

# ORAMED training module: Optimizing radiation protection in interventional radiology and nuclear medicine



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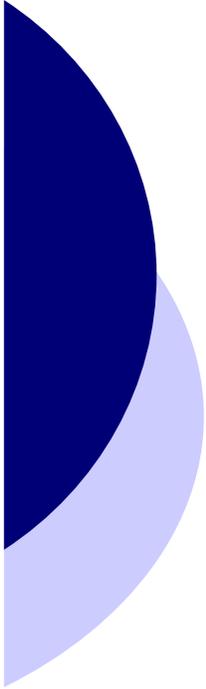


# 1. Introduction:

## 1.1 Objectives of ORAMED training

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- ORAMED FP7 project aims at developing methodologies for better assessing and reducing exposures to medical staff in interventional radiology and nuclear medicine.
- The main conclusions of the study will be disseminated through several training initiatives.
- Four main topics are addressed.
  - Optimization of radiation protection in **interventional radiology**
  - Development of **practical eye lens dosimetry** in interventional radiology
  - Optimization of the use of **active personal dosimeters in interventional radiology**
  - Improvements in **extremity dosimetry in nuclear medicine**, with special emphasis for **PET** applications and nuclear medicine **therapy**

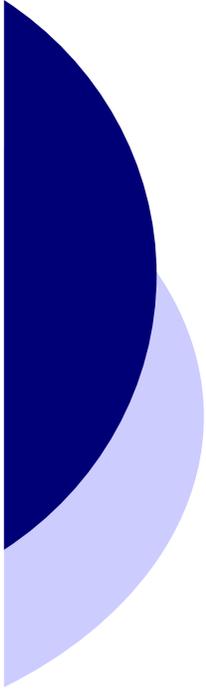


## 1.2 Main stakeholders

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The training material can be useful for:

- Medical staff exposed to ionizing radiation and more specifically: interventional radiologists, cardiologists, nuclear medicine technologists, nuclear medicine therapists.
- Radiation protection officers and medical physicists in hospitals and medical facilities.
- Education and training institutions in radiation protection.
- Personal dosimetry services.
- Calibration laboratories.
- Radiation protection regulators and authorities.
- Instrument manufacturers.



## 2. Materials and methods

### 2.1 Foreseen training activities

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- On-going training for ORAMED participating medical staff,
- Training for “trainers”
- e-training, self-evaluation, interactive courses for medical staff.
- Collaboration with existing courses
- International workshop on 20-22 January 2011, in Barcelona ORAMED 2011, [www.upc.edu/inte/oramed](http://www.upc.edu/inte/oramed) (specific interactive modules will be presented to participants)

## 2.2 Scope

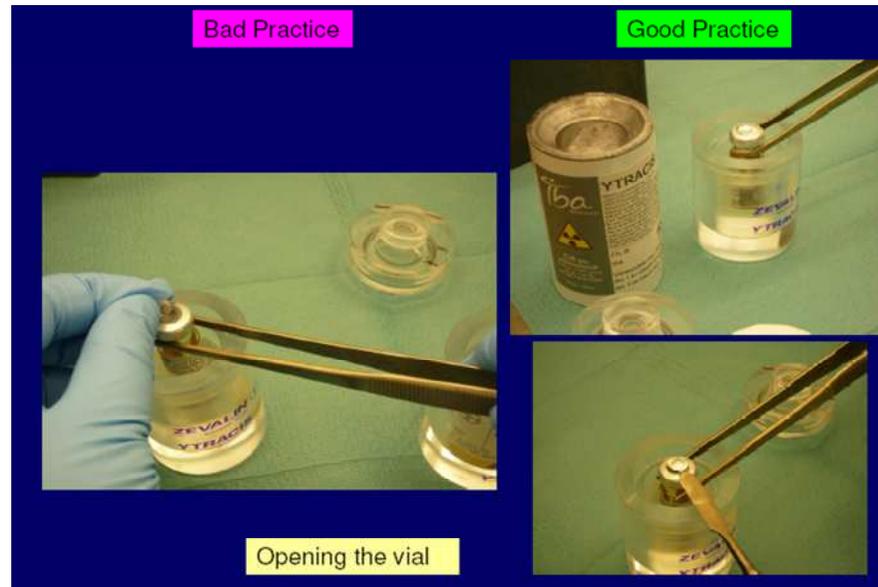
Eye lens dosemeter



Optimization in interventional radiology and cardiology



Nuclear medicine



## 2.3 ORAMED Training material

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### **For medical staff (2, 2h-modules)**

- Interventional radiology
- Nuclear medicine

*(With a general scheme for both specialties, will deal about topics studied in ORAMED and includes the use of interactive systems and video)*

### **For trainers**

Complete the specific modules, with references of free available RP general courses (IAEA), to put them into context.

### **For dosimetry services/Metrology labs**

Module on how to calibrate personal dosimeters if they are to be used in IR, NM, eye-lens dosimetry.

# 3. ORAMED specific modules

## 3.1 Contents

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### 1.- Introduction:

Aims of the medical speciality, different types of procedures, types of radiation sources, characteristics

Radiation protection summary, limits, (should be known)

### 2.- Doses of exposed staff: (ORAMED measurements)

Procedures used, associated doses. ORAMED results are used and interactive questions proposed.

### 3.- Dosimetric aspects (*general*)

Different types of available dosimeters, general characteristics, recommended uses. Interactive questions proposed.

### 4.- Radiation protection means (ORAMED measurements)

Description of available RP means, shielding, type of syringe, position of the tube, distance, time. ORAMED results are used and interactive questions proposed. First recommendations.

### 5.- Guidelines, recommendations to optimize radiation protection (summary)

## 3.2 Example of transparencies (1/2) Background and question

### Background

- Interventional radiologist and cardiologist have been identified as staff than can potentially expose their hands to high doses.
- However there are no general recommendations on what type of dosimeter should be worn: a wrist or a ring dosimeter.
- Some countries are using both types but others just one type.



Which statement would you consider if you were to recommend some type of extremity dosimeter for interventional radiology?

- A.- The ring dosimeter always provides a higher dose reading. Use a ring dosimeter.
- B. – You can use either a ring or a wrist dosimeter. But it is important to use 2 dosimeters, one in the right hand and the other in the left hand. There are no differences with the types of dosimeter but with the side where they are worn.
- C.- There are no significant differences between wrist and ring, but the wrist is more comfortable to work in the radiological procedure. Use a wrist dosimeter in the dominant hand (right).
- D.- There are no significant differences between wrist and ring, but the wrist is more comfortable to work in the radiological procedure. Use a wrist dosimeter in the non dominant hand (left).

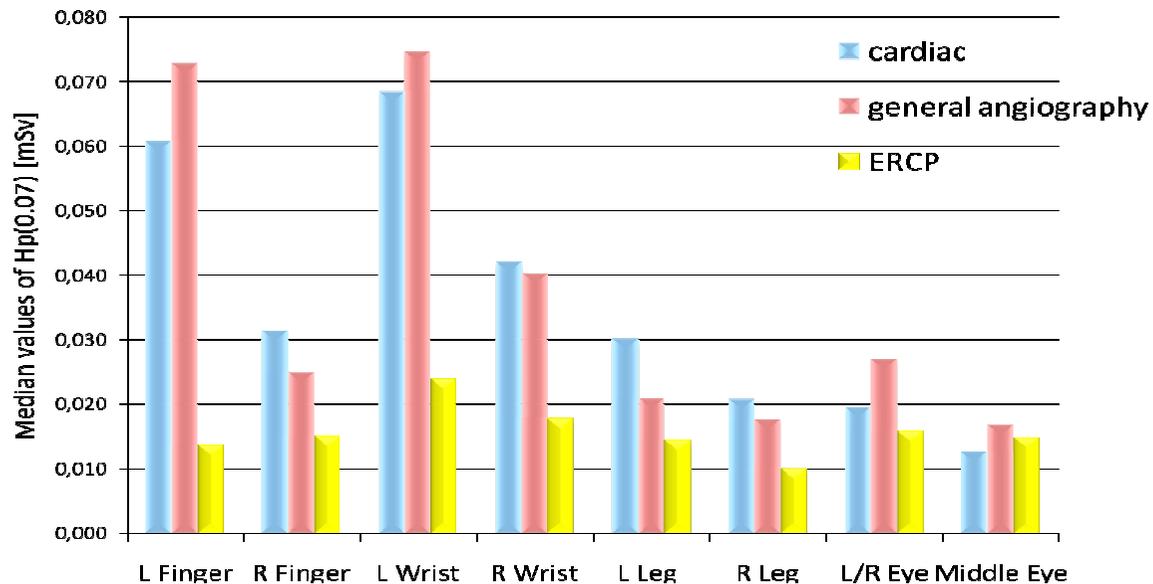


Voting system to select the answer.

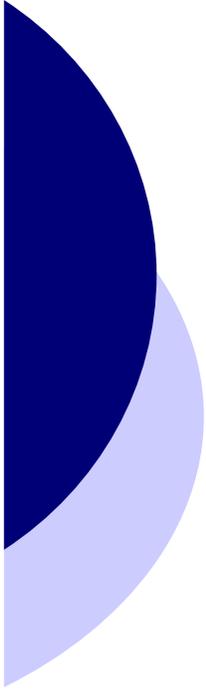


## 3.2 Example of transparencies (2/2) Answer and discussion

- First the participants vote the correct answer.
- The screen shows the number of votes for each options
- The correct answer is highlighted.
- The justification is shown with a graph of ORAMED measurements.
- The wrong answers are discussed.



**Correct answer is D:**  
The left side is usually more exposed.  
The finger ring and the wrist provide similar dose estimates.  
Any type can be used, but usually wrist is found more comfortable.



## 5. Summary

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- Recommendations and guidelines are provided to improve radiation protection practice in interventional radiology, cardiology and nuclear medicine.
- Special emphasis is given to specific problems not included in most available training courses.
- New technologies are used to promote participants to be more active and to give immediate feed-back to trainers.
- Pilot training sessions will be given in Barcelona during ORAMED 2011, feedback from interested parties and regular up-date are foreseen.

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