

# MEDIRAD

## **Implications of Medical Low Dose Radiation Exposure**

A European, multi-disciplinary project to enhance  
the scientific bases and practice of radiation  
protection in the medical field



## AMBITION

MEDIRAD is a multi-disciplinary, cross-cutting project that goes significantly beyond the state-of-the-art to enhance the scientific bases and clinical practice of radiation protection in the medical field. MEDIRAD thereby addresses the need to better understand and evaluate the health effects of low-dose ionising radiation exposure from diagnostic and therapeutic imaging and from off-target effects in radiotherapy.

The MEDIRAD key research objectives are summarised in the three pillars below:

### Pillar 1

Development of innovative tools to increase the efficiency of future radiation protection research activities and support good clinical practice

### Pillar 2

Improvement of the understanding of low-dose ionising radiation risks associated with major medical radiation procedures

### Pillar 3

Development of recommendations based on research results and establishment of information exchange infrastructures to facilitate consensus

## To fulfil these objectives, MEDIRAD relies on:

A **multi-disciplinary consortium** involving research groups focusing on radiology, nuclear medicine, radiotherapy, dosimetry, epidemiology, radiation protection and public health;

A **Scientific Advisory Board** with world-renowned experts in the fields of imaging, radiobiology, dosimetry, medical physics, radiation protection, epidemiology and ethics;

A **Stakeholder Board** with representatives from the medical associations **EANM**, **EFOMP**, **EFRS**, **ESR** and **ESTRO**, as well as the **MELODI**, **EURADOS** and **EURAMED** platforms on radiation protection research, the **WHO** and the **EPF**;

A wider **Stakeholder Forum**, including health professionals, patients, nuclear scientists, policy-makers, competent authorities and representatives from international organisations;

## EXPECTED IMPACTS

- » MEDIRAD will achieve significant progress in the interaction between the radiation protection and medical scientific communities at EU level, leading to cross-fertilisation of research efforts and the provision of more consolidated and robust science-based policy recommendations to decision makers in the respective sectors.
- » MEDIRAD will allow a better evaluation of the risks from radiation and better quantification of the necessary precautionary measures, leading to a more robust system of protection of patients, workers and the general public, whilst not unduly penalising activities through unnecessary and costly measures.
- » MEDIRAD will endeavor to positively modify the public perception of risks associated with ionising radiation thanks to the results of such combined nuclear and medical research.
- » MEDIRAD's long-term impacts are additional and improved practical measures for the effective protection of people in the medical and nuclear sectors.



## WORK PLAN

The MEDIRAD Project consists of six interdependent and complimentary work packages (WP), each of which contains tasks and deliverables vital to the project's success.

**WP1:** Project management and dissemination

Scientific and clinical coordination, ethics management, knowledge management and exploitation, internal and external communication

**WP2:** Dose evaluation and optimisation in medical imaging

Optimisation of chest CT, interventional procedures and multimodality imaging, and development of imaging and radiation dose biobank

**WP3:** Impact of low dose radiation exposure

Standardisation, biokinetic modelling and treatment planning, dosimetry, biomarkers of absorbed doses, protocol for epidemiological study

**WP4:** Possible health impact of paediatric scanning

Epidemiological study on cardiovascular changes after radiotherapy, measuring markers of exposure and risk modelling

**WP5:** Breast radiotherapy and secondary cardiovascular risk

Epidemiological study of paediatric CTs and cancer, including (epi)genetic biomarkers of sensitivity, dosimetry and statistical analyses

**WP6:** Bringing together medical & nuclear scientific communities

Formulation of science-based policy recommendations, consultation of stakeholders, organisation of dissemination seminars

## CONSORTIUM

The multi-disciplinary consortium combines the expertise of 33 partners from 14 European countries. It includes major universities and research institutes as well as clinical partners.

European Institute for Biomedical Imaging Research	AT
Belgian Nuclear Research Centre	BE
Ghent University	BE
University of Geneva	CH
Otto von Guericke University Magdeburg	DE
University Medical Center of the Johannes Gutenberg University Mainz	DE
Helmholtz Zentrum München German Research Center for Environmental Health	DE
University Hospital of Würzburg	DE
Philipps University of Marburg	DE
University Hospital rechts der Isar of the Technical University Munich	DE
Barcelona Institute for Global Health	ES
Polytechnic University of Catalonia	ES
Autonomous University of Barcelona	ES
Catalan Institute of Oncology	ES
Paris Descartes University	FR
Institute for Radiological Protection and Nuclear Safety	FR
B-COM	FR
French National Institute of Health and Medical Research	FR
Claudius Regaud Institute	FR
University of Crete	GR
University College Dublin, National University of Ireland	IE
Sapienza University of Rome	IT
Italian National Institute of Health	IT
University Medical Center Groningen	NL
VU University Medical Center	NL
Netherlands Cancer Institute	NL
Nofer Institute of Occupational Medicine	PL
Polytechnic Institute of Coimbra	PT
Cardiovascular Centre of the University of Lisbon	PT
Region Västra Götaland	SE
The Royal Marsden National Health Service Trust	UK
University of Bristol	UK
University of Newcastle upon Tyne	UK

## **PROJECT FACTS**

**Coordinator:** European Institute for Biomedical Imaging Research (EIBIR), AT

**Duration:** 48 months

**Runtime:** 1 June 2017 – 31 May 2021

**Total EU Funding:** €9,995,145.75

## **PROJECT COORDINATOR**

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