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OPTIMIZING RADIATION PROTECTION IN MEDICAL PRACTICE

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Other partners:

Bundesamt für Strahlenschutz

Nofer Institute of Occupational Medicine

Slovak Medical University

MIRION TECHNOLOGIES

RADCARD DOSIMETRIC CARDS

Presentation

1. Introduction
2. Scope - contents
3. Approach to prepare ORAMED training material
4. Feedback from first experiences in a nuclear medicine department
5. Summary

1.1 The use of ionizing radiation in medical applications

- A major field of non-natural exposure.
- New developments in medical technology and the increased complexity.
- Different backgrounds, other interests.
- Specific scope to complete existing training initiatives.

1.2 Objectives of ORAMED

- ORAMED aims at developing methodologies for better assessing and reducing exposures to medical staff in interventional radiology and nuclear medicine.
- The main goal of ORAMED training proposals is to disseminate the new knowledge to medical staff and other stakeholders.
- Four main topics are addressed.

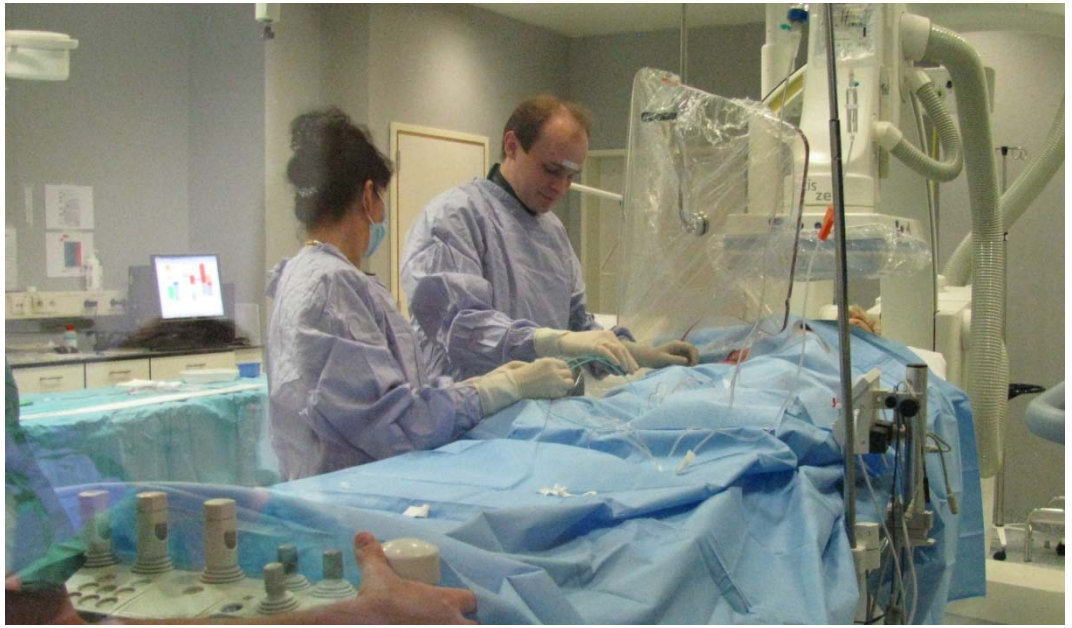
2 Scope

- Optimization of radiation protection in **interventional radiology**
- Development of **practical eye lens dosimetry** in interventional radiology
- Optimization of the use of **active personal dosemeters in interventional radiology**
- Improvements in **extremity dosimetry in nuclear medicine**, with special emphasis for **PET** applications and nuclear medicine **therapy**

2.1 Interventional radiology and cardiology

Measurement campaign

5 countries
3 hospitals



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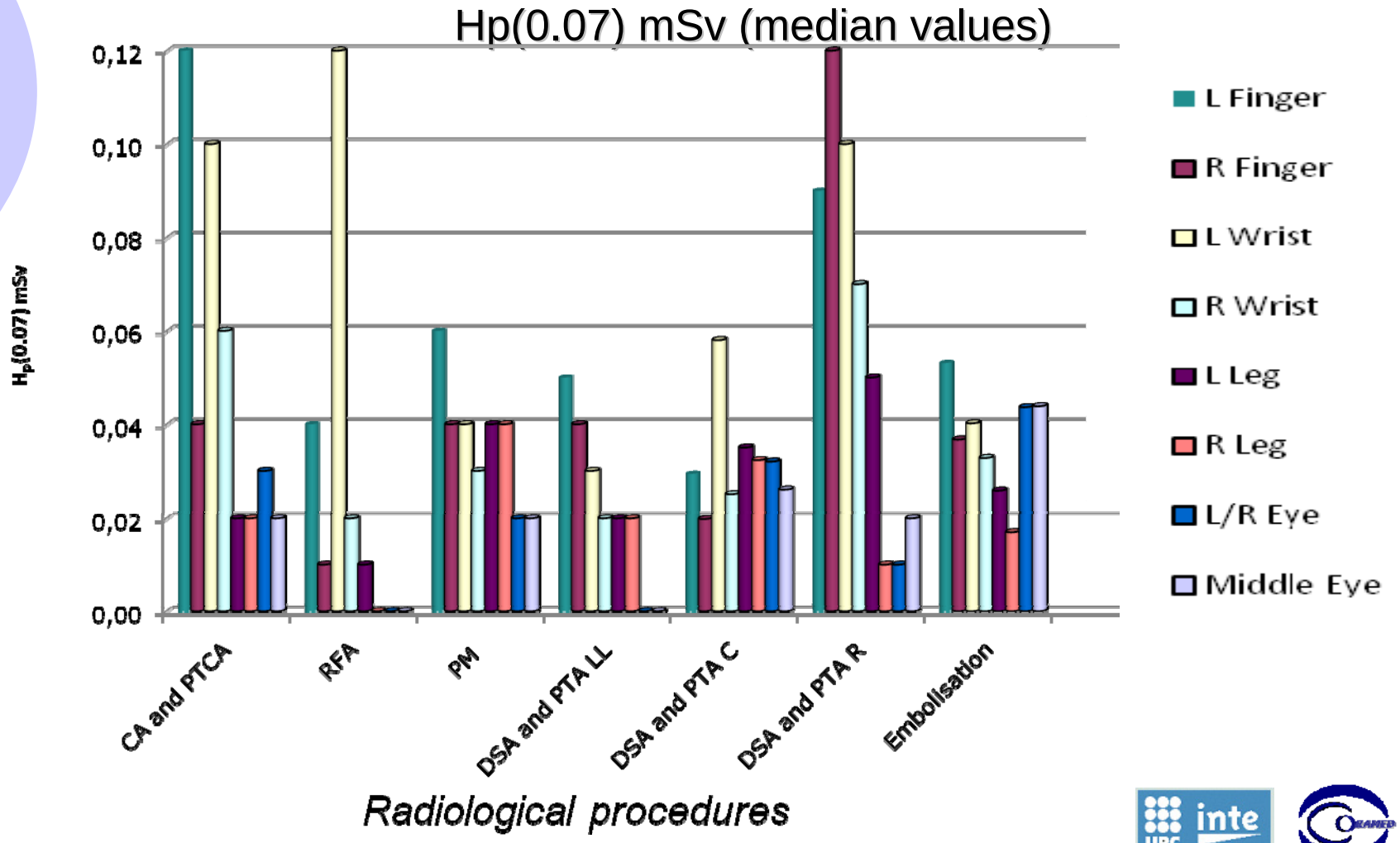

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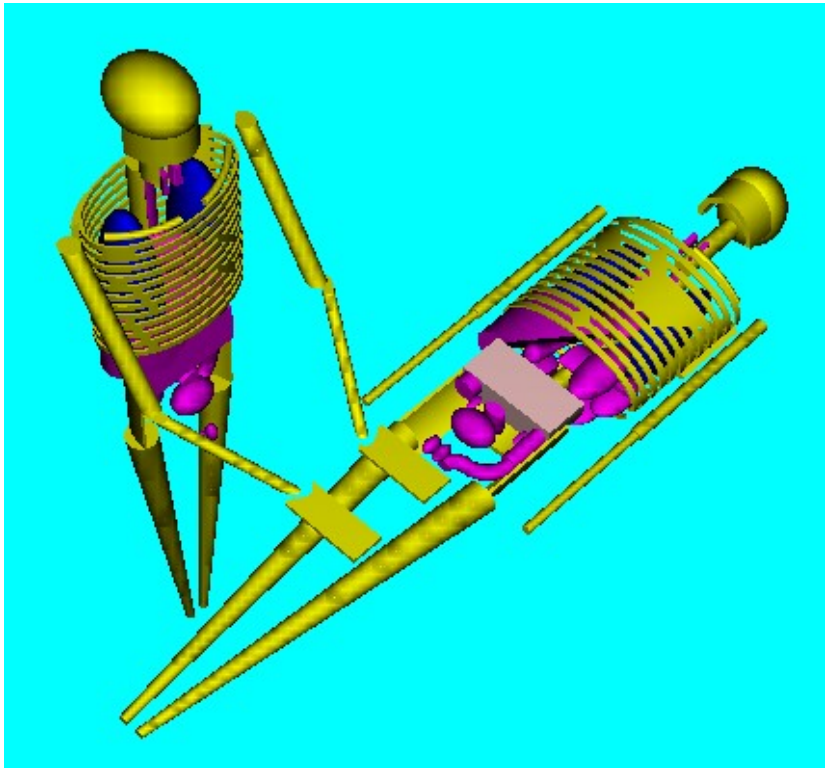
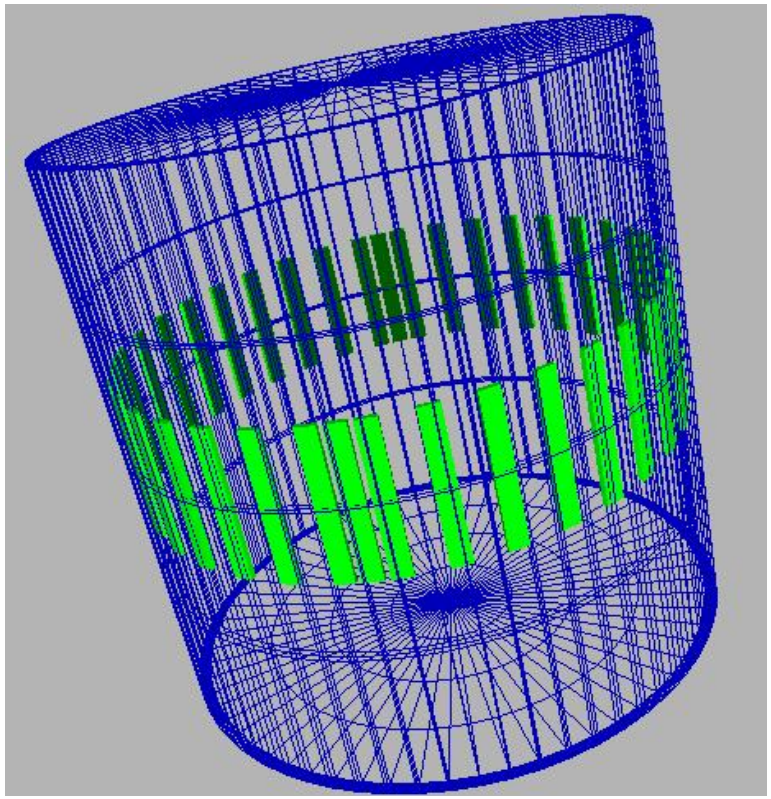


MC Simulations:
geometry influence
sensitivity study
(filtration, kV, shieldings)

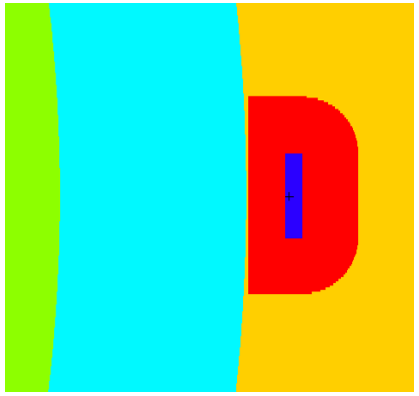
2.2 Eye-lens dosimetry



A Monte Carlo approach to define the operational quantity Hp(3)

2.2 Eye-lens dosimetry

Capsule and TL dosemeter
Pre-prototype



Monte Carlo simulations

Mounted on headband

2.3 Active personal dosemeters in IR/IC

MGPi
DMC 2000XB

Siemens
EPD Mk2.3

Dosilab
EDM III

Polimaster
PM1621A

Rados
DIS-100

UNFORS
EDD30

2.4 Extremity dosimetry in Nuclear medicine

Radiopharmaceutical:

diagnosis Tc-99m, F-18,

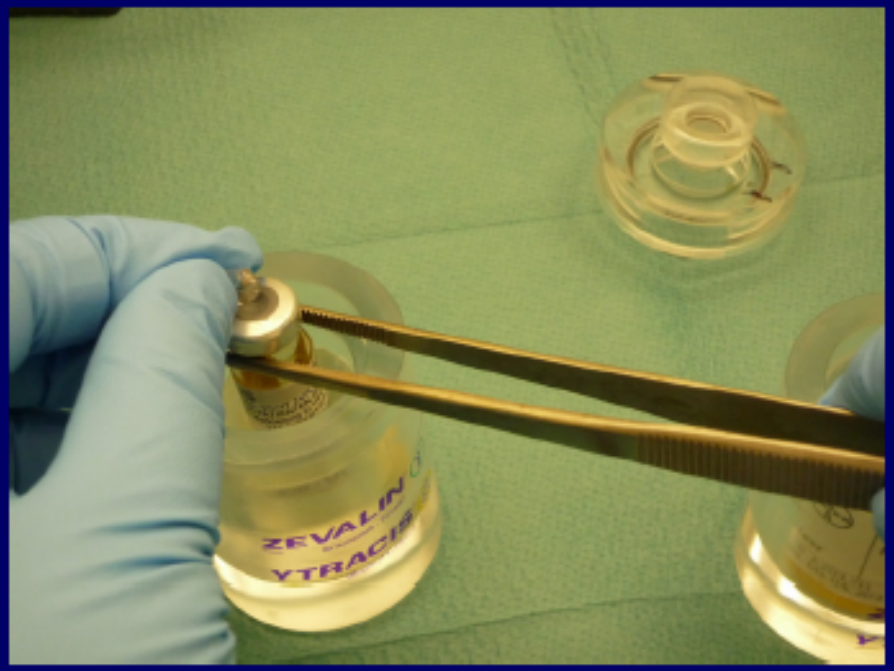
Therapy: Y-90 Zevalin

✓7 countries, 2 Nuclear Medicine Dept.

11 TLDs

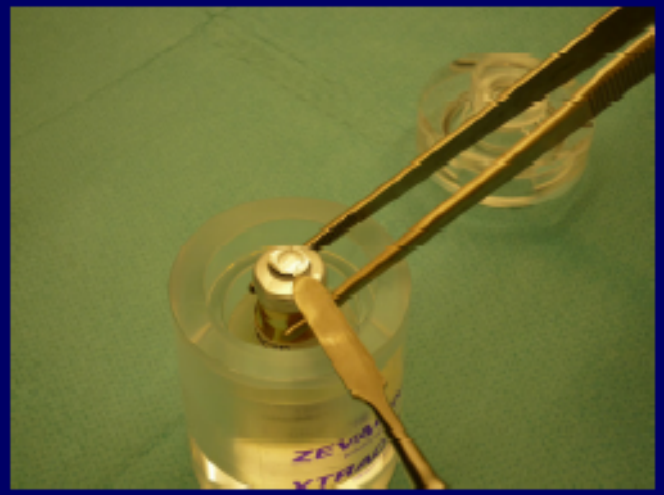
Example of good and bad practices in NM therapy

Bad Practice



Opening the vial

Good Practice



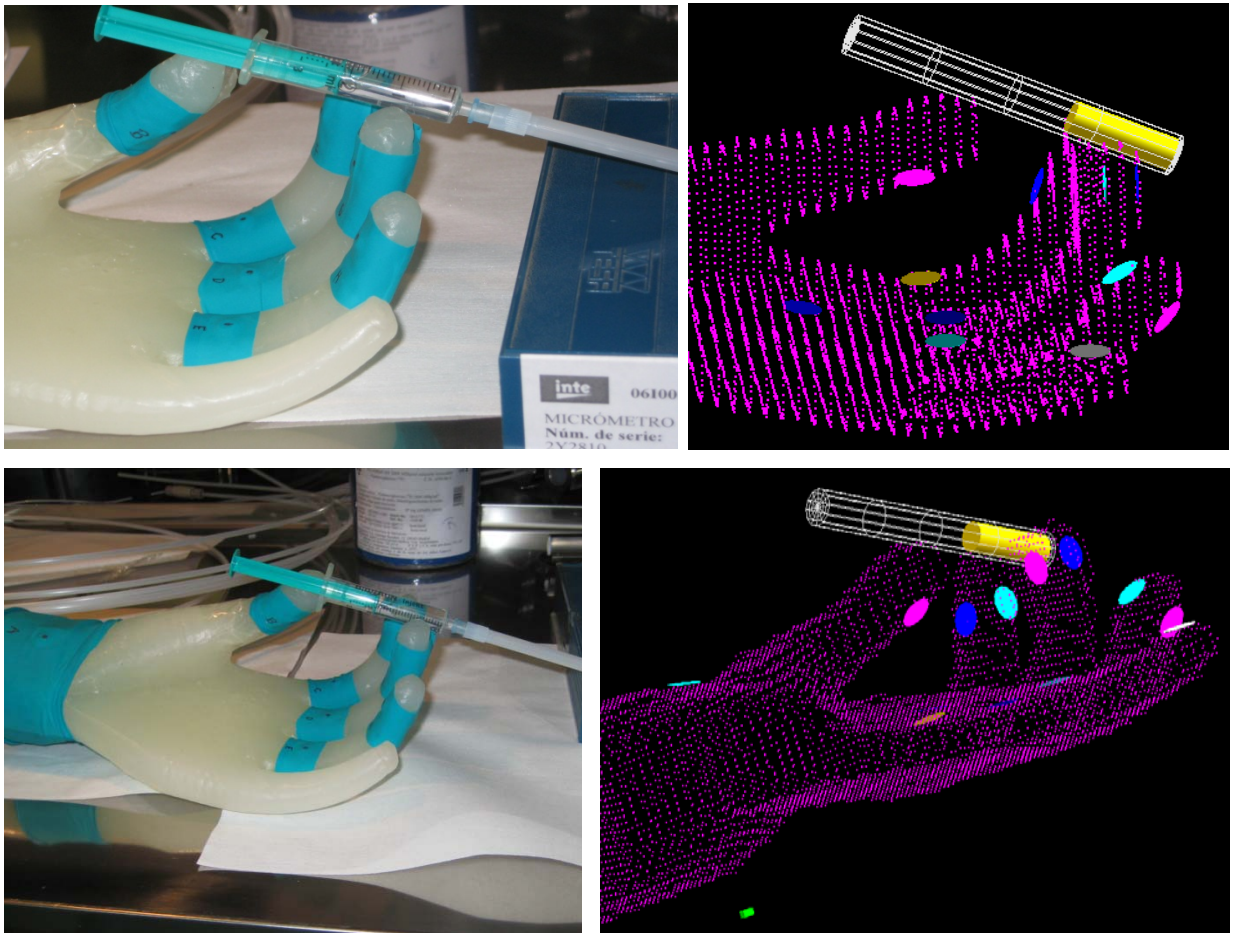
Example of good and bad practices in NM therapy

Bad Practice

Good Practice

Holding the vial shielding

2.4 Nuclear medicine: Validation: comparison measurements with simulations



3. Training and dissemination:

3.1 Main stakeholders

- Medical staff exposed to ionizing radiation.
- Radiation Protection Officers and Medical Physicists.
- Education and training institutions in radiation protection.
- Personal dosimetry services.
- Calibration laboratories.
- Radiation protection regulators and authorities.
- Instrument manufacturers.

3.2 Dissemination channels

- Contact with professional societies (EANM, EFOMP, ESR, …); institutions (IAEA, ICRP); networks (EURADOS, EMAN); Other EURATOM Fp7 projects (MADEIRA).
- Conferences and workshops
- Scientific papers.
- Workshop: Barcelona, 20-22nd of January 2011

3.3 Training material for medical staff

- **Reports on guidelines** about radiation protection measures to reduce staff dose in interventional radiology and nuclear medicine.
- **A video** with “good practices” to optimize radiation protection of medical staff,
- **Transparencies** to be used on training courses.
- **Interactive** lectures, **e-material**.

3.4 Foreseen training activities

- On the job training for participating medical staff,
- Workshops and conferences
- Training for “trainers”
- Collaboration with existing courses
- International workshop in January 2011 in Barcelona.

4. Feedback from first experiences

Lifelong learning session in a Nuclear Medicine department which had participated in ORAMED measurements (45-min)

- Practical recommendations, photographs.
- Credibility of the project participants.
- Involvement of responsibles.
- Motivation to be the best.
- Open discussion - mother tongue.

5. Summary and perspectives

- Useful recommendations and guidelines to improve radiation protection practice in interventional radiology, cardiology and nuclear medicine.
- Contacts and collaboration with other organizations to ensure dissemination.
- Pilot training sessions are being organized.
- Feedback from interested parties and regular up-date are foreseen.

For more information, please visit our website:

www.oramed-fp7.eu

THANK YOU
FOR YOUR ATTENTION

ACKNOWLEDGMENT

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