

Radiation Dose to the Patient's Eye Lens Through Neuro-Interventional Radiology Procedures: What Every Interventional Radiologist and Radiographer Should Know

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Learning Objective:

- Overview of current statements and recommendations on radiation dose limits for the lens of the eye.
- Review the literature concerning radiation dose received by the patient's eye lens during neuro-interventional procedures.
- Discuss the causes of high eye dose levels in fluoroscopic-guided interventional procedures and techniques to reduce radiation exposure to the patient without compromising the quality of diagnostic and/or treatment.

Background: Fluoroscopic-guided interventional radiology procedures are generally regarded as beneficial, however long radiation exposure during these procedures exposes patients to the potential for tissue reactions. One of the organs at risk is the eye lens as it is one of the most radiosensitive organs. Familiarity with the factors leading to cataract formation and awareness of the means to mitigate the over-exposure problems are crucial for the interventional radiologists and radiographers.

Findings and/or Procedure Details: We will review guidelines and recommendations on organ doses limits and methods for radiation dose reduction during fluoroscopic-guided interventional procedures. Latest developments in fluoroscopy technology and dose reduction techniques will be reviewed. The effect of various exposure parameters (e.g. frame rate, tube angle, imaging magnification) and accuracy of indirect dose measurement techniques (e.g. air kerma, kerma-area product [KAP]) will be explained.

Conclusion: Interventional radiologists and radiographers should have sound knowledge of radiation protection of patients and radiation risks. This will ensure radiation dose optimization to reduce the patient dose as well as scattered dose to the operators.