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INTERNATIONAL PROJECT
ON
INDIVIDUAL MONITORING AND RADIATION EXPOSURE LEVELS IN INTERVENTIONAL CARDIOLOGY

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The IAEA ISEMIR project

• Arising from the Occupational Radiation Protection International Action Plan
  • Information System on Occupational Exposure in Medicine, Industry and Research

• Set up in January 2009 for a 3 year period, to help improve occupational radiation protection in targeted areas: interventional cardiology, industrial radiography
WG on Interventional Cardiology – aims

• World-wide overview of occupational exposures in IC
• Harmonization of monitoring of staff in IC
• Establish system for regular collection of occupational doses in IC (International database on staff exposures in IC)
World-wide overview on staff exposure

- Questionnaires on present status of personal monitoring and doses in IC
  1. Interventional cardiologists (Individuals)
  2. Interventional cardiologists (Chiefs)
  3. Regulatory Body
1- Interventional cardiologists

• Questions addressed:
  • Experience & workload
  • Use of personal monitoring
  • Use of protective clothing & equipment
  • Knowledge of doses
    • Patient
    • Own
  • Radiation protection training
Cardiologists questionnaires

- Responses from 45 IC facilities (Chiefs)
  - From 24 countries

- Individual interventional cardiologists:
  - 201 responses from 32 countries
Personal monitoring habits

• Interventional cardiologists:
  • 76% claimed that they always used their dosimeter
  • 45% stated they always used 2 dosimeters
    • 50% in Healthcare Level I countries
    • 24% in other countries

Results from the survey probably give an over-optimistic picture
Knowledge of doses

- Interventional cardiologists:
  - 64% said they knew their own personal doses
  - 38% knew both their own and patients’ doses

Results from the survey probably give an over-optimistic picture
Radiation protection training

- Interventional cardiologists
  - 83% claimed to have had RP training
  - 52% said they had certification in RP

Results from the survey probably give an over-optimistic picture
2- Regulatory Bodies

• Questions addressed
  • Numbers of persons in IC being monitored
  • Dose data for IC personnel
  • Requirements for monitoring
    • Number of dosimeters
    • Position
  • Requirements for radiation protection training

• 136 answers: 24% world population
Reasons for non-availability of valid dose data

• No central dose register
• No central dose register readily accessible by RB
• Data available, but not “useful”
  • No specific classification for IC
  • Mixed corrected & uncorrected doses
  • Only doses above some action level
Reported doses for 2008 – 1080 persons

Annual effective doses IC physicians 2008

Effective dose (mSv)

Q1  min  median  ave  max  Q3

Medians  Q3s
Are these values truly representative?

- Literature reports:
  - 0.1 to 30 μSv effective dose per IC procedure
  - Average ~ 10 μSv per procedure

- Average workload ~ 400 per year
  - E.g. 400 x 10 μSv = 4 mSv per year

Reported values from survey probably under-estimate true values
Why might there be an under-estimate?

- Interventional cardiologists may not wear their dosimeter(s) all the time
- Zero doses can distort the dose distributions, depending on whether
- Administrative doses can distort the dose distribution
  - Assigned in some countries when dosimeters are not returned for reading
Regulatory requirements for monitoring in IC

• ~ 60% of RBs stated that they specify the number and position of dosimeters

• Of these:
  • 20% specify 2 dosimeters
    • 1 above and 1 below the apron
  • 40% specify 1 dosimeter
    • Most (~ 80%) above the apron
  • 40% did not provide information

No consistent approach to the number of or position of dosimeters
Present & future ISEMIR activities

- Extensive data collection (hospitals)
  - Started in 2010
  - Data in Spring 2011
- Recommendations for staff monitoring
  - To cardiologists: endorsement of developed guidelines from international/national interventional cardiology societies (SCAI, APSIC, SOLACI, etc.)
  - To RBs
- Website
  - Guidelines
  - Training material
  - Survey results
  - Database data
Present & future ISEMIR activities

- Establishment of the international database of staff doses
  - To be designed and developed in 2011
  - Hospitals are invited to provide staff dose data regularly (every year)
    - As external audit on staff monitoring
    - As part of the quality system in RP
    - And to be part of an international action
Thank you

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