

Education and Training of the Medical Staff on Radiation Protection

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ABSTRACT

As part of the implementation plan of the 97/43/EURATOM Directive, a national system on education and training of the medical staff was developed in Romania, with the aim to use the ionizing radiation in medicine with maximum of benefit and with minimum of risk and cost. Education and training refer to both practitioners and prescribers.

For continuous education in radiation protection of the medical staff , a national training program is organized by the National Centre for Personnel from Medical Domain , including four training courses on “ Radiation Protection in Diagnostic Radiology and Interventional Radiology “ , “Radiation Protection in Radiotherapy” and “Radiation Protection in Nuclear Medicine” and “Radiation Protection in Emergencies Situations”.

The EXPERT PRO-RAD SRL , in Bucharest, is the main provider of training activities in radiation protection for medical staff , in Romania.

The system includes:

- ACCREDITATION – by the Nuclear Regulatory Authority (CNCAN) , based on presented Curriculum (which should be in agreement with the national norm (see above));
 - CREDITATION – by the Romanian Collegium of Physicians (1 point/1 hour , max. 6 hours-course/day);
 - CERTIFICATION – by National School of Public Health, Management and Continuous Training in the Medical Field – Bucharest.
- TRAINING CENTRE – EXPERT PRO-RAD SRL Bucharest (four modules: diagnostic radiology and interventional radiology, radiotherapy, nuclear medicine and radiological emergencies, min. 33- 44 hours, each, covering all basic ICRP training programs). Basic knowledges on occupational exposure and medical exposure are included.

1. INTRODUCTION

The use of ionizing radiation for medical diagnosis and therapy is widespread throughout the world. In Romania, as in all industrialized countries, the medical exposure of the population to ionizing radiation is the main way of exposure to man-made sources of radiation (see figures 1-4) and as such, is a major concern in the field of radiation protection. Consequently, the education and training of the medical staff is an important task, in order to use the ionizing radiation with maximum of benefit and minimum of risk. Education refers to both practitioners and prescribers. According to the number of inhabitants assigned to one physician, Romania is placed on level 1 of medical care. The annual number of X-ray examinations (about 600) and of nuclear medicine procedures (2.4) are somewhat smaller than the average 920 and respectively , 18 values, reported by other level 1 countries. On the other hand, the annual number of radiotherapy procedures performed in Romania is five time the world average.

Number of installations and radiation sources in use

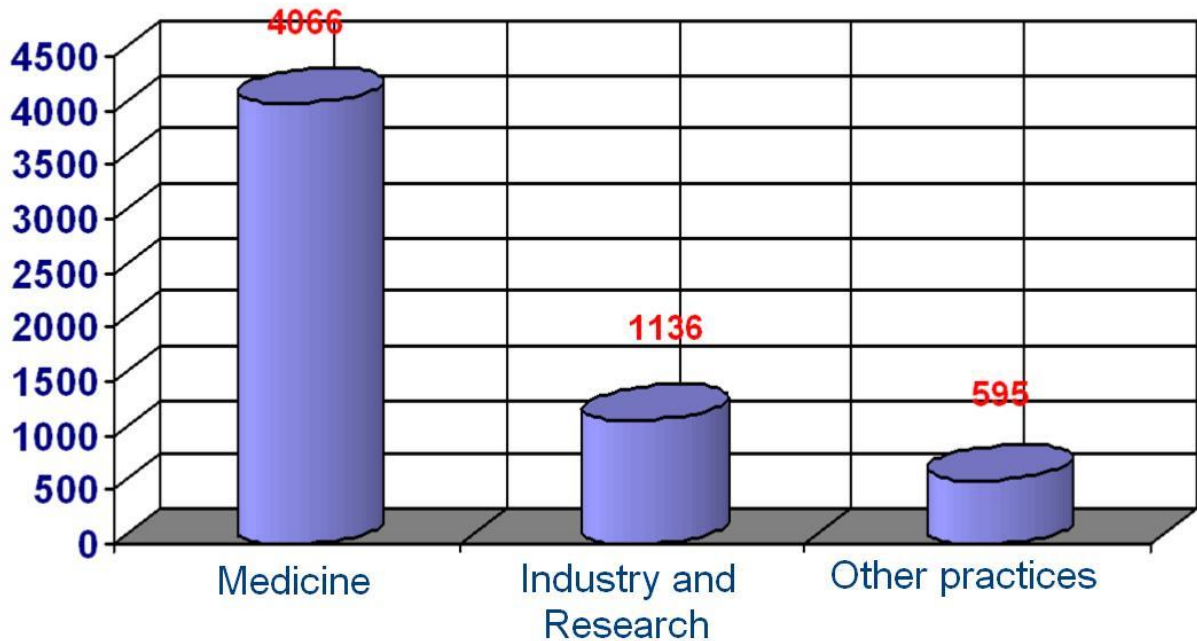


Fig.1- Number of installations and sources in medicine, in comparison with other practices.

Installations and sources in radiation medicine

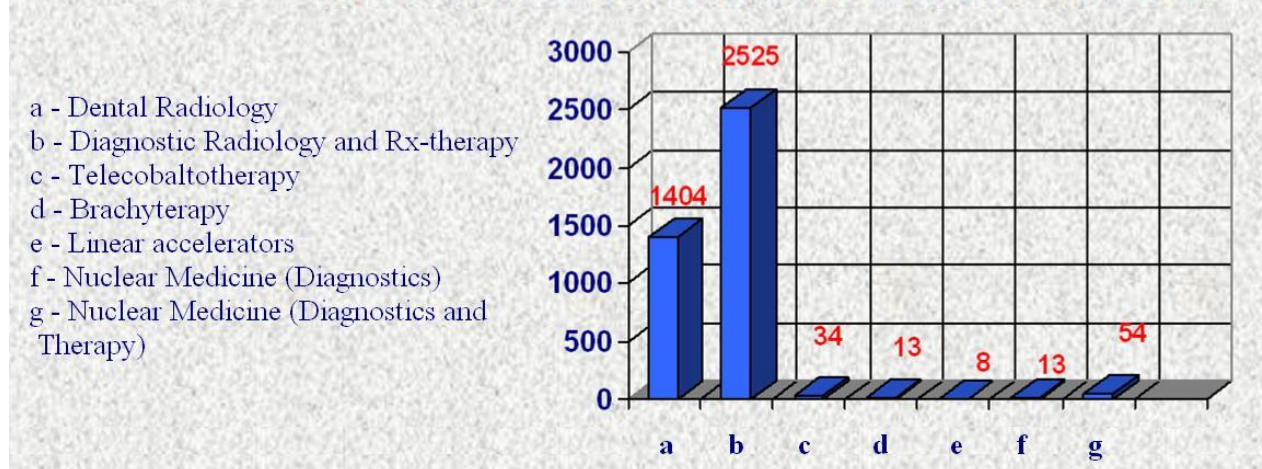


Fig.2 – Distribution of installations and sources in different medical practices.

2.- REGULATION

The legislative and statutory framework of radiation protection of patients in Romania, started with the basic Law 111/1996 on the *Safe Deployment of Nuclear Activities*, and its amendments in 1998 and 2006 and the general nuclear safety regulation, which is in agreement with the international regulation. Regarding the medical exposure, the Nuclear Regulatory Authority jointly with the Ministry of Health issued in 2002 a separate regulation, which was published in the Official Gazette Part I No.446 bis in 25 June 2002 and which represents the

transposition of the European Directive 97/43/EURATOM of 30 June 1997 on health protection on individuals against the dangers of ionizing radiation in relation to medical exposure, and repealing Directive 84/466/EURATOM.

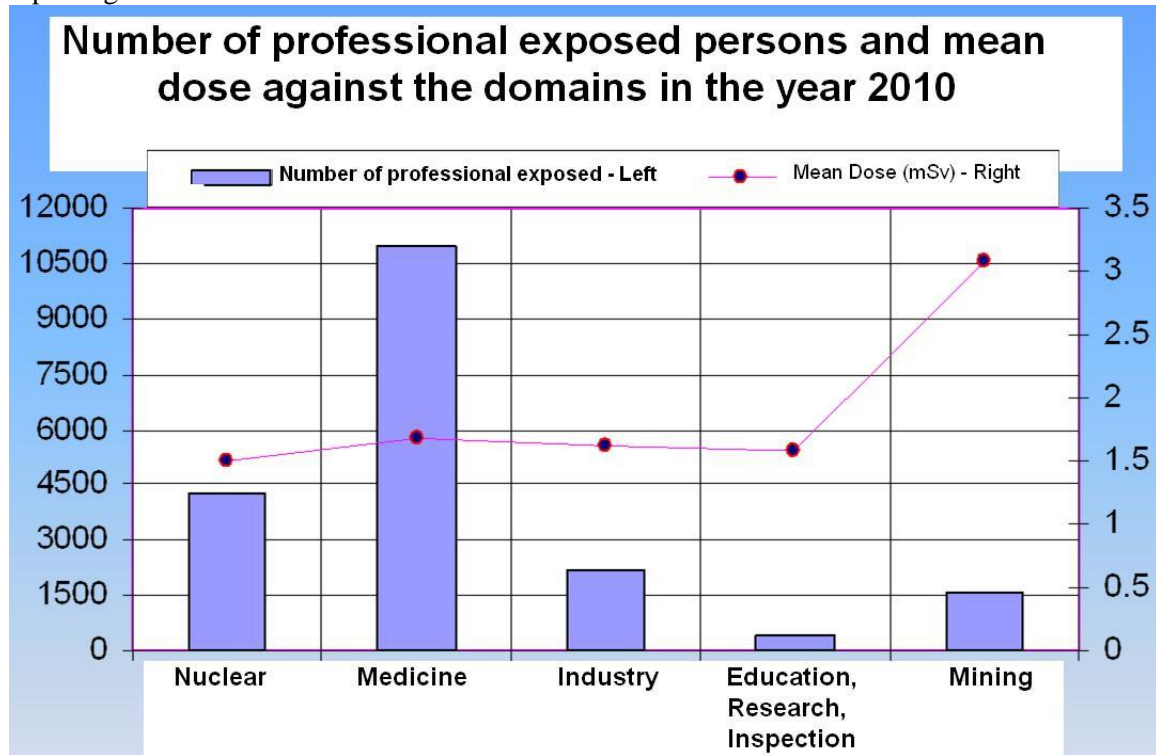


Fig.3- Number of employers and mean doses in radiation medicine, in comparison with other fields.

Following this document, several specific regulations on radiation protection of the patients were approved by the Ministry of Health.

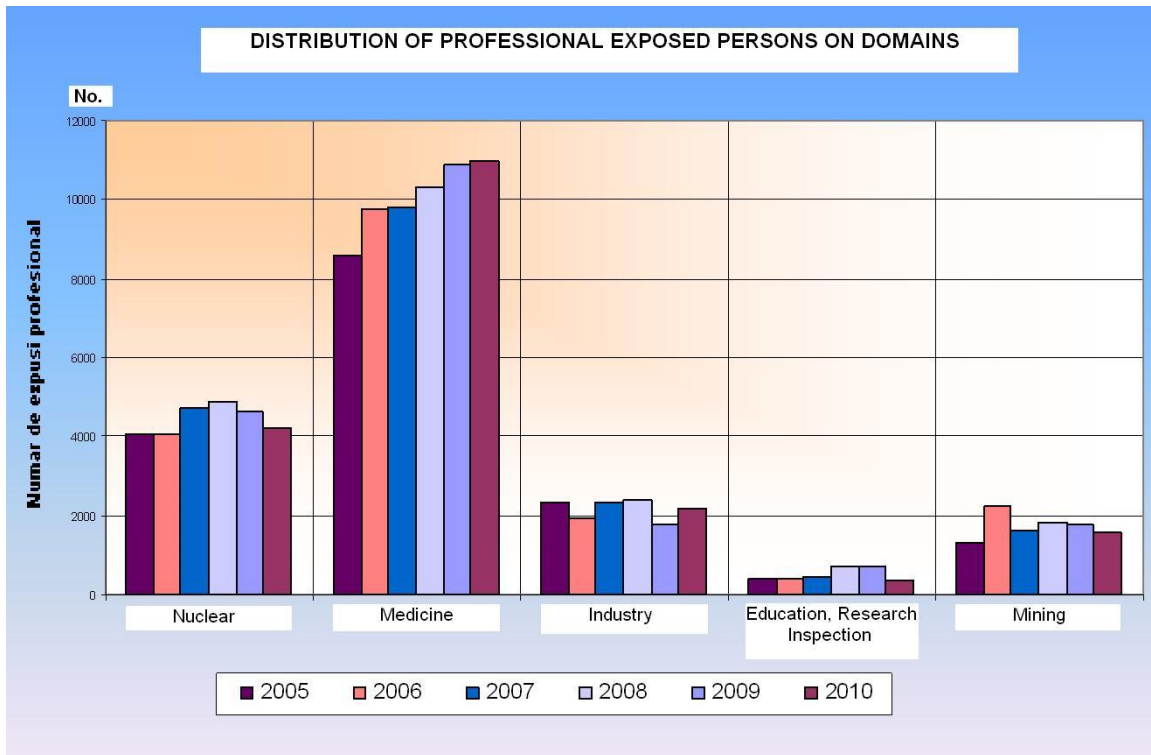


Fig.4- The increase of persons occupationally exposed to ionizing radiation in medicine.

As in most industrialized countries, the medical exposure is the main man-made radiation exposure of the population in Romania. Due to continuous development of medical techniques based on ionizing radiation, there is a high demand for developing education and training courses in medical radiation protection. It is now also an alarming increase in use of high radiation dose examinations, such as computed tomography (CT) and of X-rays guided interventions (like coronary angioplasty), with similar doses and sometimes even higher (particularly to the skin).

3.- NATIONAL SYSTEM FOR EDUCATION AND TRAINING

As part of the implementation plan of the 97/43/EURATOM Directive, a national system on education and training of the medical staff was developed, with the aim to use the ionizing radiation in medicine with maximum of benefit and with minimum of risk and cost. Education and training refer to both practitioners and prescribers.

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Several problemmes arrised during the last years :

- the increase of the number specialized (complex) techniques, which need high specialization in the field;
- the extended use of ionizing radiation in paediatric radiology;
- lack of appropriate education on radiation protection in school (even at medical universitary level);
- lack of medical physics departments in hospitals.

4.- ICRP 103

As it is well known, in 2007, in the journal *Annals of the ICRP* (Publication 103), the International Commission on Radiological Protection (ICRP) published *The 2007 Recommendations of the International Commission on Radiological Protection* .These recommendations provide important guidance for our activity regarding the protection against the risks associated with ionizing radiation, particularly from artificial sources widely used in medicine. Many of present radiation protection legislations need revision, according to the 2007 ICRP Recommendations and the education and training on radiation protection should be enforced, accordingly.

5.- CONCLUSIONS

The existing national system on education and training on radiation protection of the medical staff proved to be very useful for improving the general situation in this field, in Romania.The accreditation process in the future should be more based upon established standards, using now the availability of the MEDRAPET Guidance of the European Commission, and on appropriate qualifications and experience in medical radiation protection of the lecturers from the training providers. The existing Curriculum may be concentrated on topics of present interest: interventional cardiology, mammography, paediatric radiology and dentistry, for both referrers and practitioners and for both medical doctors and technicians and the medical physics experts too.

6.- REFERENCES

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