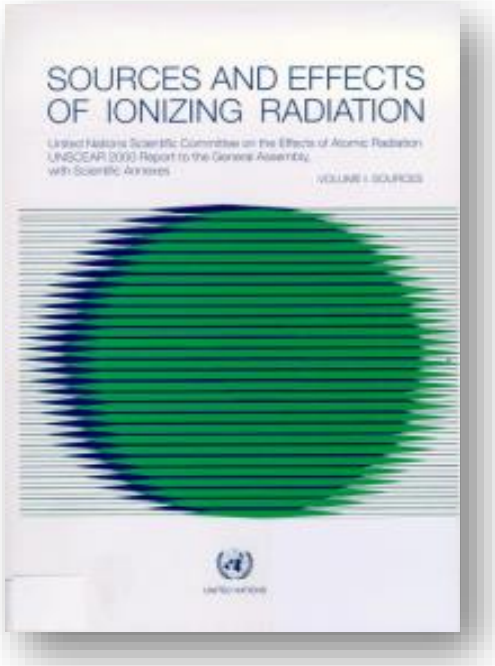
INTERNATIONAL SYSTEM FOR RADIATION PROTECTION, IAEA SAFETY STANDARDS, IAEA RESOURCES
10-14 November, Trieste, Italy

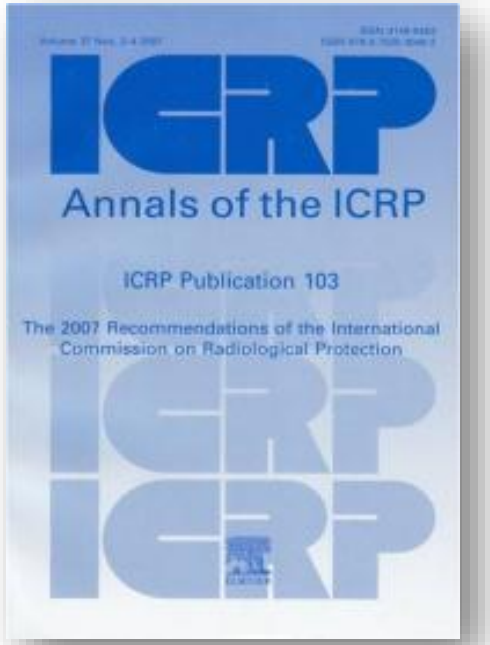
Chadia Rizk
Radiation Protection of Patients Unit
International Atomic Energy Agency, Vienna, Austria

International system for radiation protection

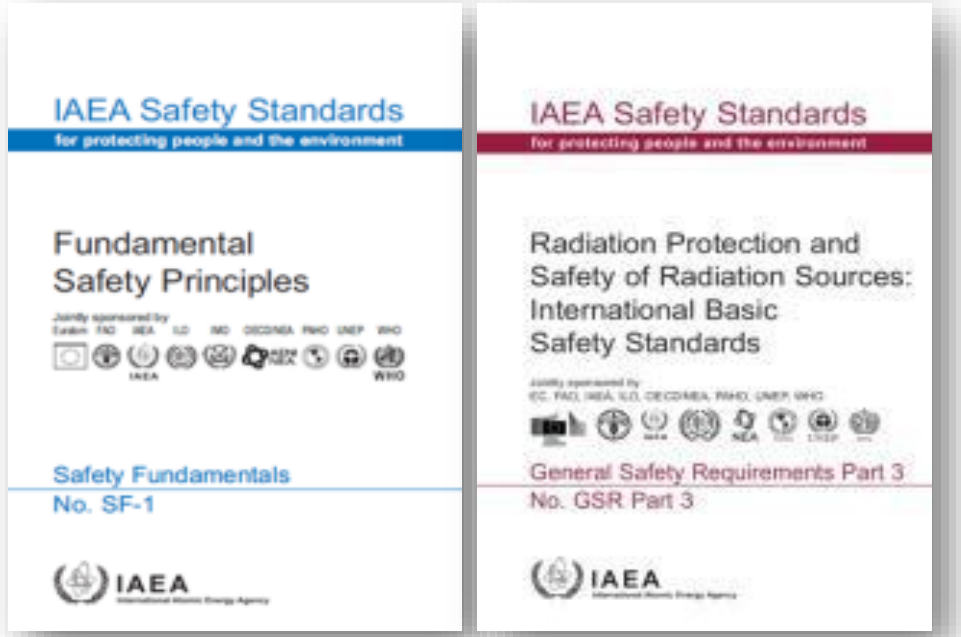
UNSCEAR studies effects of atomic radiation



ICRP provides recommendations for protection

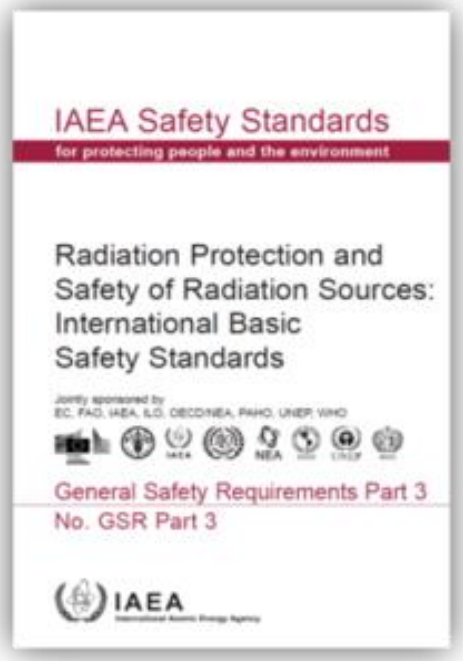


IAEA establishes safety standards for protection

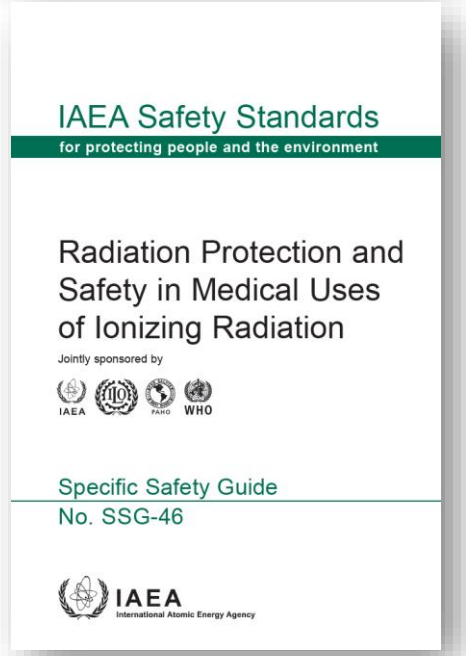


IAEA Safety Standards

- GSR Part 3: International Basic Safety Standards (BSS)
  - Set basic requirements for protection and safety
  - Mandatory for MS receiving technical assistance from the IAEA
  - Used as template for many national regulations

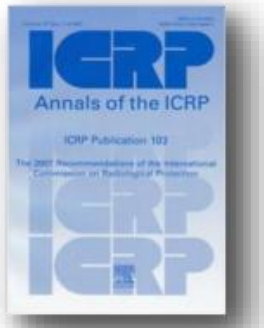


- Safety Guide on Radiation Protection and Safety in Medical Uses of Ionizing Radiation (SSG-46)
  - Provides guidance on fulfilling the BSS requirements in medical settings



International system

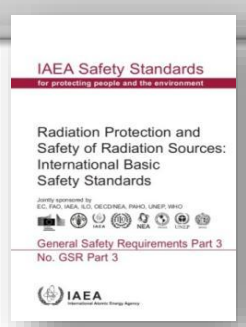
Exposure situations
- Planned
- Emergency
- Existing



Principles:
- Justification
- Optimisation
- Dose limitation

Categories of exposure
- Medical
- Occupational
- Public

Dose criteria
- Dose limits
- Dose constraints
- Reference levels



Requisites
- Information
- Assessment of exposure
- Stakeholders involvement

Safety Guide on Medical Uses SSG-46

- Scope: covers radiological procedures in

Radiology (incl. dentistry)

Image guided interventional procedures

Nuclear medicine

Radiation therapy

- Within the scope are all uses for human imaging, carried out in :
  - other medical specialties, e.g. cardiology, vascular surgery, urology, orthopaedic surgery, obstetrics and gynaecology, emergency medicine, gastroenterology, anaesthetics and pain management.
  - other health care practices (depending on the regulation), such as chiropractic, osteopathy and podiatry.

GSR Part 3: Categories of exposure

Medical exposure

Occupational exposure

Public exposure

GSR Part 3: Definitions

Occupational exposure:

Exposure of workers incurred in the course of their work.

GSR Part 3: Definitions

Medical exposure:

Exposure incurred by:

- Patients* for the purpose of medical or dental diagnosis or treatment
- Carers and comforters **
- Volunteers in a programme of biomedical research involving their exposure

*A patient is an individual who is a recipient of services of health care professionals and/or their agents that are directed at
(a) promotion of health; (b) prevention of illness and injury; (c) monitoring of health; (d) maintaining health; and (e) medical treatment of diseases, disorders and injuries in order to achieve a cure or, failing that, optimum comfort and function. Some asymptomatic individuals are included.

**Carers and comforters are persons who willingly and voluntarily help (other than in their occupation) in the care, support and comfort of patients undergoing radiological procedures for medical diagnosis or medical treatment

GSR Part 3: Definitions

Public exposure:

Exposure incurred by members of the public due to sources in planned exposure situations, emergency exposure situations and existing exposure situations, excluding any occupational exposure or medical exposure.

Exposure Situations

- Planned - The situation of exposure that arises from the planned operation of a source or from a planned activity that results in an exposure due to a source
- Emergency - A situation of exposure that arises as a result of an accident, a malicious act or other unexpected event, and requires prompt action in order to avoid or reduce adverse consequences
- Existing - A situation of exposure that already exists when a decision on the need for control needs to be taken

Exposure situations (BSS)

	Occupational exposure	Public exposure	Medical exposure
Planned exposure situations	Section 2; Section 3: paras 3.5–3.67 and paras 3.68–3.116	Section 2; Section 3: paras 3.5–3.67 and paras 3.117–3.144	Section 2; Section 3: paras 3.5–3.67 and paras 3.145–3.185
Emergency exposure situations	Section 2; Section 4	Section 2; Section 4	Not applicable
Existing exposure	Section 2;	Section 2;	Not applicable

Medical uses of ionizing radiation are a planned exposure situation.
This includes situations of potential exposure (that is not expected to occur with certainty, but could result from an accident or from an event or a sequence of events that may occur but is not certain to occur)

Exposure situations (BSS)

	Occupational exposure	Public exposure	Medical exposure
Planned exposure situations	Section 2; Section 3: paras 3.5–3.67 and paras 3.68–3.116	Section 2; Section 3: paras 3.5–3.67 and paras 3.117–3.144	Section 2; Section 3: paras 3.5–3.67 and paras 3.145–3.185
Emergency exposure situations	Section 2; Section 4	Section 2; Section 4	Not applicable
Existing exposure	Section 2; Section 5	Section 2; Section 5	Not applicable

The requirements in respect of medical exposure in planned exposure situations apply to all medical exposures, including intended, unintended and accidental exposures.

GSR Part 3: Definitions

Radiological procedure (BSS)

- A medical imaging procedure or therapeutic procedure that involves ionizing radiation - such as a procedure in:
  - diagnostic radiology,
  - nuclear medicine
  - radiation therapy
  - planning procedure, image guided interventional procedure or other interventional procedure involving radiation
- delivered by a radiation generator, a device containing a sealed source or an unsealed source, or by means of a radiopharmaceutical administered to a patient.

GSR Part 3: Definitions

Medical radiation facilities (BSS):

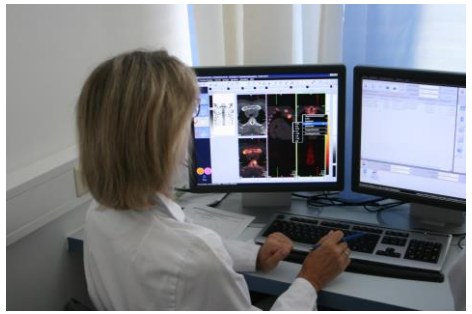
- A medical facility where radiological procedures are performed
- Medical uses of ionizing radiation take place in:
    - hospitals;
    - medical centres;
    - health clinics,
    - specialist clinics;
    - dental practices

- A medical facility may provide services for one or more medical uses of ionizing radiation

GSR Part 3: Definitions

Medical radiation facilities (BSS):

- Nuclear medicine facility:
  - Any medical radiation facility where nuclear medicine procedure is performed (imaging and therapy)
  - Department inside a wider hospital or medical centre
  - Stand-alone facility
  - Mobile facility



GSR Part 3: Responsibilities

Government:

Req 2: Establishment of a legal and regulatory framework

Req 34: specific to medical exposure – to ensure, as a result of consultation between Health Authorities, professional bodies and the Regulatory Body, that:

- DRLs are established
- Dose constraints are established for
  - Carers and comforters
  - Volunteers in biomedical research
- Criteria and guidelines are established for the release of patients after radionuclide therapy

GSR Part 3: Responsibilities

Regulatory body

Req 3: Establish or adopt regulations and guides for protection and safety and shall establish a system to ensure their implementation.

Req 35: Ensure that the authorization for medical exposures to be performed at a particular medical radiation facility allows personnel (radiological medical practitioners, medical physicists, medical radiation technologists and any other health professionals with specific duties in relation to the radiation protection of patients) to assume the responsibilities specified in these Standards only if they:

(a) Are specialized in the appropriate area;

(b) Meet the respective requirements for education, training and competence in radiation protection.

GSR Part 3: Responsibilities

Person or organization responsible for facilities / activities that gives rise to radiation

Req 4: have the prime responsibility for protection and safety, which cannot be delegated

GSR Part 3: Responsibilities

Req 36: Registrants and licensees shall ensure that no Patient/Individual incurs a medical exposure unless:

Patient	Volunteer in biomedical research	Carer or comforter
Appropriate referral	Programme approved by ethics committee	Carer or comforter has received, and understood, information on radiation protection and on risks
Medical exposure justified		
Radiological medical practitioner has assumed responsibility for protection & safety	Radiological medical practitioner has assumed responsibility for protection & safety, and dose constraints are applied	Dose constraints are applied
Patient informed of expected benefits & risks		

GSR Part 3: Responsibilities

Req 36: Registrants and licensees shall ensure that:

(a) The radiological medical practitioner performing or overseeing the radiological procedure has assumed responsibility for ensuring overall protection and safety for patients in the planning and delivery of the medical exposure, including the justification of the radiological procedure ..and the optimization of protection and safety, in cooperation with the medical physicist and the medical radiation technologist ..;

(b) Radiological medical practitioners, medical physicists, medical radiation technologists and other health professionals with specific duties in relation to protection and safety for patients in a given radiological procedure are specialized in the appropriate area;

GSR Part 3: Responsibilities

Req 36: Registrants and licensees shall ensure that:

(c) Sufficient medical personnel and paramedical personnel are available as specified by the health authority;

(d) For therapeutic radiological procedures, the requirements of these Standards for calibration, dosimetry and quality assurance, including the acceptance and commissioning of medical radiological equipment.. are fulfilled by or under the supervision of a medical physicist;

GSR Part 3: Responsibilities

Req 36: Registrants and licensees shall ensure that:

(e) For diagnostic radiological procedures and image guided interventional procedures, the requirements of these Standards for medical imaging, calibration, dosimetry and quality assurance, including the acceptance and commissioning of medical radiological equipment.. are fulfilled by or under the oversight of or with the documented advice of a medical physicist, whose degree of involvement is determined by the complexity of the radiological procedures and the associated radiation risks;

(f) Any delegation of responsibilities by a principal party is documented.

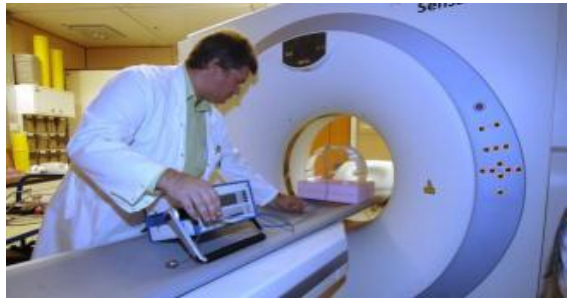
Education, training and competence

- Crucial role to radiation protection in medical exposure
  - Radiological medical practitioner
  - Medical physicist
  - Medical radiation technologist
  - Radiopharmacist
- All definitions have a similar format: A health professional, with education and specialist training in ……., competent to …… .
- Explanatory note to each definition:
  - Competence of persons is normally assessed by the Member State by having a formal mechanism for registration, accreditation or certification of ….
  - Member States that have yet to develop such a mechanism need to assess …. based either on international accreditation standards or standards from another country ….

GSR Part 3: Definitions

Medical physicist

A health professional with specialist education and training in the concepts and techniques of applying physics in medicine and competent to practise independently in one or more of the subfields (specialties) of medical physics



Competence of persons is normally assessed by the State by having a formal mechanism for registration, accreditation or certification of medical physicists in the given specialty. States that have yet to develop such a mechanism need to assess the education, training and competence of any individual …and to decide, …whether such an individual could undertake the functions of a medical physicist, within the required specialty.

GSR Part 3: Definitions

Qualified expert

An individual who, by virtue of certification by appropriate boards or societies, professional licence or academic qualifications and experience, is duly recognized as having expertise in a relevant field of specialization, e.g. medical physics, radiation protection, occupational health, fire safety, quality management or any relevant engineering or safety specialty.

Radiation Protection Officer

A person technically competent in radiation protection matters relevant for a given type of practice who is designated by the registrant, licensee or employer to oversee the application of regulatory requirements.

GSR Part 3: Definitions

Referring medical practitioners

A health professional who, in accordance with national requirements, may refer individuals to a radiological medical practitioner for medical exposure

GSR Part 3: Roles and responsibilities

State (Government)

- Health authority
- Regulatory body
- Professional bodies

Medical radiation facility

- Registrant or licensee/employer
- Radiological medical practitioner
- Medical radiation technologist
- Medical physicist
- Radiopharmacists, Dosimetrists, Engineers, IT specialist
- Ethic committee

Academic Institutions and training bodies

- Suppliers of sources, equipment and software
- Maintenance and servicing organizations

Referring medical practitioners

Principles of radiation protection

- Justification of practice

- Optimization of protection and safety

- Limitation of doses

GSR Part 3: Limitation of doses

Application to occupational and public exposure	Application to medical exposure
Dose limits apply to occupational exposure and public exposure arising from any use of ionizing radiation 	Limitation of doses do not apply to medical exposure - exposure of patients, carers or comforters, and volunteers as part of a programme of biomedical research. 

GSR Part 3: Justification

Application to occupational and public exposure
Justification of practices: A practice that entails exposure to radiation should only be adopted if it yields sufficient benefit to the exposed individuals or to society to outweigh the radiation detriment.

Application to medical exposure
Justification: The diagnostic or therapeutic benefits produced by exposures are weighed against the radiation detriment they might cause, taking into account the benefits and risks of available alternative techniques that do not involve medical exposure.

GSR Part 3: Justification

Level 1 General justification

The use of radiation in medicine

Taken for granted – accepted as doing more good than harm

Level 2 Generic justification

Given radiological procedure

Health authority in conjunction with appropriate professional bodies

Level 3 Individual justification

Exposure of individual patient

Consultation: the radiological medical practitioner and the referring medical practitioner

GSR Part 3: Justification for an individual patient

- With account taken of:
  - Appropriateness of the request
  - Urgency of the procedure
  - Characteristics of the exposure
  - Characteristics of the individual patient
  - Relevant information from previous radiological procedures

☝Particular attention to be taken for patients who are pregnant or breast-feeding or are paediatric

☝Relevant national or international referral guidelines shall be taken into account

GSR Part 3: Justification for asymptomatic individuals

As part of an approved health screening program	The health authority in conjunction with appropriate professional bodies
For the early detection of disease, but not part of an approved health screening programme	Specific justification for that individual by the radiological medical practitioner and the referring medical practitioner, in accordance with the guidelines of relevant professional bodies or the health authority. As part of this process, the individual shall be informed in advance of the expected benefits, risks and limitations of the radiological procedure.

GSR Part 3: Optimization

Application to occupational and public exposure, and to carers and comforters
Providing the best available protection and safety measures under the prevailing circumstances, so that the magnitudes and likelihood of exposures and the numbers of individuals exposed be as low as reasonably achievable (ALARA), economic and social factors being taken into account.

Application to medical exposure of patients and volunteers as part of a programme of biomedical research
In diagnostic and interventional medical exposure, keeping the exposure of patients to the minimum necessary to achieve the required diagnostic or interventional objective. In therapeutic medical exposure, keeping the exposure of normal tissue as low as reasonably achievable consistent with delivering the required dose to the planning target volume.

GSR Part 3: Optimization

Particular aspects of medical exposures are considered in the optimization process for:

- Paediatric patients subject to medical exposure
- Individuals subject to medical exposure as part of an approved health screening programme
- Volunteers subject to medical exposure as part of a programme of biomedical research
- Relatively high doses to the patient
- Exposure of the embryo or fetus
- Exposure of a breastfed infant as a result of a female patient having undergone a radiological procedure with radiopharmaceuticals

GSR Part 3: Optimization

Registrants and licensees and radiological medical practitioners shall ensure that protection and safety is optimized for each medical exposure

Components to consider:

- Design considerations for equipment
- Calibration
- Quality assurance
- Dosimetry of patients
- Diagnostic Reference Levels (DRLs)
- Operational considerations
- Dose constraints (for carers and comforters)

GSR Part 3: Radiological review

Radiological review: A systematic examination or review of the radiological procedures being performed in a given medical radiation facility, that seeks to improve the local implementation of the radiation protection principles of justification and optimization.

- Responsibility of the radiological medical practitioners

Optimization of Protection (summary)

Components	Responsibility
Equipment design and software	Manufacturer, Supplier, Licensee
Calibration	Manufacturer, Maintenance, Medical physicist
Quality assurance and quality control	Medical physicist, Radiographer, Radiologist
Dosimetry of patients and DRLs	Medical physicist, Radiographer, Radiologist,
Protocols (technique and parameters)	Radiographer, Radiologist, Medical physicist
Dose constraints for carers or comforters	Licensee, Radiation Protection Officer
Radiological review (Clinical audit)	Radiologist, Medical physicist, Radiographer
Records keeping	Licensee, Staff

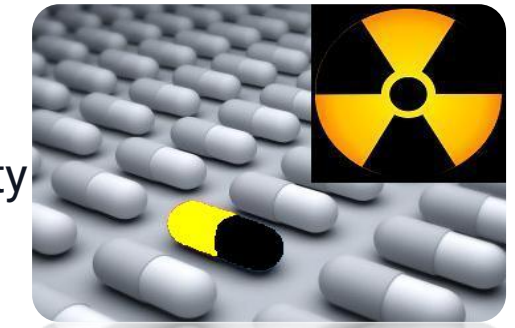
GSR Part 3: Release of patient after radiopharmaceutical therapy

Req 40: The radiological medical practitioner shall ensure that no patient who has undergone a therapeutic procedure with sealed sources or unsealed sources is discharged from a medical radiation facility until it has been established by either a medical physicist or the facility's radiation protection officer that:

(a)The activity of radionuclides in the patient is such that doses that could be received by members of the public and family members would be in compliance with the requirements set by the relevant authorities

(b)The patient or legal guardian of the patient is provided with:

- Written instructions for keeping doses to persons in contact with or in the vicinity as reasonably achievable and for avoiding the spread of contamination
- Information on the radiation risks.



GSR Part 3: Prevention and mitigation of accidents

Req 9: Registrants and licensees

(a) Shall establish clear lines of responsibility and accountability for protection and safety for the sources for which they are authorized, and shall establish organizational arrangements;..

(c) Shall, ….conduct ..a safety assessment and keep it up to date…;

(f) Shall have in place operating procedures and arrangements for protection and safety that are subject to periodic review and updating under a management system;

(g) Shall establish procedures for reporting on and learning from accidents and other incidents;

(h) Shall establish arrangements for the periodic review of the overall effectiveness of the measures for protection and safety;

GSR Part 3: Prevention and mitigation of accidents

Req 15: Registrants and licensees shall apply good engineering practice and shall take all practicable measures to prevent accidents and to mitigate the consequences of those accidents that do occur.

- Registrants and licensees shall ensure that a multilevel (defence in depth) system of sequential, independent provisions for protection and safety that is commensurate with the likelihood and magnitude of potential exposures is applied. Such defence in depth shall be applied for the purposes of:
  - Preventing accidents;
  - Mitigating the consequences of any accidents that do occur;
  - Restoring the sources to safe conditions after any such accidents.

GSR Part 3: Unintended or accidental medical exposures

Req 41: Registrants and licensees shall ensure that all practicable measures are taken to minimize the likelihood of unintended or accidental medical exposures, arising from:

- flaws in design and operational failures of medical radiological equipment,
- from failures of and errors in software,
- as a result of human error.

GSR Part 3: Unintended or accidental medical exposures

Req 41:Registrants and licensees shall promptly investigate any of the following unintended and accidental medical exposure:

- Any medical treatment:
  - delivered to the wrong individual or to the wrong tissue or organ of the patient, or using the wrong radiopharmaceutical, or
  - with an activity, a dose or dose fractionation differing substantially from (over or under) the values prescribed by the radiological medical practitioner, or
  - that could lead to unduly severe secondary effects.

GSR Part 3: Unintended or accidental medical exposures

Req 41:Registrants and licensees shall promptly investigate any of the following unintended and accidental medical exposure:

- Any procedure in which the wrong individual or the wrong tissue or organ of the patient is subject to exposure; or exposure is substantially greater than was intended;
- Any inadvertent exposure of the embryo or fetus in the course of performing a radiological procedure;
- Any failure of medical radiological equipment, failure of software or system failure, or accident, error, mishap or other unusual occurrence with the potential for subjecting the patient to a medical exposure that is substantially different from what was intended.

GSR Part 3: Unintended or accidental medical exposures

Req 41: Registrants and licensees shall :

- Calculate or estimate the doses received and the dose distribution within the patient;
- Indicate and implement corrective actions to prevent the recurrence;
- Produce and keep a written record that states the cause of the unintended or accidental medical exposure and includes the information on dose calculation and corrective measures
- For significant unintended or accidental medical exposures or as otherwise required, submit this written record, as soon as possible, to the regulatory body, and to the relevant health authority if appropriate;
- Inform the referring medical practitioner and the patient or the patient’s legal authorized representative of the unintended or accidental medical exposure.

Overview of IAEA -RPOP resources

Providing Specific guidance on implementation (Safety Reports, TecDoc)

SAFETY REPORT SERIES No. XXX

EDUCATION AND TRAINING FOR BUILDING AND MAINTAINING COMPETENCE IN RADIATION PROTECTION IN MEDICINE

Jointly sponsored by the
International Atomic Energy Agency and
World Health Organization (invited to co-sponsor)

Endorsed by
Professional organizations (ESTRO, DITTA, FDI World Dental Federation, IADMFR, IOMP, ISR, ISRRT, IUPESM, WEO, WFNMB, WONCA)

Version 22 April 2025

IAEA
International Atomic Energy Agency

SPESS F
Document Preparation Profile (DPP)
Version 1 dated 2023-05-08

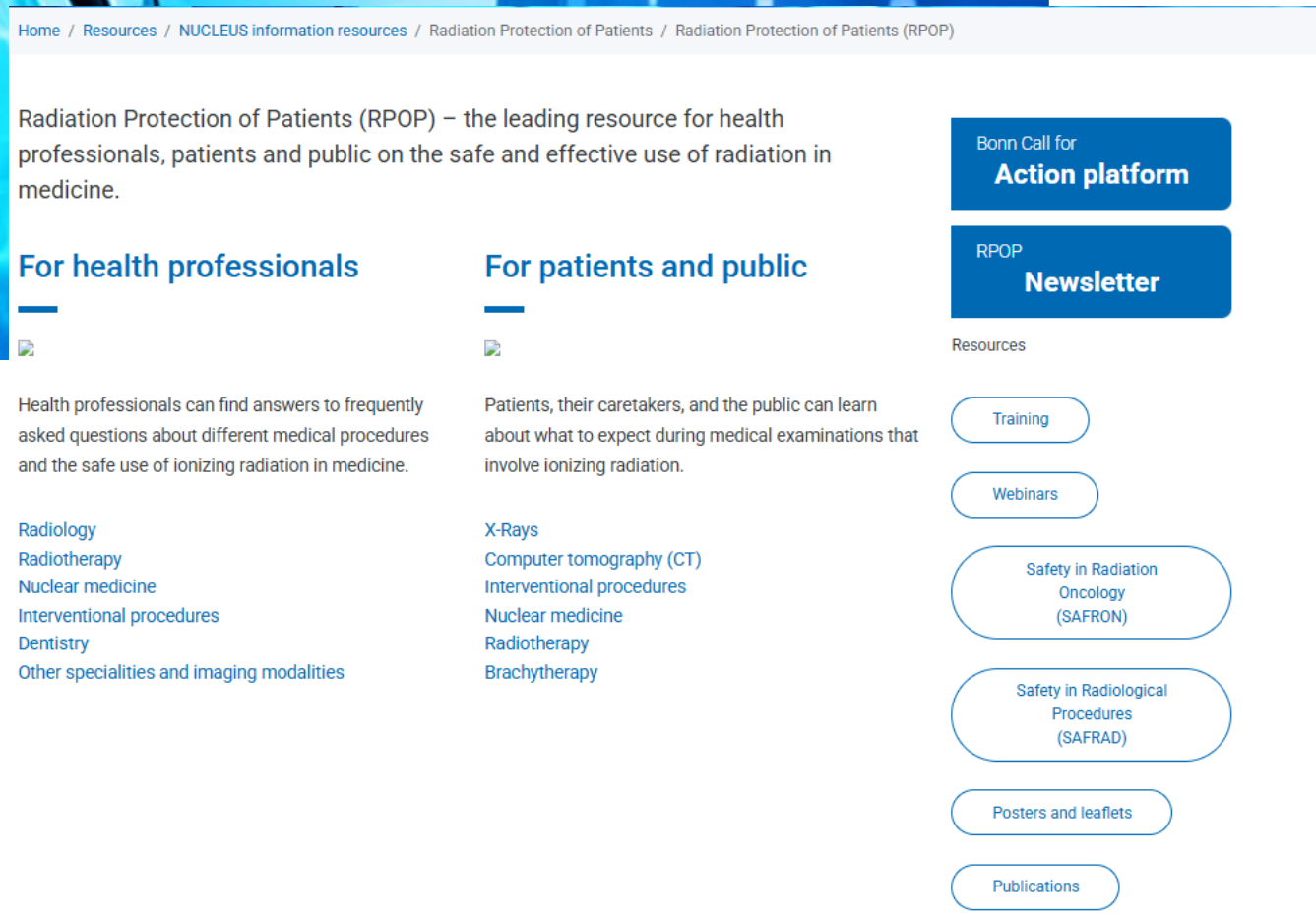
IDENTIFICATION

Document category:	**TECDOC**
Working ID:	**[leave blank until approval by the Coordination Committee]**
Proposed Title:	**Detection of Unintended or accidental Medical Exposures in Radiotherapy Through Patient Response and Recommendations**
Proposed Action:	**New document**
Review Committee(s) or Group:	**n/a**
Technical Officer(s):	**Vesna Gershan and Ola Holmberg, NSRW**

IAEA TECDOC SERIES

Detection of unintended or accidental medical exposures in radiotherapy through patient response and recommendations

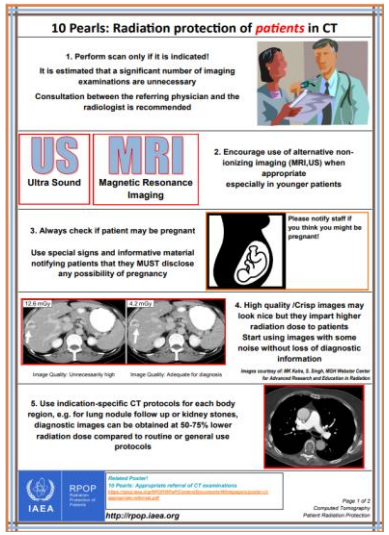
Providing guidance and Building awareness-Public website

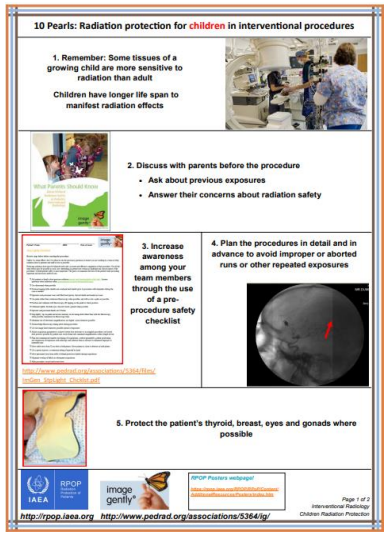


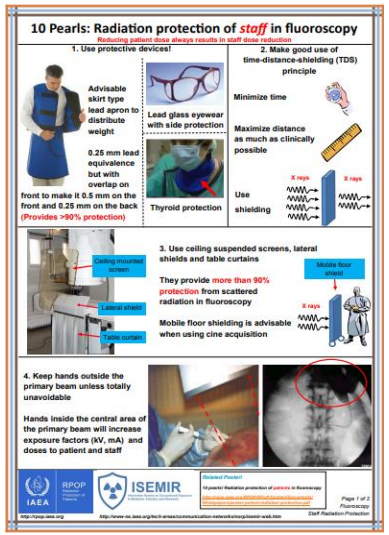
[Radiation Protection of Patients (RPOP) | IAEA]

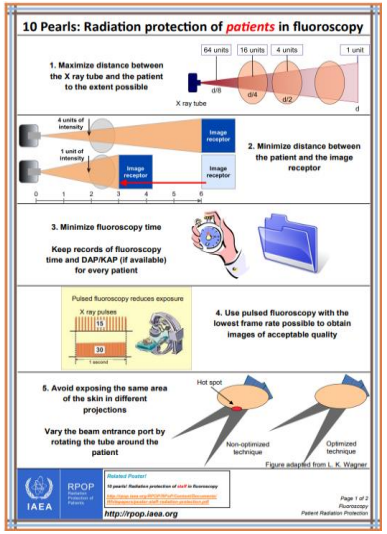
- Available in English and in Spanish
- 1.5 Million views per year

Providing guidance and Building awareness-Posters









[Posters and leaflets about radiation protection | IAEA]

Providing guidance and Building awareness-Videos

Medical imaging: The right test at the right time

https://youtu.be/0USC0C6qG9w

Medical imaging in pregnancy

https://youtu.be/2gQbR4gVXM8

Safe medical imaging for children

https://youtu.be/Zcs0MFMHkm

Protecting patients in dentistry

https://youtu.be/ub1AcfVHn7w

Providing Training- Training Packages

[Training material | International Atomic Energy Agency]

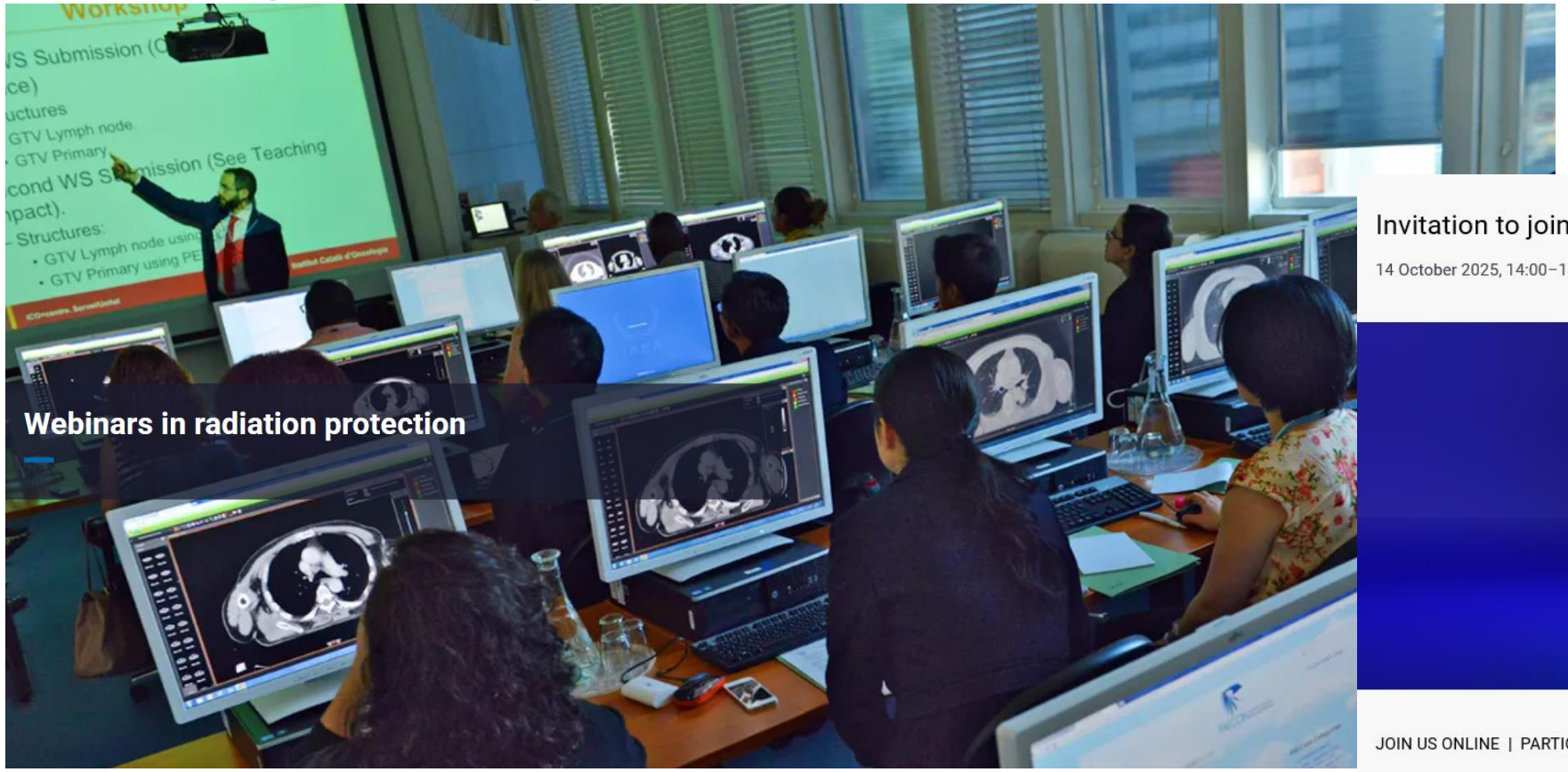
- Diagnostic and interventional radiology
- Digital radiology
- Paediatric radiology
- Radiation dose management in CT
- Radiotherapy
- Radiotherapy: Prevention of accidental exposure
- Safety and quality in radiotherapy
- Nuclear medicine
- Cardiology
- PET/CT
- Doctors using fluoroscopy outside radiology
- Dental radiology
- Radiation Safety Culture Trait Talks Handbook
- RP in Interventional Procedures: Practical Tutorials

Providing Training- eLearnings

[Online training in radiation protection | IAEA]

1. Diagnostic Reference Levels in Medical Imaging (English, Spanish)
2. Tips & Tricks: RP in Radiography (English)
3. Safety and Quality in Radiotherapy (English, Russian, Spanish)
4. Radiation Dose Management in CT (English, Russian, Spanish)
5. RP in fluoroscopy guided interventional procedures (English)
6. RP in Interventional Procedures: Practical Tutorials (English, Russian, Spanish)
7. RP in Dental Radiology (English, Spanish)
8. RP in Nuclear Medicine (English)

Providing Training- Webinars



Invitation to join IAEA webinar

14 October 2025, 14:00–15:00 (CEST)

JOIN US ONLINE | PARTICIPATION IS FREE

Artificial Intelligence in Radiation Protection of Patients: Utilities in Diagnostic and Interventional Radiology

Presented by Ehsan Samei (USA), Laurens Topff (Netherlands) and Annalisa Trianni (Italy)

[Webinars in radiation protection | IAEA]

Providing Training- Training courses

Search

Search in Conferences:

Overview

Programme

Speakers

Apply here

Practical info

Support

smr4112@ictp.it

Joint ICTP-IAEA Workshop on Radiation Protection in Diagnostic and Therapeutic Nuclear Medicine | (smr 4112)

Starts 10 Nov 2025
Ends 14 Nov 2025
Central European Time

ICTP
Kastler Lecture Hall (AGH)

Adriatico Guest House
Riva Massimiliano e Carlotta, Grignano
I - 34151 Trieste (Italy)

An ICTP-IAEA meeting

The workshop provides specialized training on safety standards and best practices for radiation protection of patients and staff in nuclear medicine, thereby supporting the reduction of potential radiation risks and fostering a strong safety culture while ensuring optimal patient care.

The clinical applications of nuclear medicine procedures are rapidly expanding, offering substantial benefits to patients. However, the introduction of new technologies, procedures, and radiopharmaceuticals necessitates specific safety measures to ensure the radiation protection of both patients and staff.
This workshop is designed to enhance knowledge and facilitate the exchange of expertise to ensure the safe application of nuclear medicine techniques in both diagnosis and treatment, while addressing the challenges and risks posed by the continuous evolution in this field.
Primarily targeted at experienced clinical medical physicists in nuclear medicine, this workshop is particularly relevant for those from departments planning to introduce new methods or radiopharmaceuticals into clinical practice. Participants are expected to present their department's radiation protection programme.

Topics

- Nuclear medicine facility planning and shielding calculations
- Management of radioactive materials and radiation waste
- Workplace and personal dose monitoring practices
- Radiation protection during the production and administration of radiopharmaceuticals
- Practical strategies for optimizing radiation protection of patients and staff members

International Workshop on Radiation Protection Optimization in Fluoroscopy Guided Interventional Procedures

April 15, 2024 – April 19, 2024

Location: Argonne National Laboratory, Lemont, IL, USA

Information

Agenda

Event Materials (protected)

Photos (protected)

Tools

Upload

Resources

FAQ sheet (Participants)

Intro PPT Template (Participants)

Presentation Guidance (Speakers)

Argonne Information

Visiting Argonne

Argonne Map

Argonne Videos

Local Area Information

Hotel & Dining

Introduction

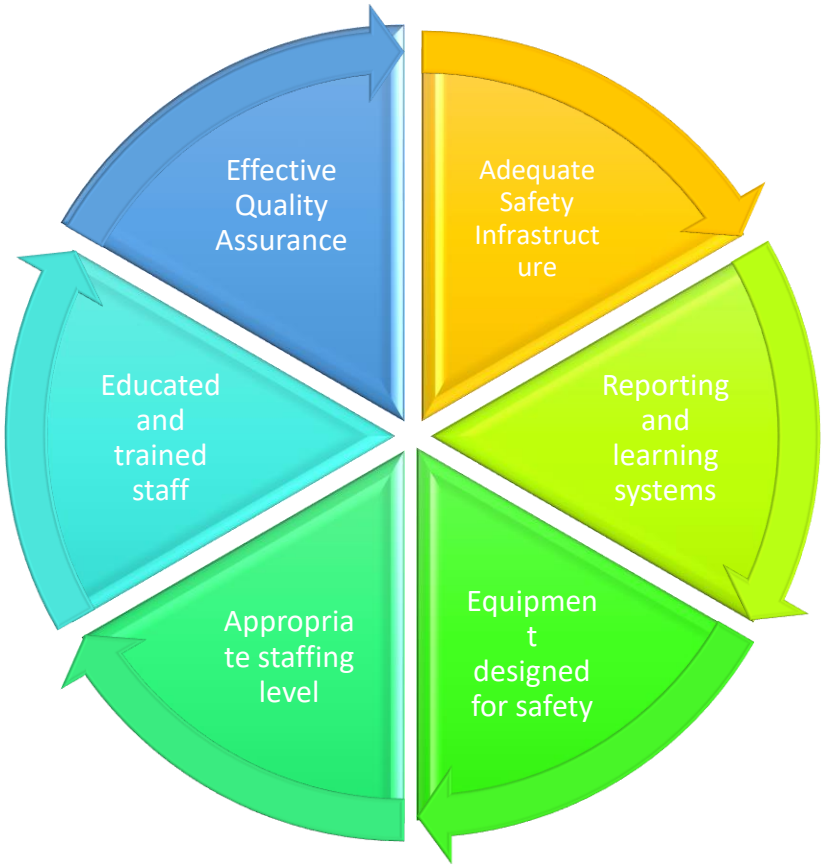
Fluoroscopically guided interventional (FGI) procedures provide an excellent alternative to many surgical interventions. In addition to the traditional performers as interventional radiologists and cardiologists, these procedures are increasingly performed by physicians of other medical and surgical specialties, e.g. neurosurgeons, vascular surgeons, orthopedic surgeons, urologists, or gastroenterologists, involving also other medical staff (nurses, anesthesiologists, etc.) who have limited or no training in radiation technology and radiation protection. The increase of variety, frequency and complexity of these procedures and the involvement of non-trained staff pose many challenges for both patient and medical staff radiation protection. Particular challenges are the risk of tissue reactions, mainly skin injuries and eye lens opacities, for patients and staff. The International Basic Safety Standards (IAEA GSR Part 3) set requirements for ensuring safe use of radiopharmaceuticals and radiation protection and safety for patients and staff in interventional procedures, which are further emphasized in the implementation Safety Guide SSG-46 of the IAEA and related technical documents.

Objectives

The overall objective of the workshop is to enhance participants' knowledge of safety standards and good practice regarding radiation protection of patients and staff in image guided interventional procedures, as well as to support the improvement of their practical skills and competence in the field.

Participants will acquire the necessary knowledge and skills to manage patient and staff dose and image quality in FGI procedures. They will learn about components to be in place in order to optimize procedures, including selection of design features of a fluoroscopy system consistent with the intended clinical use; proper configuration and exposure setting optimization at the time of commissioning of the system, tailored to the clinical tasks and required image quality; setting a comprehensive quality assurance and patient dose monitoring programme and optimal use of the available equipment features and settings by the operators to reduce exposure to patient and staff. Prevention and management of tissue reaction and setting follow-up program will be also discussed

Facilitating Knowledge Exchange- Safety initiatives



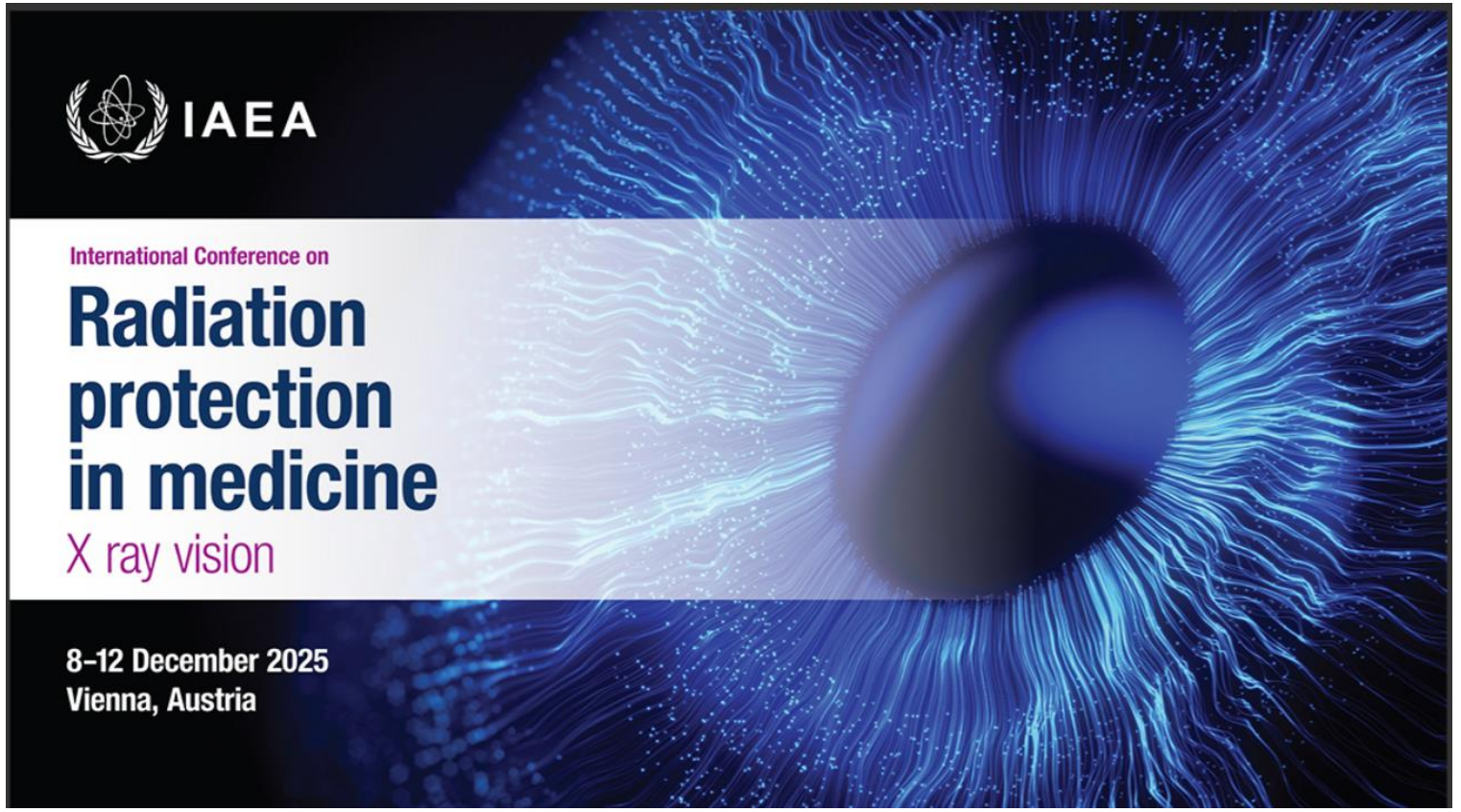
International study of patient doses and tissue reactions from fluoroscopy guided interventional procedures

June 2022 – May 2023

[Databases and learning systems in radiation protection | International Atomic Energy Agency]

Facilitating Knowledge Exchange- International Conferences

International Conference on Radiation Protection in Medicine: X Ray Vision



Home: International Conference on Radiation Protection in Medicine: X Ray Vision | IAEA

Facilitating Knowledge Exchange- Technical meetings

Radiation Protection of Patients in the New Era of Medical Imaging, 4 - 6 March 2024

Radiation Protection Challenges in Modern Nuclear Medicine, 3 – 5 March 2025

IAEA information and learning resources

http://rpop.iaea.org

Thak you!

c.rizk@iaea.org