuroSafe Imaging campaign.



MEDIRAD work plan

Become a Friend of EuroSafe Imaging

Show your support for radiation protection and safety in medical imaging by joining our more than 51,500 Friends of EuroSafe Imaging now.

EuroSafe Imaging Lounge
1st floor - Foyer N
www.eurosafeimaging.org

