

Expert Group on the Dose Limit from the Lens of the Eye EGDLE Webinar 7 March 2022

IRPA TG on the implementation of the Eye Lens Dose Limit

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Three IRPA surveys (2012-2013, 2015-2017, 2018-2020 respectively) aimed **to promote exchange of experiences with a large as possible participation by the RP community worldwide.**

The questionnaires are based on questions concerning different areas of practice, as:

- Implications for monitoring and assessing lens dose (3rd survey, 10 Q)
- Implications for method of protection (3rd survey, 12 Q)
- Wider implications of implementing the revised limits (3rd survey, 5 Q)

The 3rd Survey received 34 answers, but if we consider all the countries included in the regional societies represented by single responses, the amount is 44 countries, from Africa, North and South America, Asia/Australia, and Europe.



Some of the key points derived from the received answers

■ *Legislative processes status with regard to the new dose limits for the lens*

The great majority of countries reported an active level of **involvement of ASs in legislative processes** related to the new dose limits for the eye lens. **Different levels of participation were described**, such as open discussion with pertinent authorities, ministries and organizations representing the view of practitioners or provision of comments on draft legislation. **Most countries have or are intending to adopt the ICRP recommendation**. In about one third of the countries the limit of 150 mSv yr⁻¹ is still in place. Many countries reported the preparation of **codes of practice, guidance documents, standards, factsheets, or information on websites** relating to RP and dose monitoring requirements for the eyes.

■ **Costs**

A general **concern about additional costs and time required** to implement new dosimetry and protection methods particularly in interventional procedures. This will require significant amounts of additional training of staff. There could also be **costs related to improving designs of protective eyewear** in view of proper protection, ergonomics for proper fitting, and requirements for prescription glasses. **In addition, medical examinations of workers will be performed more frequently** in some countries linked to a foreseen increase in numbers of category A workers.

Some of the key points derived from the received answers

■ **Direct implication in dosimetry and protection.**

Is in **general known the development of new dosimeters** for measuring eye dose; there is a **wide variation in dosimeter arrangements** for interventional staff, including different options (*one dosimeter worn under the lead apron and one either over the apron at the collar or adjacent to the eye; a single dosimeter at the collar outside the apron; and a single dosimeter under the lead apron*)

Dose levels at which routine monitoring would be considered are variable, ranging from 5–6 to 15 mSv per year. In nuclear medicine the body dosimeter was considered to give sufficient information on eye dose by most countries.

Ceiling suspended shields and lead glasses are used on a regular basis by more than half of countries during interventional procedures. While in NPPs, lead or PMMA glasses or full-face masks, are used in particular for beta radiation.

A third of countries reported measurements of effectiveness of protection through dosimetry monitoring, but no formal methods for verifying the effectiveness of protection have emerged. **The need to develop standard protocols for verification of the protection provided by glasses is well recognised.**

Some of the key points derived from the received answers

■ *Exposure of the eye lens in patients and public*

The primary concern for patients undergoing examinations involving radiation is **maintaining adequate image quality for diagnosis, while keeping lens doses as low as practicable. National guidelines are produced** for protection of the patient relating to the eye, thyroid and breast. There is awareness of the need for **minimising doses to the eye lens in interventional radiology procedures, in particular for paediatric patients**, and for organising systems for notifying occurrence of cataracts following long and/or multiple interventional procedures. **Doses to the eye lens are considered in planning radiotherapy treatments. No special issues or scenarios of high lens dose were identified for the public,** who are considered to be unlikely to receive doses to the lens above the 15 mSv yr⁻¹ limit.

Final note of the 3rd Survey

The third IRPA questionnaire highlights that the introduction of a 20 mSv dose limit for the eye is well underway in the majority of countries.

However, not all countries are intending to adopt the limit in the foreseeable future.

Compared with the previous surveys, there has been a significant amount of work carried out relating to practical implementation. But national and international guidelines are available and in place in half of the countries surveyed.

There is, by at large, agreement that training and education is crucial to ensure an appropriate use of protections and increase awareness

For more info see the result of the IRPA Surveys, at the IRPA web
<https://www.irpa.net/page.asp?id=54696>