Defining the key competencies in radiation protection for endovascular procedures:

a multispecialty Delphi consensus study

B. Doyen[1], B. Maurel[2], J. Cole[3], H. Maertens[1], T. Mastracci[4], I. Van Herzeele[1]

On behalf of: **PRET** (Principles of Radiation protection within Endovascular Team) group

[1] Department of Thoracic and Vascular Surgery, Ghent University Hospital, Ghent, Belgium

[2] Department of Vascular Surgery, University Hospital Centre of Nantes, Nantes, France

[3] Radiological Physics and Radiation Safety, Royal Free London NHS Foundation Trust, London, United Kingdom

[4] Department of Vascular Surgery, Royal Free London NHS Foundation Trust, London, United Kingdom

UNIVERSITEIT GENT

FWO VLAANDEREN

NHS Royal Free London NHS Foundation Trust

CENTRE HOSPITALIER UNIVERSITAIRE DE NANTES

UZ GENT

Disclosure of Interest

Speaker name: Bart Doyen

- I do not have any potential conflict of interest

Radiation safety

- **Essential** in modern clinical practice

- **Current training curricula:**
  - Theory-based
  - Multitude of topics
  - Not always relevant/feasible in daily practice
  - Variations in content across Europe

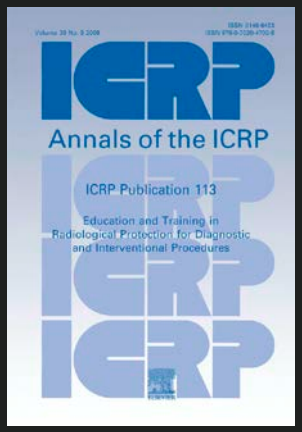
Regulations & guidelines

DIRECTIVES

COUNCIL DIRECTIVE 2013/59/EURATOM

of 5 December 2013

laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom



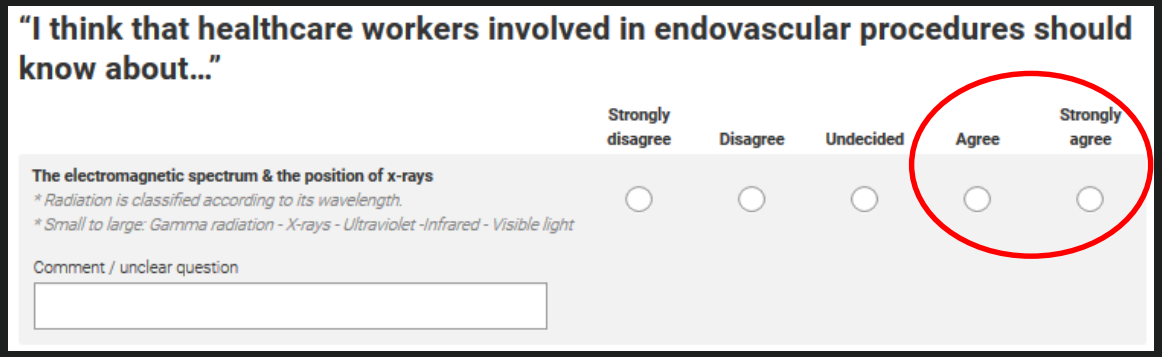
- ***STUDY GOAL:***

  Define **key competencies** in radiation safety that every endovascular team member should possess and be able to apply routinely.

Methods – Modified Delphi consensus

- **Iterative structured consensus forming process**
  - Expert panel
  - Rating statements on 5-point Likert scale
  - Anonymous controlled feedback (statement mean; SD)
- **Delphi statements:**
  - Knowledge skills, technical skills, attitudes
  - Initial literature search
  - Additional statements suggested by expert panel

Key competency in radiation safety:
Internal consistency
alpha ≥ 0.80
Agreement (rating ≥ 4/5)
≥ 80% of experts



Results

- **European multispecialty expert panel**
  - Vascular surgeons (22 / 31 invited)
  - Interventional radiologists (10 / 18 invited)
  - Interventional cardiologists/angiologist (4 / 16 invited)

- **Second Delphi round**
  - Response rate: 36/41 (87,8%)

  - Consensus: 68 / 80 Delphi statements
    - ***Knowledge skills: 30/33***
    - ***Technical skills: 23/27***
    - ***Attitudes: 15/20***

Results



Knowledge skills

- **Physics and basic knowledge** generally rated lower
  - Some not considered key competency (x-ray producation)
  - Exception: **Scattered radiation**

Technical skills

- TIME – DISTANCE – PROTECTION
- Operator of C-arm: No consensus

Attitudes

- Protective equipment: not all equal?
- Principle of justification; patient information <u>not seen as key competencies</u>

Conclusion & future perspectives

- **Relevant and practical radiation safety training needed!**
  - Handle team/patient risks in a realistic and pragmatic way.

- **Key competencies in radiation safety**
  - **Frequent updates of recommendations (consensus) required.**
  - (Dose-reduction) Technology continuously evolving