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

R.Padovani[1], A.Duran[3], C. Lefaure[2], J. Le Heron[2], D.Miller[4], M. Rehani[2], H.K. Sim[5], E.Vano[6]

[1] Medical Physics Dpt. University Hospital, Udine, Italy
[2] International Atomic Energy Agency, Vienna, Austria
[3] Cardiology Dpt., Montevideo, Uruguay
[4] Radiology Dpt., Uniformed Services University, Bethesda, USA
[5] Cardiology Dpt., Kuala Lumpur, Malaysia
[6] Medical Physics Dpt., S. Carlos University Hospital, Madrid, Spain

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

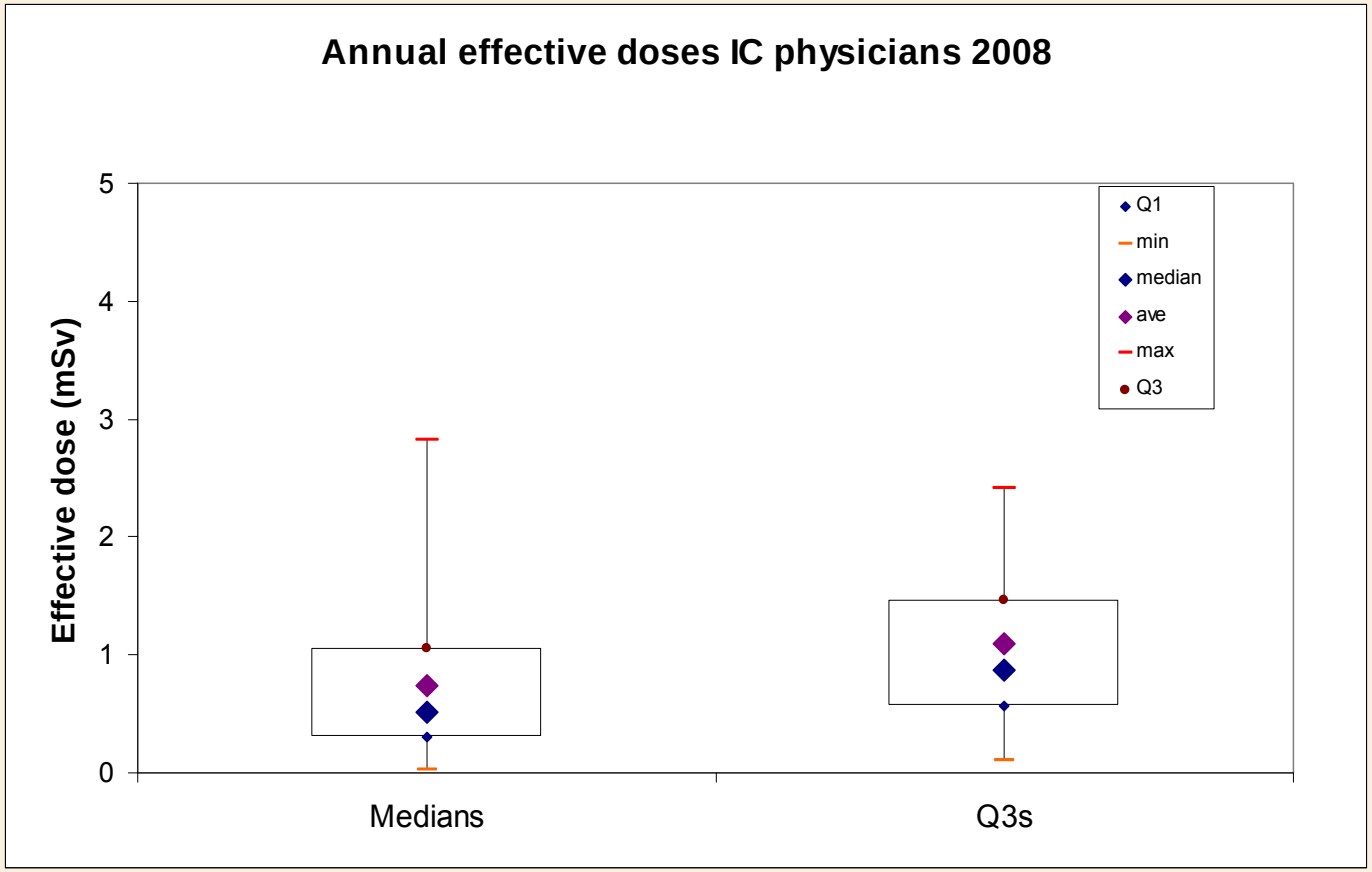
- Questions addressed
  - Numbers of persons in IC being monitored
  - Dose data for IC personnel
  - Requirements for monitoring
    - Number of dosimeters
    - Position
  - Requirements for radiation protection training

- 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



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

J. Le Heron
A.Duran
D.L. Miller
M. Rehani
H.K. Sim
E.Vano
C. Lefaure