IAEA Free Webinar

Approaches to estimating radiation exposure to the lens of the eye during interventional procedures

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If radiation protection rules are not properly applied then the level of radiation exposure to the lens of the eye in health professionals working at catheterization laboratories may be higher than the current occupational dose limit. Radiation dose to the lens of the eye needs to be assessed. Different approaches that take into account the difficulties of additional dosimetric control during clinical work can be considered. In 2000, the ICRP suggested estimating lens doses from indirect measurements (e.g. personal dosimeter worn over the apron), which in some cases may yield potential inaccuracies. Wearing additional dosimeters near the lens of the eye is another option for better and more accurate dosimetry, but there is difficulty in implementing such dosimeters as part of routine occupational dosimetry. Correlating lens doses and patient doses may be another approach in some interventional procedures, as is continuously registering the level of scatter dose of the X-ray system in a fixed position using electronic dosimeters. The recommendations issued by the ICRP, the IAEA and several medical societies will also be discussed, with emphasis placed on the need for research that facilitates an easier evaluation of the occupational dose to the lens of the eye and better radiation protection in different clinical settings.

Learning objectives

1. To recognize the levels of radiation exposure to the lens of the eye during interventional procedures.
2. To describe the various approaches to estimating occupational radiation doses to the lens of the eyes in professionals working at catheterization laboratories.
3. To summarize the international recommendations on lens protection and suggest the need for further research on the topic.

Presenter

Eliseo Vano is a full Professor of Medical Physics at the Faculty of Medicine of the Complutense University in Madrid and head of the Medical Physics Service at the San Carlos University Hospital. He is an advisor to the Spanish Ministry of Health for radiation protection in medical exposure. He is a member of the Medical Working Party on Medical Exposures of the Article 31 Group of Experts of the EURATOM Treaty and Chairman of the Committee on Protection in Medicine of the International Commission on Radiological Protection (ICRP). Prof. Vano is also acting as a consultant for the International Atomic Energy Agency (IAEA) on topics concerning radiation safety in diagnostic and interventional radiology.