



Project title: Radiation risk appraisal for detrimental effects from medical exposure during management of patients with lymphoma or brain tumour (SINFONIA)

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Deliverable D7.5 - Updated Communication and Dissemination Plan and updated video

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Table of Contents

List of figures	2
List of tables.....	2
Executive Summary	3
1. Introduction.....	4
2. Stakeholders and target audience.....	4
3. Dissemination activities.....	5
4. Dissemination strategy.....	7
5. Dissemination material.....	9
6. Congresses, conferences and public events.....	9
7. Scientific publications and presentations.....	10
8. Partners’ contacts.....	11
Annexes	12
Annex A: Identified stakeholders and proposed dissemination strategy	12
Annex B: Suggested communication and dissemination channels	14
Annex C: List of relevant international events	16
Annex D: Dissemination materials	17

List of figures

Figure 1. Announcement of SINFONIA training programme on the EFOMP website.....	5
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List of tables

Table 1. Overview of communication plan for the SINFONIA project.....	6
Table 2. SINFONIA website: visits per section.....	9

Executive Summary

This deliverable is an update of D7.3 (Plan for Communication and Dissemination) which was submitted in M3 (30.11.2020) of the project. The present document describes the communication and dissemination strategy and activities for SINFONIA during the project's duration, and is a living document that provides a framework for the project's communication and dissemination activities which are revised and updated regularly. The core stakeholders and target groups for dissemination activities are outlined in this deliverable, as well as respective dissemination objectives and strategies.

This deliverable is complemented by "Deliverable D7.1 – Intermediate report on SINFONIA dissemination activities" which presents in detail the dissemination and communications activities carried out in the first 24 months of the project in accordance with the strategies laid out in the first version of the plan for Communication and Dissemination (D7.3 Plan for Communication and Dissemination).

The video of the project has not been updated at this stage and will not be submitted together with the present report. The update was postponed for month 47 of the project in order to fully reflect the project's consolidated results and present its achievements which will contribute to a more impactful dissemination. This was discussed and agreed upon with the EC project officer, Ms. Bachorczyk-Nagy Renata.

1. Introduction

A well-structured communication and dissemination strategy to reach out to the end users of the results is key to the success of the project. In the first 24 months the SINFONIA project partners have already established communication with relevant stakeholders, who were targeted using a tailored dissemination approach specific to each group in order to maximise relevant uptake of project outcomes. The plan defines the communication and dissemination activities and overall strategy for the project. It is a living document that is regularly being revised and updated throughout the lifetime of the project. In the present report we detail the activities that have been undertaken up to this point and how the dissemination efforts will be carried out until project's end.

The SINFONIA dissemination activities focus on the transfer of the knowledge and skills developed by the project. This is mainly carried out via open access scientific publications, presentations at professional events, fairs, and conferences, particularly those related to radiation protection, etc and dedicated training activities for PhD students, postdoctoral researchers and trainees.

2. Stakeholders and target audience

To effectively communicate information about the project, we identified multiple stakeholders as part of our target audience. The identified groups are targeted using a tailored dissemination and communication approach specific to each group. This ensures a customised presentation of the project, as well as relevant uptake by the target audience which will substantially increase the project's impact.

The main communities that we disseminate results to include:

- Radiation protection scientific community (medical physicists, radiation biologists, radiation oncologists, computer scientists)
- Existing Radiation Protection Research Platforms (MELODI, EURADOS, NERIS, ALLIANCE, EURAMED)
- Healthcare Authorities & Regulators
- Industry
- Healthcare Professionals (radiation oncologists, nuclear medicine doctors, radiologists) and providers
- General public and patients

One of the direct ways to interact with members of the above communities is through the members of the External Advisory Board (EAB) of the SINFONIA project, which is composed of representatives of the following organisations:

- The European Society for Radiotherapy and Oncology (ESTRO)
- European Trade Association representing the medical imaging, radiotherapy, health ICT and electromedical industries (COCIR)
- European Federation of Organisations for Medical Physics (EFOMP)
- European Society of Radiology (ESR)
- European Federation of Radiographer Societies (EFRS)
- European Platform on Preparedness for Nuclear and Radiological Emergency Response and Recovery (NERIS)
- The European Radioecology ALLIANCE (ALLIANCE)

- The European Radiation Dosimetry Group (EURADOS)
- Federal Office for Radiation Protection Germany (BFS)
- Multidisciplinary European Low Dose Initiative (MELODI)
- European platform for Social Sciences and humanities research relating to ionizing radiation (SHARE)

SINFONIA established in the beginning of the project an External Advisory Board (EAB) to allow the results from the project to be disseminated more widely even before they are included in publications. In addition, the EAB advises on mitigation actions in case of identified possible risks related to the dissemination of project results. During the first 24 months of the project, the EAB members have been supporting the dissemination efforts especially with promoting and advertising the training courses developed under WP6 (Task 6.2: Organisation of a training programme for the SINFONIA scientific collaborators) (exemplified in Figure 1), as well circulating among their networks the 1st Newsletter of the project.

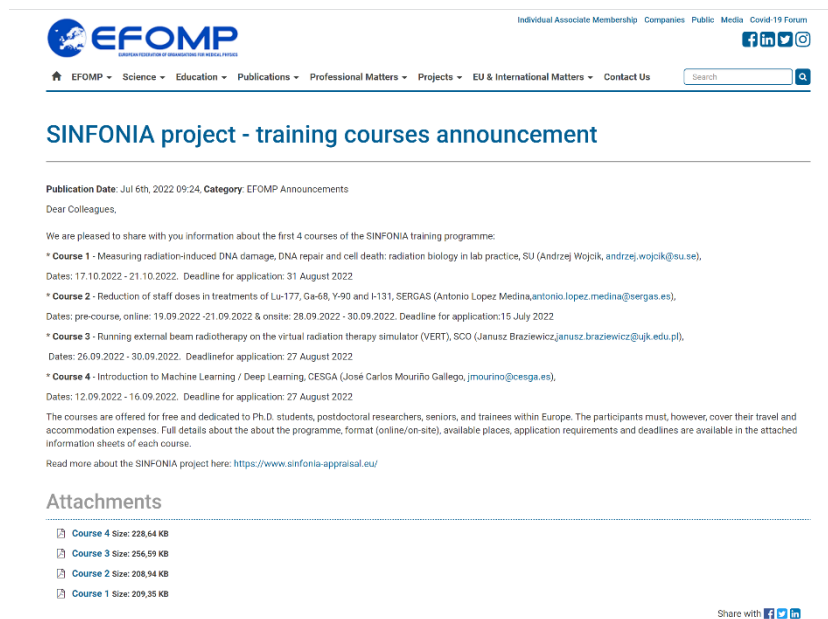


Figure 1. Announcement of SINFONIA training programme on the EFOMP website.

Furthermore, during its first meeting the EAB suggested the SINFONIA Consortium to consider opening the training courses to outside the project participants, a recommendation that was followed once the training programme was set up and promoted.

3. Dissemination activities

SINFONIA’s dissemination activities address one or more of the identified stakeholder groups and ensure that the dissemination objectives are achieved.

Services provided by the European Commission, such as the [CORDIS website](#) with the subsections CORDIS News, CORDIS Wire, the research*eu magazine, and the OpenAIRE platform, will be used to inform the broader public about SINFONIA, its objectives and the project’s progress. In addition, online magazines, newsletters, papers and journals, will be used to promote the project, project partners, objectives and results. Media distribution options that have been initially suggested by project partners as dissemination channels are listed in Annexes A-C. Web platforms from European societies and federations of societies, such as ESTRO and EFOMP, will be used to announce the SINFONIA project. The dissemination measures will rely

on the material (both electronic and print) developed by partners and implement the overall dissemination and communication strategies as outlined in this document.

Dissemination material:

- Project visual identity, including a project logo that will be used for all communication purposes
- The SINFONIA project website (www.sinfonia-appraisal.eu)
- Press releases
- Target-group and end-user specific project material, such as flyers or folders detailing the project’s objectives and goals, and highlighting different aspects of relevance to each audience
- Digital newsletters tailored to the various target audiences
- Public part of the SINFONIA repository

In addition to a project website, the further establishment of the online presence for SINFONIA also includes profiles on social media platforms, or messages on partners’ social media presences, as well as on each partner’s institutional website. SINFONIA will strive to connect with social media campaigns related to its activities, e.g., by participating in the use of certain hashtags, for added exposure. Furthermore, regular updates with information tailored to all target audiences will be shared through online channels.

Provision of information to a wide range of target audiences is crucial to increase the project’s visibility and ensure uptake of the project’s outcome and that the envisaged impact is reached.

Table 1 provides an overview of the communication and dissemination plan for SINFONIA:

Table 1. Overview of communication and dissemination plan for the SINFONIA project.

Topic	Main audience	Methods	Time/interval	Partners
Overall project expectations	All identified stakeholders, target groups, end users identified in Annex A.	Contents will be tailored to each specific audience. All dissemination channels described in Annex B, and others, will be employed.	M3 and regularly following the initial release	EIBIR, all others
WP2 results and achievements on dose and risk assessment in patients undergoing radiotherapy	Stakeholders, target groups, end users identified in Annex A.	Dissemination channels described in Annex B, and others, will be employed.	As soon as they are ready for publication	All partners
WP3 results and achievements on dose and risk assessment of workers, comforters, the public and the environment	Stakeholders, target groups, end users identified in Annex A.	Dissemination channels described in Annex B, and others, will be employed.	As soon as they are ready for publication	All partners
WP4 results and achievement on individual sensitivity to radiation	Stakeholders, target groups, end users identified in Annex A.	Dissemination channels described in Annex B, and others, will be employed.	As soon as they are ready for publication	All partners

Topic	Main audience	Methods	Time/interval	Partners
WP5 results and achievement on data collection	Stakeholders, target groups, end users identified in Annex A	Dissemination channels described in Annex B, and others, will be employed	As soon as they are ready for publication	All partners
WP6 results and achievements on education and training	Stakeholders, target groups, end users identified in Annex A	Dissemination channels described in Annex B, and others, will be employed	As soon as they are ready for publication	All partners
Overall project achievements	All identified stakeholders, target groups, end users identified in Annex A.	Newsletter and reports at meetings, project website	Annually	EIBIR, all partners

Dissemination material prepared so far is exemplified along with the respective event in Annex D. The complete details of all the dissemination activities carried in the first 24 months of the project are detailed “Deliverable D7.1 – Intermediate report on SINFONIA dissemination activities”.

4. Dissemination strategy

To achieve the project’s dissemination objectives, each activity will use the appropriate channel to ensure the messages reaches the right audience. Dissemination channels range from scientific publications for e.g., technical information, to general media for information intended for the general public.

To aid the execution of the dissemination strategy, the following list of questions can guide the selection of dissemination channels and shape the nature of the information that is dissemination:

- **What should be disseminated?**
 - Overall project information and expectations
 - Project achievements, such as:
 - project events
 - completion of tasks, work packages, deliverables or and milestones
 - Project results, such as:
 - General summary of the results
 - Detailed information on the results
 - Methodology on how results were achieved
 - Best practices and information of how methods can be applied elsewhere
- **To whom do we need to disseminate this information?**
 - Relevant subset of stakeholders
 - General public
- **How does this information need to be disseminated?**
 - Via scientific publications in relevant journals
 - Via events, such as:

- Presentations at national or international scientific meetings
 - Workshops
 - Online, live-streaming events
 - Via the project website
 - Via social media
 - Via newsletters
 - Via printed media such as:
 - Folders
 - Flyers
 - Posters
 - Via traditional media such as:
 - Press releases
 - Television
 - Printed advertisements or articles
- **When is the information disseminated?**
 - As soon as possible after completion
 - Through regular updates
- **How far does the information have to be disseminated?**
 - Local
 - National
 - European
 - International
- **What should the dissemination of this information achieve?**
 - Set goals for reach and impact
 - Measure performance indicators at specified intervals or times, such as:
 - Reach (e.g., number of visitors, views or readers)
 - Impact and engagement numbers (e.g., links, republications, downloads, ‘likes’, ‘favourites’)

The above questions allow identification of the unique needs of each dissemination activity and its audience, including in what manner the information is to be disseminated. This ensures effective and efficient distribution of project information and a maximised impact.

For example, in Table 2 visits for the most visited pages on the SINFONIA website are presented. In March 2022 the promotion of the Training courses developed under WP6 and promoted on the page “education”. In the statistics below it can be observed that the respective page received an increased number of views once the advertising campaign started.

Table 2. SINFONIA website: visits per section

A. 1 January - 28 February 2022

Label	Unique Pageviews	Total Pageviews
/index	165	464
sinfonia-research-results	70	152
work-packages-2	17	41
more-info	16	33
belgium	9	15

B. 1 March – 15 August 2022

Label	Unique Pageviews	Total Pageviews
/index	917	2743
education	466	1596
sinfonia-research-results	231	509
more-info	80	183
work-packages-2	78	183

5. Dissemination material

EIBIR leads the development of promotional material, with support from all project partners. Promotional material that will be developed includes a periodic digital newsletter, target-audience specific folders and flyers with relevant, general information about SINFONIA (exemplified in Annex D), promotional posters, and a general presentation.

Partners will use institutional publications, such as annual reports, institutional newsletters or internal and external websites, to disseminate information about SINFONIA. Additionally, partners will prepare articles for publication in national newspapers, magazines or websites.

Posters or roll-ups (exemplified in Annex D) will be prepared for display at workshops, meetings, congresses and conferences. These can be for promotional or informational use. Posters and roll-ups promoting SINFONIA will be designed to be aesthetically pleasing and attract attention and contain only general information about the project. Informational posters will be used to summarize scientific findings and achievements. Both types of posters will be designed to fit the project’s visual identity.

Published information will include contact details of the publishing partner, the SINFONIA project manager, and a link to the project website where further information can be obtained.

6. Congresses, conferences and public events

SINFONIA will be represented at relevant national, European, and international congresses, conferences and public events. Partners will attend meetings relevant to their expertise and role in the project and provide general information on the project and present (interim) results.

Examples of congresses or conferences where the results will be presented by the consortium members include:

- ECR – European Congress of Radiology
- ECMP – European Congress of Medical Physics
- ESTRO – European Society for Radiotherapy and Oncology annual meetings
- EANM – European Association of Nuclear Medicine annual meetings
- ERPW – European Radiation Protection Week annual meetings
- NACP (Nordic Association of Clinical Physicists) regular meetings
- PTCOG Particle Therapy Cooperative Group regular meetings
- World Congress of Medical Physics and Biomedical Engineering
- International Conference of Medical Physics
- WGML – Galician Workshop on Machine Learning
- OR - Open Repositories Conference
- SNMMI – Society of Nuclear Medicine and Molecular Imaging
- OXMI Optimisation in X-ray and Molecular Imaging
- AAPM (American Association of Physicists in Medicine) annual meeting
- RSNA (Radiological Society of North America) annual meeting
- SEFM-SEPR – Spanish Societies of Medical Physics and Radiological Protection (biennial meetings)
- SEMN – Spanish Society of Nuclear Medicine (annual meetings)
- SEOR – Spanish Society of Radiation Oncology (annual meetings)

Relevant events that SINFONIA will attend are listed in Annex C. Further events may be included as the project progresses.

7. Scientific publications and presentations

SINFONIA will publish its research results in high-ranking and relevant journals. We will target the following journals for publication of results:

- Physica Medica (European Journal of Medical Physics)
- Medical Physics
- Physics in Medicine and Biology
- Radiation Protection Dosimetry
- European Journal of Nuclear Medicine and Molecular Imaging
- Future Generation Computer Systems
- Journal of Nuclear Medicine
- Radiology
- European Radiology
- Investigative Radiology
- Radiotherapy and Oncology
- Radiation Oncology
- Journal of Medical Imaging (from SPIE)

8. Partners' contacts

The project partners will make use of their established contacts and communication and dissemination channels to reach stakeholders. In addition, partners will also contact National Contact Points and relevant national government agencies or public bodies with information about the project.

Annexes

Annex A: Identified stakeholders and proposed dissemination strategy

Target group	Details	Communication and dissemination methods
Scientific community	SINFONIA will generate new scientific knowledge on radiation protection and the effects of low-dose medical radiation	<p>The achievements and impact of the project will be disseminated by publishing in international, peer-reviewed journals and conferences listed Section 1.6, 1.7 and in Annex C.</p> <p>Researchers will receive dissemination material of project-related information. International professional societies or organisations will be approached to reach this target group.</p> <p>Access to public to the part of the repository will be provided to researchers</p>
Existing Radiation Protection Research Platforms (MELODI, EURADOS, ALLIANCE, EURAMED)	Improved understanding of low-dose radiation exposure and its effects especially in medical sectors, e.g. EURAMED and other radiation protection platforms, e.g. MELODI and EURADOS	<p>Platforms will be reached by a) participation in the External Advisory Board, b) tailored print material (e.g. folder, flyers) distributed online, at local, national and international events and c) dedicated information distributed via the project website, press releases, newsletters, and through social media. Moreover, SINFONIA will present results at annual meetings of the European Radiation Protection Week.</p>
Clinicians	Clinicians in the field of radiobiology, radiotherapy	<p>The achievements and impact of the project will be disseminated by publishing in international, peer-reviewed journals and conferences listed Section 1.6, 1.7 and in Annex C.</p> <p>The clinical community will receive dissemination material of project-related information. Organisations to be approached to reach the target group include, but are not limited to:</p> <ul style="list-style-type: none"> • The European Society of Radiology (ESR) • Radiological Society of North America (RSNA) • European Society of Medical Oncology (ESMO) • European Society for Radiotherapy and Oncology (ESTRO) <p>Dissemination of tailored newsletters/fact sheets and promotional material, invitations to presentations or hands-on demonstrations at meetings and conferences and the project website.</p> <p>Participation in the International Day of Radiology campaign.</p>
Physicists	Medical physicists	<p>The achievements and impact of the project will be disseminated by publishing in international, peer-reviewed journals and conferences listed Section 1.6, 1.7 and in Annex C.</p> <p>Physicists will receive dissemination material of project-related information. International professional societies or organisations will be approached to reach this target group.</p>

Target group	Details	Communication and dissemination methods
Healthcare Professionals and providers	Physicians	Conference presentations, lay press publications and peer-reviewed open-access publications, and direct contacts. Tailored print material (e.g. folder, flyers, newsletters) will be distributed online, at local, national and international events. A massive open online course (MOOC) will be created and hosted by the project to broaden the impact of its training and education efforts. A training network on clinical dosimetry will be established.
Industry	Manufacturers of diagnostic radiotherapy equipment	Meetings with industry representatives at large medical or technical conferences (see Annex C). Tailored newsletters and promotional material, invitations to presentations at meetings and conferences and information on the project website.
General public and patients	Patient organisations, general public	Patient organisations, patient advocacy groups, and physicians will be used as means to inform patients about the developments of SINFONIA, in addition to the project website and social media activities. Tailored promotional material Participation in the International Day of Radiology campaign. Information on the project website
Healthcare Authorities & Regulators	Dissemination of project results and their application to diagnostic and research processes in direction to physicians and scientists	Tailored messaging relevant to regulations and policymaking will be developed specifically targeted to competent authorities

Annex B: Suggested communication and dissemination channels

Channels	Activity	Target group	Date or frequency
The EIBIR Member network	EIBIR's network includes more than 80 clinical, research and industry members in the field of biomedical imaging research and related fields.	Clinicians, researchers and industry	Relevant results and data will be shared online upon publication, and periodically in the EIBIR annual report and newsletters.
EIBIR Shareholders	EIBIR's 12 shareholder organisations are: CIRSE, COCIR, EANM, EFOMP, EORTC, ESMI, ESMRMB, ESPR, ESTRO, EuSoMII, EFRS, ESR	Clinicians, researchers and industry	Relevant results and data will be shared online upon publication, and periodically in the EIBIR annual report and newsletters.
European Society of Radiology (ESR)	<p>The ESR has more than 69,300 members from 157 countries active in the field of radiology as clinicians and researchers.</p> <p>The ECR is the annual meeting of the ESR. On average more than 20,000 visitors from industry and the clinical and academic community attend the congress.</p>	Clinicians, researchers and industry	<p>Relevant results and data will be shared online in periodic newsletters.</p> <p>SINFONIA findings will be presented at the ECR in dedicated sessions and/or at a dedicated booth</p>
European Society for Radiotherapy & Oncology (ESTRO)	ESTRO aims to facilitate research and development in radiation therapy and to stimulate scientific exchange in the field of radiation oncology and related disciplines.	Clinicians, researchers and industry	SINFONIA findings will be presented at the annual congresses in dedicated sessions
Particle Therapy Co-Operative Group (PTCOG)	PTCOG aims to promote science, technology and practical clinical application of particle therapy,	Clinicians, researchers, and industry	SINFONIA findings will be presented at the annual congresses in dedicated sessions
Spanish Society of Nuclear Medicine and Molecular Image (SEMNUM)	SEMNUM Meets annually and publish their own journal	Clinicians, researchers, and industry	Relevant results and data will be shared online upon publication. SINFONIA findings will be presented at the annual congresses
RSNA (Radiological Society of Northern America)	The Radiological Society of North America (RSNA) is an international society of radiologists, medical physicists and other medical professionals. It counts more than 54,000 members across the globe.	Clinicians, researchers, and industry	<p>Relevant results and data will be shared online in periodic newsletters.</p> <p>SINFONIA findings will be presented at RSNA in dedicated sessions and/or at a dedicated booth</p>
AAPM (American Association of Physicists in Medicine)	The American Association of Physicists in Medicine (AAPM) is a scientific, educational, and professional organization of Medical Physicists.	Medical physicists from all disciplines	SINFONIA findings will be presented at the annual congresses in dedicated sessions

Channels	Activity	Target group	Date or frequency
EFOMP (European Federation of Organisations for Medical Physics)	EFOMP coordinates the activities of its national Medical Physics societies in Europe	Medical physicists from all disciplines	SINFONIA findings will be presented at the annual congresses in dedicated sessions

Annex C: List of relevant international events



Event	Target group	Date or frequency
European Congress of Radiology (ECR)	Radiologists and professionals with an interest in radiology	Annual
ESTRO	Radiation oncologists, medical physicists, radiation therapists working in radiation oncology and related disciplines	Annual
PTCOG	Scientists and professionals interested in proton, light ion and heavy charged particle radiotherapy	Annual
ECMP	Medical physicists from all disciplines	Biennially
World Congress of Medical Physics and Biomedical Engineering	Medical physicists, biomedical engineers and adjoining health care professionals with an interest in health-related technologies	Triennially
WGML – Galician Workshop on Machine Learning	Scientists and professionals interested in Machine Learning and Data Analytics	Annual
RSNA annual meeting of the Radiological Society of Northern America	Radiologists and professionals with an interest in radiology	Annual
AAPM annual meeting of the American Association of Physics in Medicine	Medical physicists from all disciplines	Annual
EANM – European Association of Nuclear Medicine annual meetings	Medical physicists, radiologists, nuclear medicine physicians	Annual
NACP (Nordic Association of Clinical Physicists) regular meetings	Medical physicists, radiologists, nuclear medicine physicians, engineers, radiographers and biomedical scientists	Triannual

Annex D: Dissemination materials

Visual identity (including logo and presentation video) and website of the SINFONIA project.

<p>1. Logo</p> 	<p>2. Template: presentations slides</p> 
<p>3. Promotional video</p> 	<p>4. Website (homepage)</p> 

SINFONIA leaflet. On display over the ECR2022 – European Congress of Radiology at project partner EIBIR’s lounge between 13-17 July 2022, in Vienna, Austria.

 <p>Radiation risk appraisal for detrimental effects from medical exposure during management of patients with lymphoma or brain tumour</p> <p>SINFONIA will develop better risk evaluation of radiation exposure for patients, medical professionals, and the public during the management of cancer</p> <p>OBJECTIVES</p> <ul style="list-style-type: none"> Develop dose estimation tools based on personalised dosimetry methods, advanced computational tools, powered by artificial intelligence (AI) Perform research on individual sensitivity to radiation and susceptibility to Second Malignant Neoplasms (SMN) for risk appraisal in medicine Develop a novel patient radiation risk appraisal tool and estimate uncertainties Conduct research to support radiation risk appraisal for staff, comforters, the public and the environment Develop and operate a platform for dose, imaging and non-imaging data Provide multidisciplinary education and training <p>CONSORTIUM</p> <p>The multidisciplinary SINFONIA consortium combines the expertise of 14 partners from 8 countries. It includes major universities, research institutes, hospitals, and industry partners.</p> <table border="1"> <tr><td>European Institute for Biomedical Imaging Research</td><td>AT</td></tr> <tr><td>University of Crete</td><td>GR</td></tr> <tr><td>Belgian Nuclear Research Centre</td><td>BE</td></tr> <tr><td>Stockholm University</td><td>SE</td></tr> <tr><td>Galicia Supercomputer Centre</td><td>ES</td></tr> <tr><td>Gent University</td><td>BE</td></tr> <tr><td>Skandion Clinic</td><td>SE</td></tr> <tr><td>Jan Kochanowski University</td><td>PL</td></tr> <tr><td>QAEUM</td><td>BE</td></tr> <tr><td>Galician Healthcare Service</td><td>ES</td></tr> <tr><td>University of Geneva</td><td>CH</td></tr> <tr><td>Holy Cross Cancer Centre</td><td>PL</td></tr> <tr><td>Otto-von-Guericke University Magdeburg</td><td>DE</td></tr> <tr><td>National Centre for Nuclear Research Badan Jadowych</td><td>PL</td></tr> </table>	European Institute for Biomedical Imaging Research	AT	University of Crete	GR	Belgian Nuclear Research Centre	BE	Stockholm University	SE	Galicia Supercomputer Centre	ES	Gent University	BE	Skandion Clinic	SE	Jan Kochanowski University	PL	QAEUM	BE	Galician Healthcare Service	ES	University of Geneva	CH	Holy Cross Cancer Centre	PL	Otto-von-Guericke University Magdeburg	DE	National Centre for Nuclear Research Badan Jadowych	PL	<p>WORK PLAN</p> <ul style="list-style-type: none"> WP1 Coordination and project management: scientific and ethical coordination, data management, knowledge management and exploitation, project governance. WP2 Novel patient dose estimation methods, risk assessment and uncertainty evaluation: accurate estimation of organ doses from radiological and nuclear medicine examinations; personalised dosimetry in radiotherapy, appraisal of radiation-induced malignancies. WP3 Dose and risk assessment of staff, comforters, the public and the environment: development of a dosimetry system for staff monitoring in nuclear medicine; assessment of risks for staff and comforters in nuclear medicine; analyse the impact on human and biota from the release of radiopharmaceuticals; evaluation and optimisation of personnel dosimetry in proton radiotherapy. WP4 Individual sensitivity to radiation: determination of intra- and inter-individual variability for the risk of developing SMNs after radiotherapy; validation of functional and genetic biomarkers of susceptibility to SMNs. WP5 Data collection: development of a repository with data from imaging and non-imaging examinations; integration of AI algorithms for dose management. WP6 Education and training: training of young clinicians, medical physicists, radiobiologists and other healthcare professionals; development of interactive multidisciplinary massive open online courses on clinical dosimetry and radiation risks. WP7 Dissemination and recommendations: outreach to experts and the general public; development of science-based recommendations on radiological protection. <p>PROJECT FACTS</p> <p>Coordinator: European Institute for Biomedical Imaging Research (EIBIR), AT Duration: 48 months Runtime: 1 September 2020 – 31 August 2024 Total EU Funding: € 5,999,998.75</p> <p>PROJECT COORDINATOR Monika Hierath European Institute for Biomedical Imaging Research (EIBIR), AT</p> <p>SCIENTIFIC COORDINATOR Prof. John Damilakis University of Crete (UoC), GR</p> <p>PROJECT MANAGER Andreea Bucur European Institute for Biomedical Imaging Research (EIBIR), AT abucur@eibir.org</p> <p>Find out more at: www.sinfonia-appraisal.eu</p>  <p>This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 945196.</p>
European Institute for Biomedical Imaging Research	AT																												
University of Crete	GR																												
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Stockholm University	SE																												
Galicia Supercomputer Centre	ES																												
Gent University	BE																												
Skandion Clinic	SE																												
Jan Kochanowski University	PL																												
QAEUM	BE																												
Galician Healthcare Service	ES																												
University of Geneva	CH																												
Holy Cross Cancer Centre	PL																												
Otto-von-Guericke University Magdeburg	DE																												
National Centre for Nuclear Research Badan Jadowych	PL																												

SINFONIA roll-up. On display over the ECR2022 – European Congress of Radiology at project partner EIBIR’s lounge between 13-17 July 2022, in Vienna, Austria.



Radiation risk appraisal for detrimental effects from medical exposure during management of patients with lymphoma or brain tumour

SINFONIA will develop better risk evaluation of radiation exposure for patients, medical professionals, and the public during the management of cancer

Our key objectives are to:

- Develop dose estimation tools based on personalised dosimetry methods, advanced computational tools, powered by artificial intelligence (AI)
- Perform research on individual sensitivity to radiation and susceptibility to Second Malignant Neoplasms for risk appraisal in medicine
- Develop a novel patient radiation risk appraisal tool and estimate uncertainties
- Conduct research to support radiation risk appraisal for staff, comforters, the public and the environment
- Develop and operate a platform for dose, imaging, and non-imaging data
- Provide multidisciplinary education and training

The multidisciplinary SINFONIA consortium combines the expertise of 14 partners from 8 countries. It includes major universities, research institutes, hospitals, and industry partners.

Watch the SINFONIA video

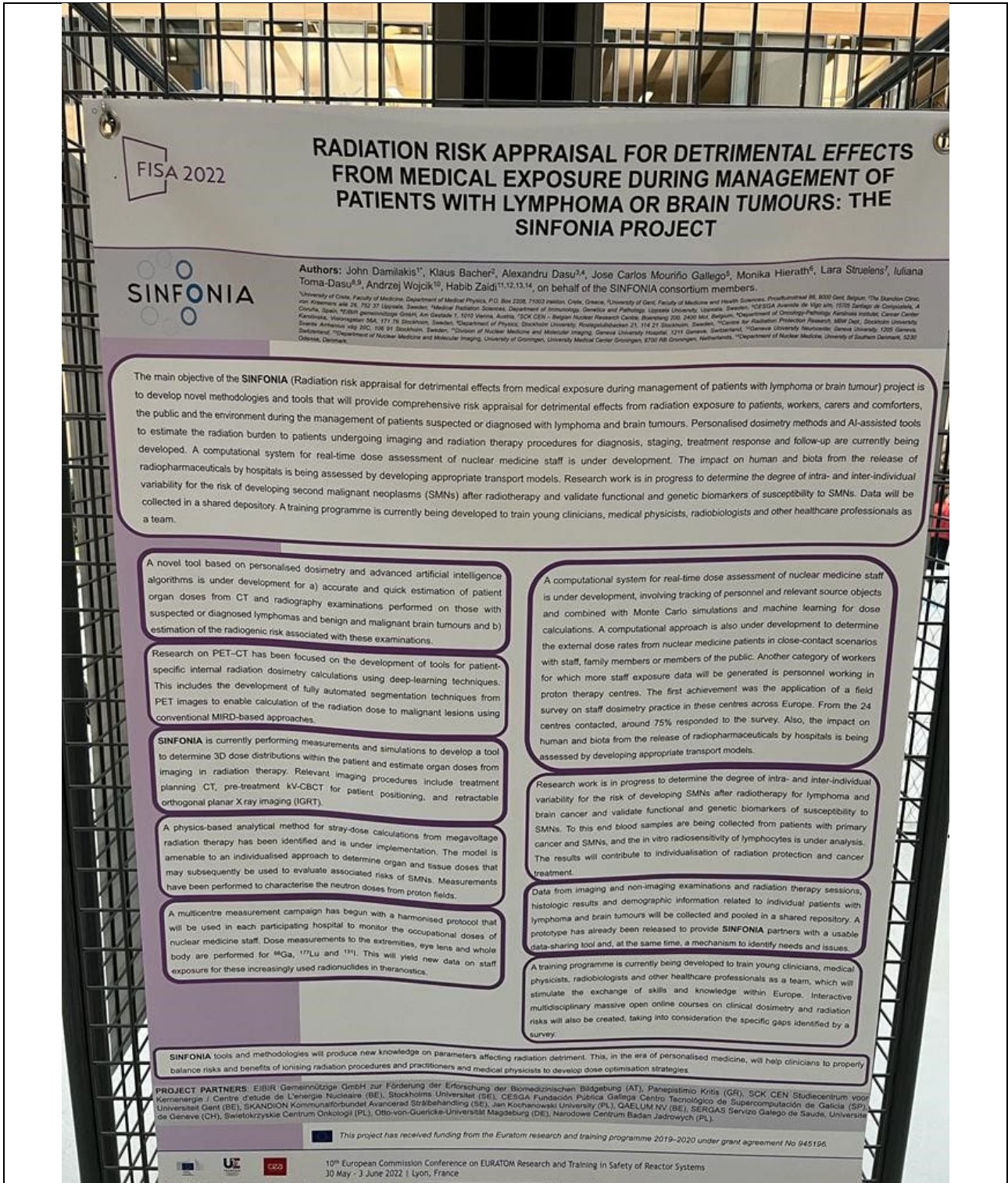


Find out more at
sinfonia-appraisal.eu



This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 945196.

SINFONIA poster. Presented at the FISA2022 conference, 30 May-3 June 2022 in Lyon, France on (invited participation).



1st SINFONIA Newsletter

[View this email in your browser](#)



Radiation risk appraisal for detrimental effects from medical exposure during management of patients with lymphoma or brain tumour

NEWSLETTER 1 / 2022

In this Newsletter:

- [The SINFONIA project](#)
- [First results](#)
- [Training courses](#)
- [Information for the general public](#)
- [Publications](#)



SINFONIA's main ambition is to introduce a paradigm shift by going from the current generalised approach in risk appraisal to a personalised-driven methodology which will significantly improve the state-of-the-art of medical radiation protection. Project

With a multidisciplinary team of 14 partners from 8 European countries, SINFONIA, a 4-year EURATOM funded project, aims to develop novel methodologies and tools that will provide a comprehensive a risk appraisal for detrimental effects of radiation exposure on patients, workers, carers and comforters, the public and the environment during the management of patients suspected or diagnosed with lymphoma and brain tumours.

The scientific work will (1) develop novel AI-powered personalised dosimetry and risk appraisal methods and tools to estimate the radiation burden on patients undergoing state-of-the-art radiological, nuclear medicine and radiation therapy procedures, (2) reinforce risk appraisal for exposed staff, comforters, the public and the environment during nuclear medicine and proton therapy procedures, (3) determine the degree of patient variability in radiation sensitivity for the risk of developing secondary malignancies and (4) design and develop data management techniques for managing data from imaging and non-imaging examinations and radiation therapy sessions. A data repository will be developed for storing data as well as for the deployment of AI algorithms on an online platform. SINFONIA research outcomes for the two clinical examples, lymphoma and brain tumours, will be also applicable to other diseases. AI-powered personalised dosimetry tools will provide advanced knowledge on parameters affecting radiation detriment. This will help balancing risks and benefits of ionising radiation procedures and developing dose optimisation strategies. Additionally, radiation biology studies will identify individuals with increased susceptibility of developing cancer from ionising radiation exposure. SINFONIA also will organise high-level multidisciplinary training in the field of radiation dosimetry, risk appraisal and radiation protection and develop recommendations on radiological protection.

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The work up to now, has been devoted to the establishment and approval of studies, literature review, data collection and data processing for the development of tools and training of AI models. First results

Patient radiation risk appraisal through personalised dosimetry and AI: Patient data have been collected and personalized Monte Carlo simulations have been performed to develop tools for the estimation of patient dose from various X-ray modalities. Research on PET/CT has been focused on the development of tools for patient-specific internal radiation dosimetry calculations using deep learning techniques. Moreover, an analytical method for stray dose calculations from megavoltage radiation therapy has been identified and is under implementation.

Staff dosimetry: An AI-assisted computational system for real time staff dose assessment in nuclear medicine is under development. Data is being collected on detecting laboratory objects, tracking position and posture of medical staff, as well as for the 3D reconstruction of the workers and their surrounding environment. For the evaluation of the risk to which staff is exposed in nuclear medicine, measurements at 7 hospitals in 3 countries (Spain, Switzerland and Belgium) are

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medicine patients after injection with radiopharmaceuticals, the performance and accuracy of a computational framework based on Monte Carlo simulations is being evaluated. In addition, a field survey on staff dosimetry practices and doses measured on staff working in proton therapy centres in Europe has been carried out and the results have been analysed.

Environmental detriment: The impacts on human and biota from the release of radiopharmaceuticals by hospitals in sewers are currently assessed with the help of a transfer and biosphere models. The biological species considered are: Pelagic and Benthic Fish, Crustacean, Bivalve mollusc, Vascular plant, Phytoplankton and Zooplankton; while the radionuclide for which data has been collected are: 89Zr, 90Y, 99Mo, 99mTc, 131I, 131mXe, 133Xe, 177Lu, 177mLu, 223Ra, 225Ac, 226Ra and 227Th.

Assessment of variation in radiation sensitivity among patients: The collection of blood samples to determine the degree of intra-, and inter-individual variability in the level of RT-induced, SMN-related mutations is ongoing. A viable freezing of peripheral blood lymphocytes procedure has been established and successfully tested allowing for transfer of blood samples between different laboratories. The group of patients with primary cancers has been extended by including breast cancer patients.

Storing and accessing patient data in a centralised repository infrastructure: The prototype repository has been released providing the SINFONIA partners a usable data sharing tool.

Education and training: A survey has been carried out in order to analyse at EU level the gaps and good practices in dosimetry, radiobiology and radiation protection education and training. Furthermore, 5 high-level training courses have been prepared and currently accepting applications from professionals within EU. The framework and initial prototype for the context-aware training module has been created and will be integrated into the interactive and multidisciplinary MOOC (Massive Open Online Course) on dosimetry/radiobiology/ radiation protection produced by SINFONIA.

Training courses

A training programme is currently being developed to train young clinicians, medical physicists, radiobiologists and other healthcare professionals as a team, which will stimulate the exchange of skills and knowledge within Europe. Information about the courses is available on our website: <https://www.sinfonia-appraisal.eu/education/>. Training courses

Course	Organiser	Dates
1 Cellular effects of ionising radiation – introduction to radiation biology	SU	Autumn 2022 (exact dates to be determined soon)
2 Patient dosimetry and occupational radiation exposure assessment arising from Lu-177, Ga-68, I-131 and Y-90 procedures	SERGAS	pre-course, online: 19.09.2022 - 21.09.2022 onsite: 28.09.2022 - 30.09.2022
3 Theoretical and practical fundamentals of radiation therapy	SCO	Autumn 2022 (exact dates to be determined soon)
4 Introduction to Machine Learning / Deep Learning	CESGA	12.09.2022 - 16.09.2022
5 Course on personalized dosimetry and quantitative radiation risk assessment	UGENT	To be determined



Factsheets Information for the general public

SINFONIA is seeking to present the scientific results and information beyond the professional and specialist communities in the field of medical radiation. Thus, the fact sheets give information about different radiation procedures and potential associated risks in an accessible non-expert language targeting the public and patients.

- [Diagnostic radiology](#)
- [Radiation therapy](#)
- [Nuclear medicine](#)

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distributed to the public relations departments of hospital and/or clinics in project's partners networks to be considered for further inclusion in regular information materials.

Publications

[Salimi, Y., Shirji, J., Akhavanallah, A. et al. Deep learning-based fully automated Z-axis coverage range definition from scout scans to eliminate overscanning in chest CT imaging. Insights Imaging 12, 162 \(2021\).](#) Publications

The SINFONIA consortium consists of 14 hospitals, universities, R&D centres, and private research companies from 8 European countries, and incorporate multidisciplinary expertise in the fields of clinical dosimetry, radiotherapy, radiation biology, and artificial intelligence.



In the era of personalised medicine, SINFONIA wants to help clinicians to properly balance risks and benefits of ionising radiation procedures, and practitioners and medical physicists to develop dose optimisation strategies. Our tools and methodologies will produce new knowledge on parameters affecting radiation detriment.

Visit the SINFONIA website!

SINFONIA factsheets for general public (available online on the project’s website and as downloadable information material: <https://www.sinfonia-appraisal.eu/sinfonia-research-results/>). (a – diagnostic radiology), (b - radiotherapy), (c – nuclear medicine).

<p>(a)</p> <h2>Medical X-ray imaging</h2> <h3>Overview of medical imaging procedures</h3> <p>Medical imaging procedures like x-ray imaging, conventional radiology, PET and CT scans, medical ultrasonography, carry medical information that can help to guide a diagnosis. However, the typical medical X-ray examinations are X-ray projection radiography, like chest radiography, the CT radiography, conventional radiography (CXR), ultrasonography and the procedures in X-ray imaging prior to radiation therapy procedures.</p> <p>Medical imaging procedures, including radiography, nuclear medicine and health diagnosis.</p> <h4>RADIOGRAPHY</h4> <p>X-ray radiations are the most common X-ray imaging procedure. Radiography is an ionizing radiation imaging procedure. It uses about 100 times less radiation than CT scans. The human radiation dose is low, but it is not zero. The radiation dose is low, but it is not zero. The radiation dose is low, but it is not zero. The radiation dose is low, but it is not zero.</p> <p><small>This content has been updated by the SINFONIA project. It is not intended to be used for medical purposes. For more information, please contact the SINFONIA project.</small></p>	<p>(b)</p> <h2>Doses from medical exposure in radiation therapy and their impact on patient risk</h2> <h4>INTRODUCTION</h4> <p>Cancer is a global disease that is a leading cause of death. The main cause of cancer is genetic mutations that can be inherited or acquired. In other words, genetic mutations can be inherited or acquired. In other words, genetic mutations can be inherited or acquired. In other words, genetic mutations can be inherited or acquired.</p> <p>Cancer treatment is a complex process that involves the use of radiation therapy. Radiation therapy is a treatment that uses high-energy X-rays to kill cancer cells. Radiation therapy is a treatment that uses high-energy X-rays to kill cancer cells. Radiation therapy is a treatment that uses high-energy X-rays to kill cancer cells.</p> <p><small>This content has been updated by the SINFONIA project. It is not intended to be used for medical purposes. For more information, please contact the SINFONIA project.</small></p>	<p>(c)</p> <h2>What are nuclear medicine and molecular imaging?</h2> <p>Conventional radiology, nuclear medicine and molecular imaging are different imaging techniques. Conventional radiology, nuclear medicine and molecular imaging are different imaging techniques. Conventional radiology, nuclear medicine and molecular imaging are different imaging techniques.</p> <p>In nuclear medicine, radiopharmaceuticals are used to diagnose and treat diseases. Radiopharmaceuticals are used to diagnose and treat diseases. Radiopharmaceuticals are used to diagnose and treat diseases.</p> <h4>SPECT imaging</h4> <p>SPECT is a widely used diagnostic imaging procedure that involves injection of a radioactive tracer into a patient's bloodstream. SPECT is a widely used diagnostic imaging procedure that involves injection of a radioactive tracer into a patient's bloodstream.</p> <p><small>This content has been updated by the SINFONIA project. It is not intended to be used for medical purposes. For more information, please contact the SINFONIA project.</small></p>
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