

# Effective engagement of the CT department personnel of a public hospital in the implementation of the optimization principle



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# OPTIMIZATION



All doses for medical purposes except for radiotherapeutic procedures shall be kept as low as reasonably achievable consistent with obtaining the required diagnostic information, taking into account economic and social factors.



# OPTIMIZATION



- Persons involved in radiological procedures must have knowledge on RP (theoretical and practical training);
- Verification of competence on RP;
- Provisions for QE– Recognition requirements;
- Certification of competency on RP;
- Recognition of syllabi on RP;



# COUNCIL DIRECTIVE 2013/59/EURATOM



- Enhanced education, training and re-training requirements on radiation protection;
- Need for establishment of appropriate recognition and approval mechanisms;
- Increased requirements regarding the optimization of medical exposures;
- Active engagement of the personnel in the implementation of the optimization principle;
- Safety culture;



# EXAMPLE – CT DEPARTMENT



**KONSTANTOPOULIO  
HOSPITAL**



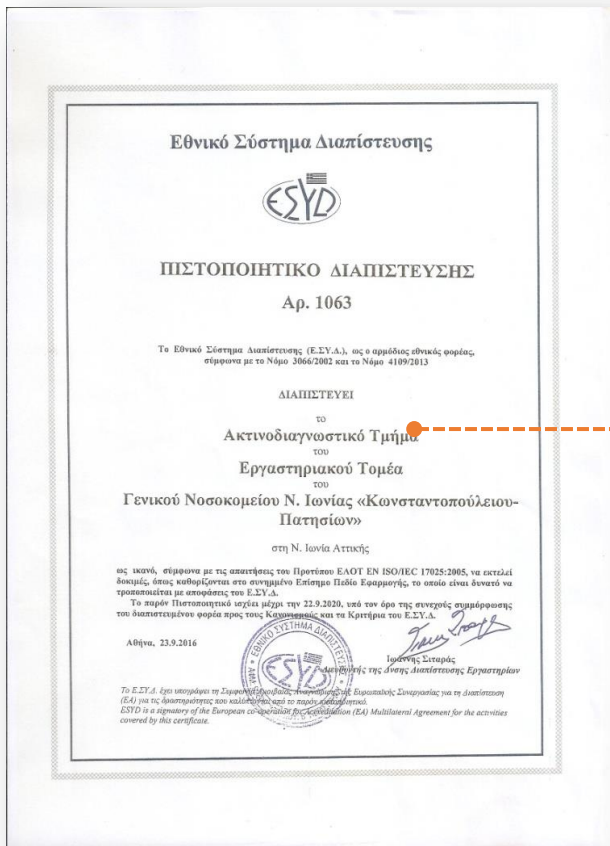
# CT DEPARTMENT



- Two multislice CT systems;
- 16.000 CT examinations annually
- Many special examinations (CT coronography, pyelography, etc.);
- Advanced capabilities for image processing (Virtual imaging, angiography, coronography, pyelography, liver volumetry, etc);
- Digital patient archive system: Data processing & statistical analysis software, PACS;



# QUALITY MANAGEMENT SYSTEM



- Implementation of a QM system according to ISO 9001:2015 and ISO/IEC 17025:2017 standards;
- The department is accredited by the Hellenic Accreditation System (ESYD);





# PRIORITY – RADIATION PROTECTION



Pacemaker C-arm room



ERCP room



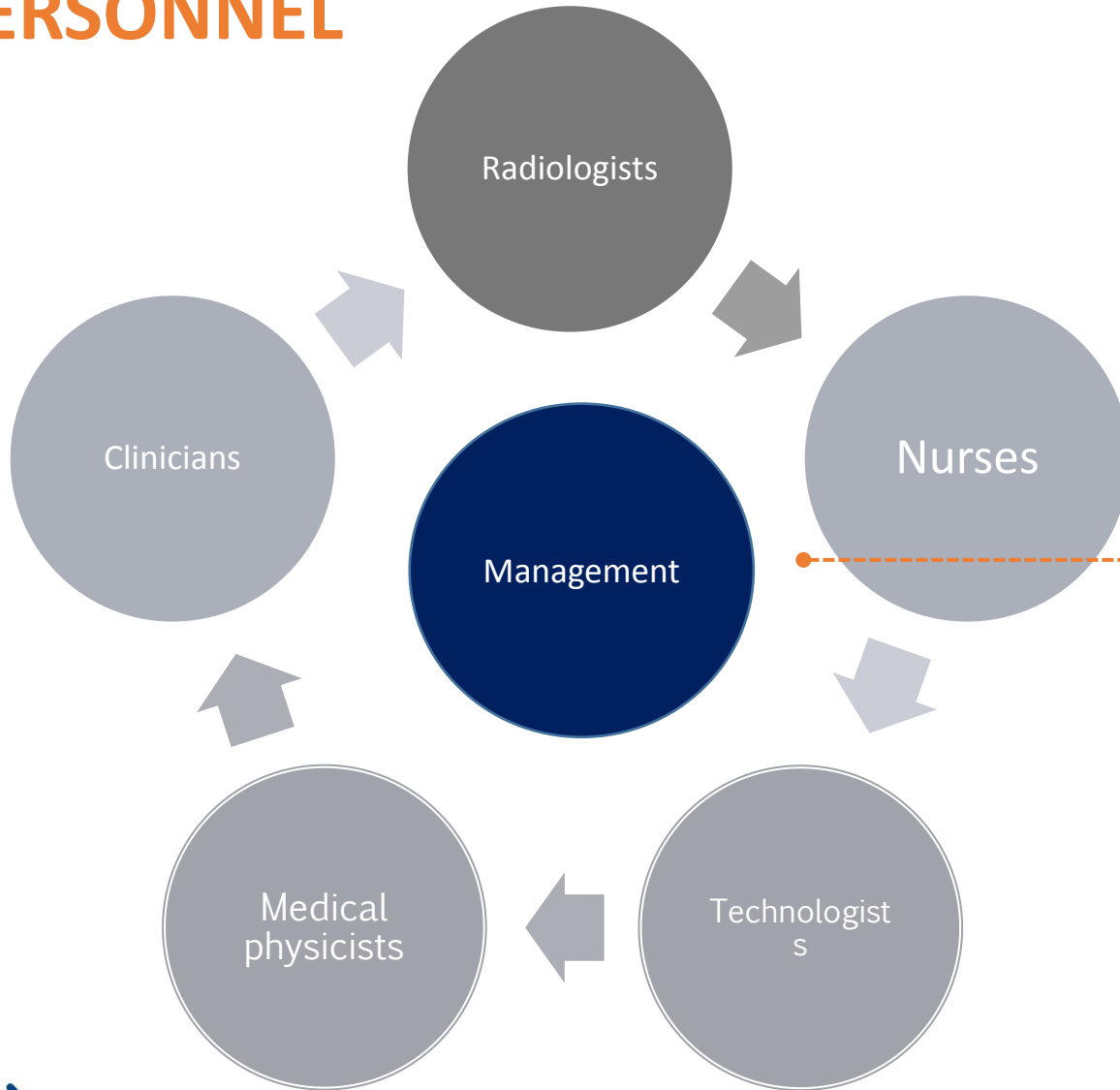
Angio room

The hospital sets radiation protection as one of its top priorities!





# PERSONNEL



- Active participation in the implementation of the QM system for a number of years;
- Interaction, cooperation, collaboration and continuous need for improvement;
- Every day work in line with higher standards of quality and safety;
- Management appreciates the combined work of the staff within the hospital



# EDUCATION & TRAINING



- Provision of E&T to:
  - physicians on radiology;
  - radiologists on CT procedures and on non interventional angio-radiology;
  - technologists.
- Hospital's radiologists participate as lecturers to educational courses organized by the Hellenic Radiology Society, Athens University, etc..



# EDUCATION & TRAINING



- A quality and safety 2 day workshop on interventional gastroenterology with the use of ionizing radiation organized by the hospital in April 2018.
- The participants included:
  - Radiologists;
  - Gastroenterologists;
  - Medical Physicists;
  - Technologists;
  - Surgeons;
  - Nurses, etc.;



# RESEARCH ACTIVITIES



- Significant scientific work on the development of research protocols in cooperation with other departments as well as with other hospitals;
- Virtual reality applications in CT imaging, interventional radiology, development of medical software.

2<sup>nd</sup> IRPA workshop on reasonableness in the implementation of the ALARA principle, 23-24.10.2018, Paris, France



# RESEARCH ACTIVITIES



- Numerous oral and poster presentations in national and international conferences.
- BEST ORAL AWARD during the National Hellenic Radiological Conference in 2015;
- Several publications to peer reviewed medical journals;



# RESEARCH ACTIVITIES



- Letter of appreciation from the MAXIMA Horizon2020 European Project (June 2016).
- A Horizon2020 project for increasing the research and innovation capacity of EU universities in the field of breast cancer modelling - Three dimensional breast cancer models for X-ray Imaging research.



# PUBLICATIONS

**European Society of  
Gastrointestinal Endoscopy**

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Full List of GuidelinesGuideline Details

## Radiation protection in digestive endoscopy: European Society of Digestive Endoscopy (ESGE) Guideline

Authors: J.-M. Dumonceau, F. J. Garcia-Fernandez, F. R. Verdun, E. Carinou, L. Donadille, J. Damilakis, I. Mouzas, K. Paraskeva, N. Ruiz-Lopez, L. Struelens, V. Tsapaki, F. Vanhavere, V. Valatas, M. Sans-Merce

### Abstract

This article expresses the current view of the European Society of Gastrointestinal Endoscopy (ESGE) about radiation protection for endoscopic procedures, in particular endoscopic retrograde cholangiopancreatography (ERCP). Particular cases, including pregnant women and pediatric patients, are also discussed. This Guideline was developed by a group of endoscopists and medical physicists to ensure that all aspects of radiation protection are adequately dealt with. A two-page executive summary of evidence statements and recommendations is provided. The target readership for this Guideline mostly includes endoscopists, anesthesiologists, and endoscopy assistants who may be exposed to X-rays during endoscopic procedures.



**Radiation protection in digestive endoscopy: European Society of Digestive Endoscopy (ESGE) Guideline**

Download full guideline

DOI <http://dx.doi.org/10.1055/s-0031-1291791>  
Endoscopy 2012; 44: 408–424  
© Georg Thieme Verlag KG Stuttgart · New York

2 staff members were chosen from the ESGE to participate in the development of RP guidelines





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# AWARD...



- EuroSafe Imaging Stars is an initiative designed to identify and recognize imaging facilities worldwide that embody best practice in radiation protection;
- One of the approximately 80 hospitals in Europe with 5 stars (max number of stars).



# MEDICAL PHYSICIST



- Involved in several scientific platforms and fora;
- Creates communication channels among the personnel;
- Supports and triggers a safety culture;
- Supervises the implementation of the radiation protection programme and the QMS;
- Provides training on RP ;
- Follows advances in medical applications of ionizing radiation technology and RP;



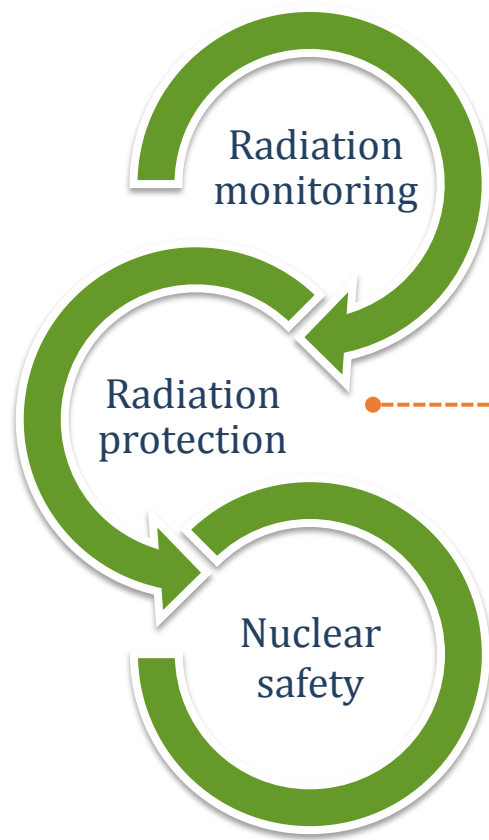
# RADIOLOGISTS & TECHNOLOGISTS



- Aware of RP;
- Effectively contribute to the optimization of medical exposures;
- Continuous supervision of applied protocols;
- Continuous monitoring of patient doses;
- Questioning attitude;
- Openness, transparency;
- Commitment to dose reduction;



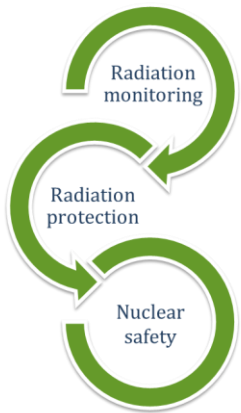
# GREEK ATOMIC ENERGY COMMISSION (EEAE)



- Regulatory work
- Inspections and licensing of facilities
- Individual monitoring of occupationally exposed workers
- Monitoring of environmental radioactivity levels
- Response to radiation emergencies
- Combating of radioactive materials illicit trafficking
- Calibrations of ionizing radiation instruments
- **Education and training**
- Research and development
- International cooperation
- Public information



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- website, social media
- organization of events
- information material
- media relations
- cooperation with stakeholders
- crisis management



**transparency// public awareness//dissemination**



[www.eeae.gr](http://www.eeae.gr)

2<sup>nd</sup> IRPA workshop on reasonableness in the implementation of the ALARA principle, 23-24.10.2018, Paris, France



# INTEGRATED MANAGEMENT SYSTEM

## ISO 9001

### ISO 17025

- individual monitoring of occupationally exposed workers
- gamma spectrometry measurements
- radon measurements
- calibration of ionizing radiation instruments
- non-ionizing radiation measurements

### ISO 17020

- inspections body of type A

### ISO 29990

- design, development and provision of non-formal education and training in radiation protection and nuclear safety



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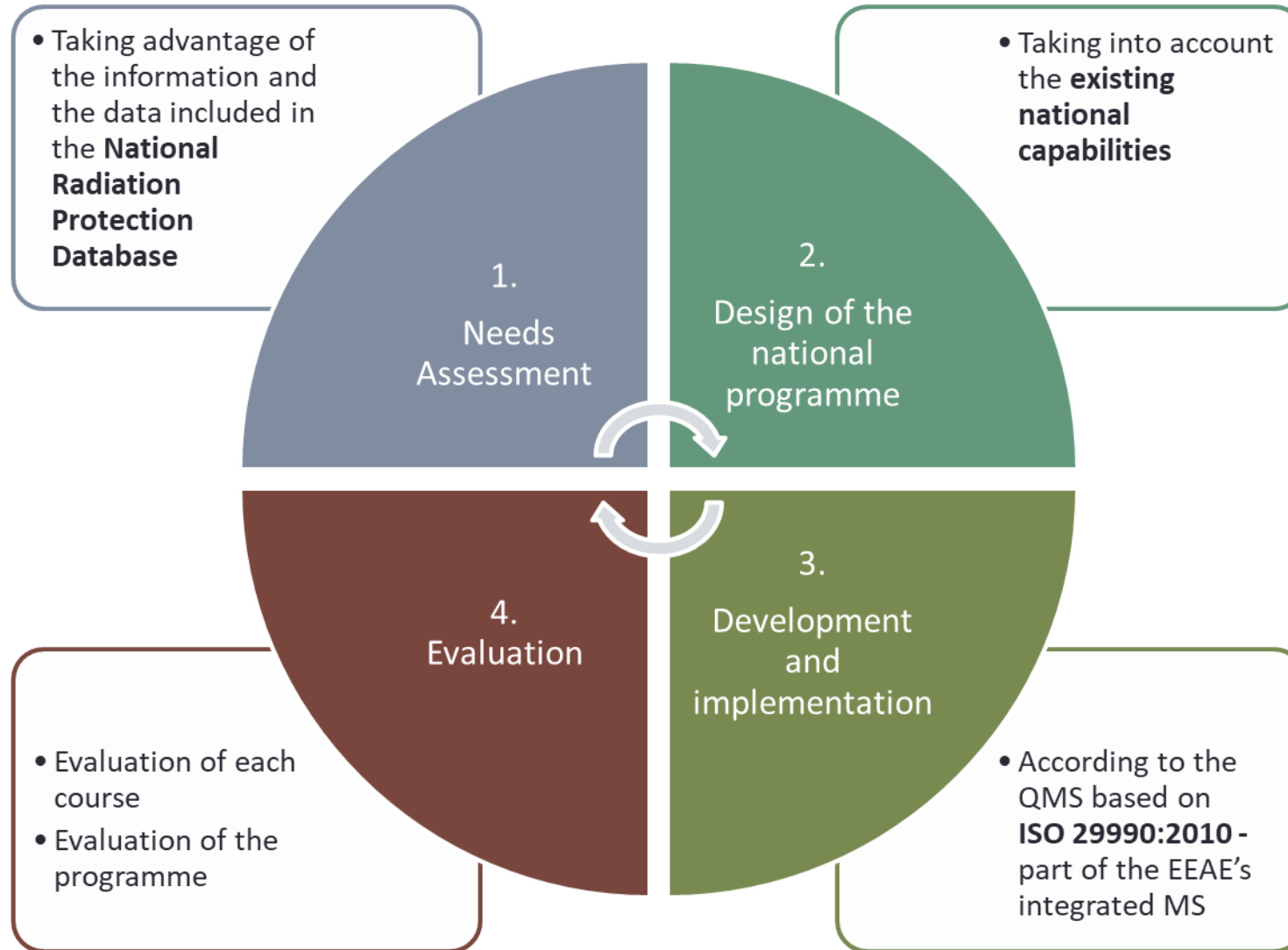
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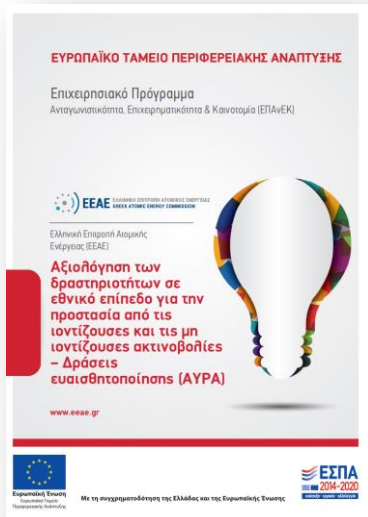
# STRATEGY



# SUPPORTING ACTIONS



- Funded by the “CONCERT-European Joint Programme for the Integration of Radiation Protection Research” under the Horizon 2020;
- Improvement of the governance of radiological risks by strengthening and enhancing stakeholder engagement processes in relation to radiation protection policy and practice;



- Evaluation of the national RP system;
- Establishment and evaluation of indexes regarding RP;
- Education- provision of information for the sensitization of the public on RP issues.

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# Thank you!



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