EDUCATION IN RADIATION PROTECTION FOR MEDICAL STAFF IN TRAINING

D. HERNÁNDEZ GONZÁLEZ (1), P. CHAMORRO SERRANO (1),
P. GARCÍA CASTAÑÓN (1), C. ANSÓN MARCOS (1), M.L. ESPAÑA LÓPEZ (1),
S. FERNANDEZ RODRIGUEZ (2), M.D. VICENT GARCÍA (2)
1 - Medical Physics Department
Medical Physics and Radiation Protection Department, H.U. La Princesa
Diego de León 62, 28082 Madrid, Spain
2 - Servicio de formación especializada Consejería de Sanidad,
Comunidad de Madrid, Spain
INTRODUCTION

- **2013/59/EURATOM**
  Legislative framework in Member States

- **ICRP 113. Education and Training in RP**
  for diagnostic and interventional procedures
INTRODUCTION

* **National legislation:**  RD 815/2001

Ministerial Order 2006/04/21

Medical Physics and Radiation Protection Department

Radiation Protection education in the training programmes of medical specialities
INTRODUCTION

- European Commission Guidelines for health practitioners
  116 and 175

- Biological effects
- Justification
- Risk-benefit
- Typical doses received by patient
- Complex techniques
- New equipment

Education & Training in RP for referrers and practitioners
OBJECTIVE

* Analysis and evaluation of the education and training programmes on Radiation Protection from 2013 to 2015 in Madrid region
Radiation Protection Education and Training for physicians and nurses in training in Madrid

- Preclinical Period → Medical University Schools
- Clinical Period → University Teaching Hospitals
METHODOLOGY

* Radiation Protection Education and Training for physicians and nurses in training in Madrid

Clinical Period → University Teaching Hospitals

**BASIC**

- Residents (1st year)
- Nurses in training (1st year)
- Residents (3rd year)

**ADVANCED**

- Nuclear Medicine
- Radiotherapy
- Radiology
- Radiopharmacy
BASIC LEVEL (1st year)

- Structure of matter
- Radiation quantities and units
- X-ray equipment (generation, tube…)
- Image formation
- Biological effects of ionizing radiation
- Occupational and medical exposures
- Radiation Protection principles and legislation
- Radiological risk information for patients

Annual periodicity

1 session

evaluation + satisfaction questionnaire
METHODOLOGY

BASIC LEVEL (3rd year)

- Radiation Protection in medicine
- Justification of medical procedures
- Optimization of radiation protection
- Discussion of practical cases

Annual periodicity

1 session

Practical exam + satisfaction questionnaire
METHODOLOGY

ADVANCED LEVEL

- Biennial periodicity
- Several sessions
- General theoretical contents
- Practical lessons
- Specific contents for the different specialities

Reduced number of trainees

evaluation + satisfaction questionnaire
METHODOLOGY

Satisfaction Questionnaire

Developed by Regional Council

- Contents and applications
- Documentation supplied
- Organization
- Utility for job
- Degree of knowledge
- Global assessment

+ suggestions and observations
**RESULTS**

*Basic Level Courses*

- **Residents (1st year)**
  - Great acceptance
  - More than 1200 students in Madrid (increase of 120% respect to firsts editions)

- **Nurses in training**
  - First in 2013 adapted to nurse specialities

- **Residents (3rd year)**
  - Best evaluated (in this level)
# RESULTS

<table>
<thead>
<tr>
<th>Basic Level Course for nurses in their first year of residency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
</tr>
<tr>
<td>Number of participants</td>
</tr>
<tr>
<td>Marks from 0 (min) to 10 (max)</td>
</tr>
<tr>
<td>Theoretical contents</td>
</tr>
<tr>
<td>Practical contents</td>
</tr>
<tr>
<td>Methodology suitability</td>
</tr>
<tr>
<td>Utility for their job</td>
</tr>
<tr>
<td>Degree of knowledge acquired</td>
</tr>
<tr>
<td>Aroused interest</td>
</tr>
<tr>
<td>Response to previous expectations</td>
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<tr>
<td>Delivery documentation quality and suitability</td>
</tr>
<tr>
<td>Employed resources quality and suitability</td>
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<tr>
<td>Employed installations suitability</td>
</tr>
</tbody>
</table>
**RESULTS**

Basic Level Course for trainees during third year of residency at Madrid region

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of participants</th>
<th>Global assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>752</td>
<td>6.83</td>
</tr>
<tr>
<td>2014</td>
<td>755</td>
<td>7.05</td>
</tr>
<tr>
<td>2015</td>
<td>2731</td>
<td>6.79</td>
</tr>
</tbody>
</table>
RESULTS

* Advanced Level Courses

Specialities directly making use of ionizing radiation

• Best evaluated course (more related to their clinical practice)

Accreditation by the regulatory body to perform ionising radiation procedures
DISCUSSION

* Period 2013-2015

Interest in medical aspects more than in RP Physics

- Emphasize Principles of RP in Medicine
  - Practical contents
  - Radiological risk information
  - Situations involving pregnant women and paediatric patients (Justification Principle)
  - Radiobiological Effects

Theoretical contents are difficult but necessary
CONCLUSIONS

- Arising a better understanding of ionizing radiations in medical practice
  - Justification of radiation procedures
  - Optimization of RP in operational and medical exposures
- New technologies and more sophisticated procedures require continuous education in Radiation Protection to be imparted for all health professionals

Contents adapted
- Higher degree of implication and motivation of the residents

Attendance rises continuously
- more persons (patients and workers) obtain benefit

Better communication of radiation risk (specially paediatric and pregnant women)
- Improvement of patient’s safety
Thank you for your attention

Nothing in life is to be feared, it is only to be understood

-Marie Curie