Dose constraints to the individual annual doses of the workers in interventional cardiology laboratories

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Body of Abstract: The study is an attempt within the optimization of protection to evaluate the Dose Constraints (DC) to the individual annual doses (IAD) of workers in interventional cardiology laboratories in Greece. The IAD values for the time period of 1999 - 2001 of the workers in the field of interventional cardiology, as well as the annual dose distributions of their different occupational groups were retrieved from the National Dose Registry Information System (NDRIS) of the Greek Atomic Energy Commission (GAEC) and were statistically analyzed. The workers were grouped according to their specialties (medical doctors, nurses and technicians) and their working sector (private or public). In order to evaluate the DC level, the doses varying from 0.2mSv/year to 20mSv/year were taken into account. Doses greater than the annual dose limit (20mSv) do not represent well-managed operation of practice and consequently were ignored. As DC70% and DC75% are defined the dose levels below which the 70% and 75% of the received IAD are included. DC70% or DC75% has been taken as the DC value, taking into account the number and percentage of the workers with annual dose ≤ 0.2mSv per category, the trend of the mean annual doses (MAD) with time and the minimum MAD values corresponding to each group. This study shows that the percentage of the exposed workers is decreasing with time regardless of the fact that the number of workers in interventional cardiology laboratories as well as, the relevant workload is steadily increasing. This is also in agreement with the reduction of the MAD values and consequently of the DC70% and DC75% levels with time. These findings are attributed to the fact that the radiation protection system in Greece has been improving for the last decade due to the new legal framework. Actually this includes the establishment of revised quality assurance and quality control programs, stretching of the inspections by the competent authority and specified training courses and seminars in radiation protection. However the doses received by the workers in the private sector need further investigation because of the unusual decrease of the MAD values in 2001. The results of this study can be used to evaluate the DC values proposed by GAEC for the exposed workers in the medical sector back in 2000, which may lead to the re-selection of the DC levels. The new values will be indicative of the optimization goal achieved by each occupational category.