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European Medical Application and Radiation Protection Concept

ETRAP 2023

HOW CAN WE ATTRACT AND PRESERVE A COMPETENT WORKFORCE IN MEDICAL RADIATION PROTECTION?

J. DAMILAKIS, G. PAULO

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 899995

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ROCC-N-ROLL OBJECTIVES

The EURAMED rocc-n-roll project aims to propose an integrated and coordinated European approach to research & innovation in medical applications of ionising radiation and related radiation protection based on stakeholder consensus and existing activities in the field (incl. existing SRAs of radiation protection platforms, EC health and digitisation programmes, EURATOM-funded projects, SAMIRA initiative). The EURAMED rock-n-roll will produce an SRA for medical applications of ionising radiation and related radiation protection and a corresponding roadmap.

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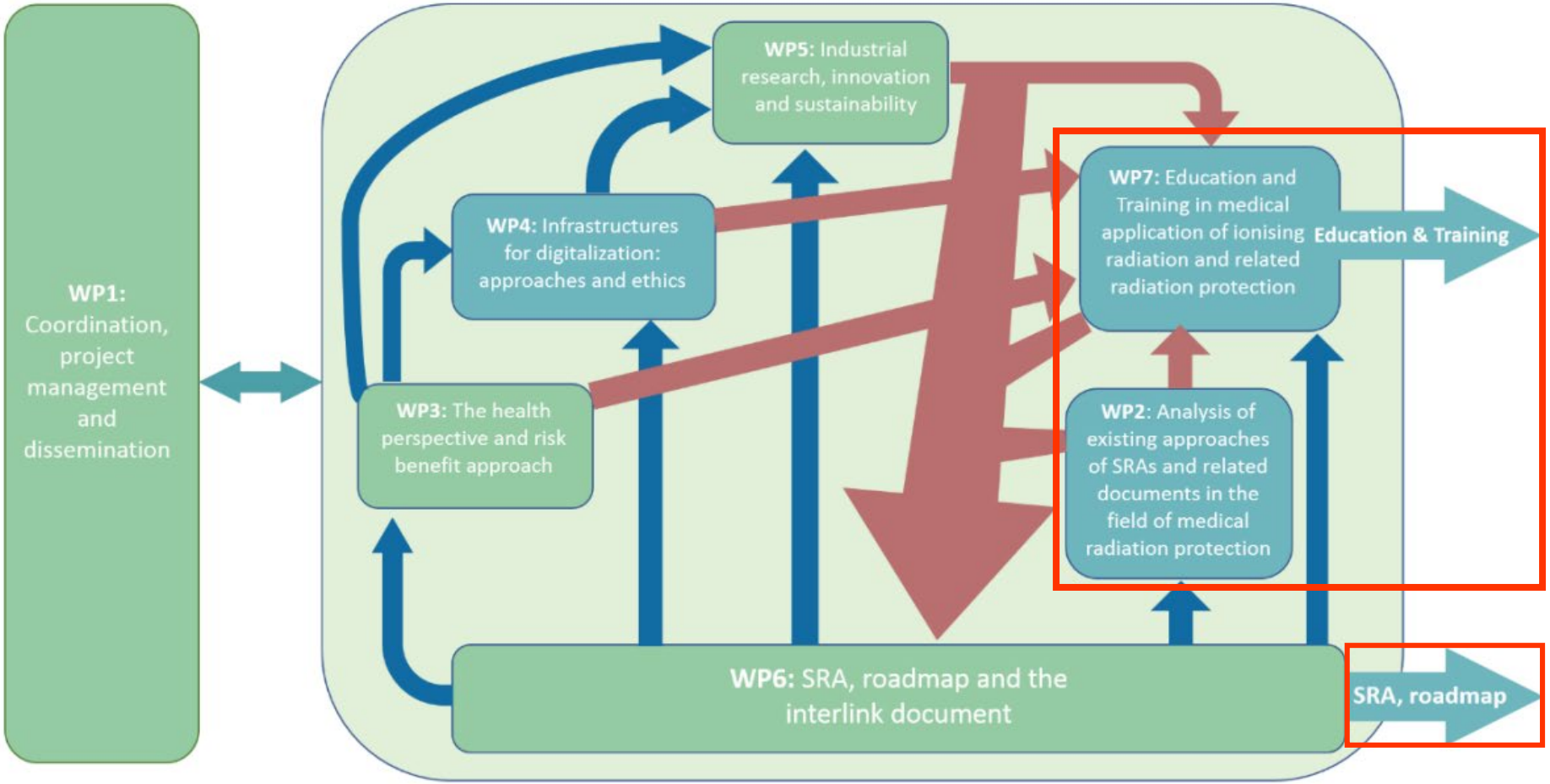

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Rainford et al. Insights into Imaging (2022) 13:142
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Insights into Imaging

ORIGINAL ARTICLE Open Access

Education and training in radiation protection in Europe: an analysis from the EURAMED rocc-n-roll project

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Threats evidenced due to a lack of

(1) Awareness of E&T in RP and Radiation Application in Medicine (RAM) for health professionals. The importance of E&T training remains present inside a small community or group only

(2) Time/space or interest by higher education institutions to include E&T in RP and RAM in the curricula of health professions, especially for clinical disciplines

(3) Translation of real application of E&T in RP and RAM in the clinical setting and inclusion in life-long learning (LLL) for all health professionals involved in the application of ionising radiation. National Health Authorities are only focused on the inclusion of the requirement of E&T in RP and RAM and new technological developments in national legislation

(4) Importance placed upon the need for E&T in RP by clinical researchers who include medical imaging procedures in their studies

(5) Awareness by hospital managers of E&T in RP and RAM importance

(6) Holistic approach to radiation protection education. Considering that all EU projects until now were focused on/oriented to E&T of Radiation Protection Officer (RPO), Radiation Protection Expert (RPE) and Medical Physics Expert (MPE), the health professionals' community has the impression that E&T in RP and RAM is only relevant for those group

(7) Cohesion between the health and research and the EURATOM communities (EURATOM with low engagement with clinical areas and the health community with low engagement with the EURATOM field)

(8) Incentives regarding role development in RP and RAM, leading to health professionals not interested in these topics and in understanding new applications and developments in the field

(9) Sufficient importance to E&T in RP and RAM and new technological achievements by national scientific and professional societies which do not attach appropriate importance and or do not include them in consistently.

(10) Quality control of published document as outputs of previous EU-funded projects with social media and self-learning tools play an increasing role among health professionals. The low impact of E&T in RP and RAM documents increases the potential for sub-optimal information to be challenged

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Santos et al. Insights into Imaging (2023) 14:55
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Insights into Imaging
ESR EUROPEAN SOCIETY OF RADIOLOGY

ORIGINAL ARTICLE Open Access

Education and training in radiation protection in Europe: results from the EURAMED Rocc-n-Roll project survey

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Table 4 RP problems rated as "no problem" (green), "minor problem" (yellow), "moderate problem" (orange) and "serious problem" (red)

Statements (S)		No problem	Minor problem	Moderate problem	Serious problem	Total
1. Lack of mandatory continuing E&T in RP for health professionals	*n*	100	105	167	166	538
	%	18.6	19.5	31.0	30.9	100.0
2. Lack of practical aspects in current E&T in RP for health professionals	*n*	68	107	190	171	536
	%	12.7	20.0	35.4	31.9	100.0
3. Lack of professionals with sufficient E&T in RP	*n*	85	117	143	190	535
	%	15.9	21.9	26.7	35.5	100.0
4. Low research activity in the RP medical area	*n*	46	129	200	139	514
	%	8.9	25.1	38.9	27.0	100.0
5. Incorrect use of personal RP devices (e.g. lead aprons; lead glasses; table or suspending shield)	*n*	76	167	129	155	527
	%	14.4	31.7	24.5	29.4	100.0
6. Lack of regulatory requirements for RP E&T programs for medical staff.	*n*	132	135	115	147	529
	%	25.0	25.5	21.7	27.8	100.0
7. Insufficient inclusion and development of RP topics in undergraduate degree programmes for health professionals	*n*	88	94	181	157	520
	%	16.9	18.1	34.8	30.2	100.0
8. Lack of RP recommendations and guidelines	*n*	171	117	131	122	541
	%	31.6	21.6	24.2	22.6	100.0
9. Lack of mechanisms to prevent incidents and accidents	*n*	118	146	112	156	532
	%	22.2	27.4	21.1	29.3	100.0
10. Insufficient implementation of optimisation of procedures	*n*	79	129	170	156	534
	%	14.8	24.2	31.8	29.2	100.0
11. Difficulties and/or limitations with regard to dose audit	*n*	109	119	143	147	518
	%	21.0	23.0	27.6	28.4	100.0
12. Difficulties and/or limitations with regard to quality control of medical imaging & radiotherapy equipment	*n*	157	136	106	122	521
	%	30.1	26.1	20.3	23.4	100.0
13. Improper use of technical equipment features that allow lower dose to patients and staff	*n*	108	143	129	142	522
	%	20.7	27.4	24.7	27.2	100.0
14. Lack of adequate imaging protocols for paediatric patients	*n*	99	104	107	157	467
	%	21.2	22.3	22.9	33.6	100.0
15. Lack of adequate treatment protocols for paediatric patients	*n*	94	93	82	141	410
	%	22.9	22.7	20.0	34.4	100.0
16. Lack of availability of dose reduction technologies in equipment	*n*	128	154	122	114	518
	%	24.7	29.7	23.6	22.0	100.0
17. Lack of compliance with up-to-date Diagnostic Reference Levels	*n*	129	113	142	114	498
	%	25.9	22.7	28.5	22.9	100.0

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ROCC-N-ROLL roadmap Breakthrough 8 Career attractiveness and radioprotection for workers

J. Damilakis, G. Paulo

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ATTRACTING UNIVERSITY STUDENTS CAN BE A CHALLENGE

The various applications of ionising radiation in medicine as well as medical radiation protection are essential components of modern healthcare. This field encompasses a range of professions, including radiologists, radiographers, medical physicists, nuclear medicine professionals and radiation oncologists. Despite the importance of these roles, attracting university students to pursue a career in medical application of ionising radiation or radiation protection can be a challenge.

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LIFELONG LEARNING

Lifelong learning is essential not only to ensure continued improvements in medical applications of ionising radiation and the corresponding radiation protection, but also to engage and motivate health professionals in this scientific field by developing a multidisciplinary and collaborative approach, towards the implementation of better radiation-based healthcare & of a radiation protection culture. Considering that these activities have the objective to improve outcomes of patients and safety of patients and staff, they will act as a trigger to make these professions more attractive, which might even include incentives in case there persists a lack of educated staff.

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E&T FOR RESEARCHERS

There is a crucial need to improve the field of knowledge of radiation-based medicine and radiation protection, through valuable, well-founded and structured research. To achieve this desideratum it's of utmost importance to develop dedicated education and training programs for researchers (outside the clinical departments & including preclinical research) specifically for those that include medical imaging procedures in their studies and are not aware of the importance and need of education and training in radiation protection.

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ACTIONS

The following priorities within this breakthrough are proposed:

- increasing the attractiveness of a career in medical applications of ionising radiation
- Increase awareness of radiation-based medicine and medical radiation protection
- Highlight the diverse range of career paths
- Emphasise the rewarding aspects of a career in the field
- Provide opportunities for students to gain practical experience in the field

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ACTION 1

Career attractiveness in medical applications of ionising radiation and corresponding radiation protection

As a first measure, it is important to increase the awareness for the field of radiation-based medicine and medical radiation protection:

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ACTION 1

• amongst university students - This can be achieved through education and outreach efforts. Higher education institutions are autonomous and develop new courses in response to a perceived need, taking into consideration various parameters including maintenance of the range of expertise essential in everyday clinical practice and research as well as staff expertise. Universities need to offer courses that provide an introduction to radiation and its uses in healthcare, as well as the importance of radiation protection. Relevant information need also to be incorporated into existing courses, such as health sciences, physics, or engineering. Outreach programs have to be organised to educate students and researchers about the field and the career opportunities available.

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ACTION 1

• amongst health professionals - This can be achieved through dedicated lifelong learning programs to develop knowledge, skills and competences in medical use of ionising radiation and RP, to improve patients' outcome as well as patients' and staff's occupational safety, through a holistic, multidisciplinary and collaborative approach. Specific time and budget must be allocated to guarantee the establishment of these actions.

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ACTION 2

The diverse range of career paths available in the various applications of ionising radiation in medicine and medical radiation protection must be highlighted as a second measure. Many students may not be aware of the range of professions that exist within this field. By showcasing the various roles and career paths available, universities can help students to understand the breadth of opportunities available to them. This need to include showcasing the roles of professionals involved in medical radiation protection and applications of ionising radiation in medicine. Universities can also connect students with professionals in the field through mentorship programs, internships, and job shadowing opportunities

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ACTION 3

The third important measure is to emphasise the rewarding aspects of a career in radiology, nuclear medicine, radiation therapy, medical physics, and medical radiation protection. Students who are interested in this field are likely to be motivated by a desire to help people & make a difference in their communities. By highlighting the positive impact that these professionals have on patient care and outcomes, universities can appeal to students' desire to make a difference. They can also emphasise the important role that professionals working with ionising radiation play in ensuring patient safety, which can be an appealing aspect of the profession for students who are interested in health and safety.

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ACTION 4

In addition, the radiation-based medicine and the corresponding radiation protection often benefits from new technological developments, so that the careers can include a continuous possibility to work with new fascinating technological approaches to help patients even better.

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ACTION 5

Finally, it is important to provide opportunities for students to gain practical experience in the field. This should include internships, research opportunities, or job shadowing. By giving students the opportunity to see the real-world application of ionising radiation and medical radiation protection, they can better understand the importance of the field and the impact that they can have as professionals. This can also help students to develop important skills, such as problem-solving, critical thinking, and communication, which are essential for success in this field (Bryant et al. 2021).

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RADIATION PROTECTION FOR WORKERS

Medical applications of ionising radiation is based on caring persons who act as medical doctors, radiographers, nurses, caring staff to help patients, radiochemists, medical physicists etc. Some need to perform duties on patients during exposure like caring duties in the nuclear medicine department, holding tasks in X-ray investigations, staff in the interventional rooms etc. Therefore, it is inevitable that workers in the medical context will be exposed to ionising radiation due to their duties.

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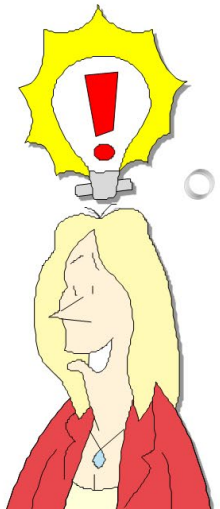
RADIATION PROTECTION FOR WORKERS

PREGNANT ??

What is the dose received by my baby?



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RADIATION PROTECTION FOR WORKERS

In terms of attractiveness of the corresponding jobs as well as to care for the staff and guarantee the best possible health conditions for the staff it is mandatory to include radiation protection of workers and foster the research to improve it further. Today, online tools f or assessment of exposure of the staff get more and more available. Such systems need to be developed in a way that they can be as accurate as possible in all surroundings they are supposed to work in.

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RADIATION PROTECTION FOR WORKERS

Such tools need also to be used for training purposes to realise how the staff can help itself to reduce the radiation exposure e.g., by taking better positions in interventional suites or by reducing exposure times etc. In addition, radiation protection of workers need to be included in feasibility studies when new or improved technologies are supposed to be implemented into clinical routine.

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THANK YOU

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