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

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.

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, and the **EPF**;

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

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: Breast radiotherapy and secondary cardiovascular risks	Epidemiological study on cardiovascular changes after radiotherapy, measuring markers of exposure and risk modelling
WP5: Possible health impact of paediatric scanning	Epidemiological study of paediatric CTs and cancer, including (epi)genetic biomarkers of possible 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
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