EURALOC educational tools for radiation protection of interventional cardiologists

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European epidemiological study on radiation induced lens opacities among interventional cardiologists

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www.euraloc.eu
EURALOC Eye Lens Dosimetry Methodology

- Major factors in procedure specific eye lens dose
  - Procedure type
  - X-ray equipment
  - Common radiation protection devices

Old system!
EURALOC eye lens dosimetry methodology

- **Cumulated eye lens dose calculation**
  \[
  D_{eye,cum} = \sum_{i,j,x,y,z} D_{j,x,y,z} \times N_{i,j,x,y,z}
  \]

- **Median value**
  - Good approximation for single dose estimate
  - Can be used for training & education purposes
Development of an educational App

- Target population: interventional cardiologists
- Dedicated to be used on mobile devices
- Ready-accessible, user-friendly
- Track and learn to optimise individual eye lens doses
- Uses underlying median values of the exposure configurations

Track individual cumulated eye lens doses
Calculate the effect of RP device
Calculate the effect of an alternate X-ray system

Not a replacement of an eye lens dosimeter!

www.meyedose.eu
mEyeDose: www.mEyeDose.eu

- “Online App”
- Ransomware
- Stores data on your device (very limited) so he will remember you
- Suitable for:
  - iPhones: Safari, Firefox, Google Chrome
  - Android phones: Firefox, Chrome
  - PC/Mac: Safari, Firefox, Chrome
  - Windows phones
mEyeDose: entering procedures

- Choose Procedure type
- Choose equipment
- Choose protection
- Choose start/end date
- Add
- Save Changes
mEyeDose: results

Switch for eye

Show results per period or cumulated

Cumulated Dose value

Dose level

Call the help screen

Time slider to adjust results period

Adjust Protection
|=as you entered
+=add protection
-=remove protection

Protection level, full width=100% protection
To conclude...mEyeDose:

- Uses the EURALOC Dosimetry Methodology
- Didactic interface
- Tracks and visualises eye lens doses
- Visualises the effect of a radiation protection devices
Individual use → Multiple use

- **mEyeDose**: individual use

- **Multiple cardiologists**: mEyeDose_X

  ![mEyeDose_X](image)

  Track, calculate and analyse eye lens doses of interventional cardiologists!

  Although the results obtained by this calculation tool were validated through a measurement campaign and against literature data, they are only an approximation and cannot replace the use of an eye lens dosimeter!

  This tool was developed as part of the EURALOC project and is supplied "AS IS" without any warranties and support.

  Visit also: [meyedose.eu](https://meyedose.eu) and [euraloc.eu](https://euraloc.eu)

  - Do not show this screen on next startup

  ![Input Personal Data, Calculate Eye Lens Doses](image)

  Eye lens dose calculation tool for interventional cardiologists

  ![EXIT](image)
mEyeDose_X

- Target population: epidemiologists, radiation protection professionals, occupational physicians, ...
- Desktop application (Microsoft Access)
- User-friendly
- Track, optimise and calculate eye lens doses of (a population of) cardiologist(s)
- Uses the full EURALOC dosimetry methodology
- Possibility to export statistics

2 approaches:
- Using procedure workload
- Using over-apron dose data

2 methods:
- Single value using median or mean of PDFs
- Complete dose distribution using Monte Carlo sampling of PDFs
Tools are freely available!

- mEyeDose: go to www.meyedose.eu

- mEyeDose_X: go to www.euraloc.eu

  → Go to “project partners”

  → Request your copy through email from one of the project partners
Thanks for the attention!