

Defining the key competencies in radiation protection for endovascular procedures: a multispecialty Delphi consensus study



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Objective: Determine the key competencies in radiation protection which every endovascular team member should possess and apply routinely, through multispecialty clinical-content expert consensus.

Methods: A multispecialty Delphi consensus study involving European vascular surgeons, interventional radiologists and interventional cardiologists / angiologists experienced in endovascular procedures.

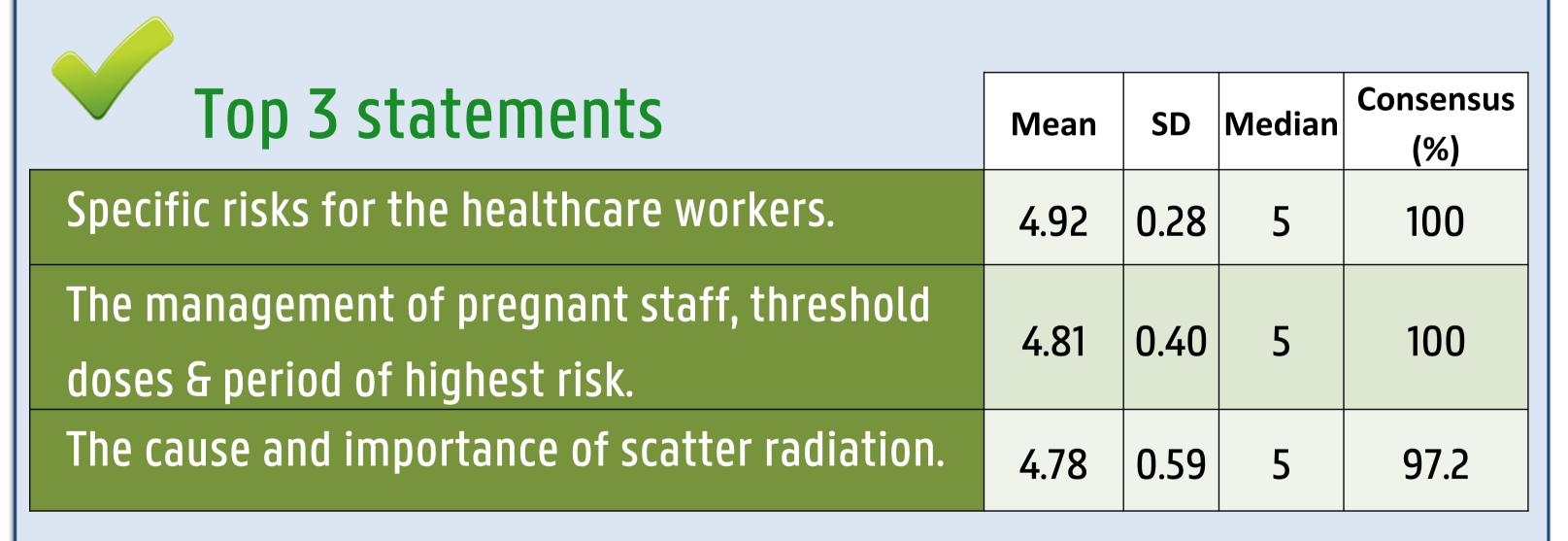
Initial statements were drafted, in three categories: 29 knowledge skills, 25 technical skills and 19 attitudes. Experts were able to suggest additional statements between rounds.

Results: Forty-one out of sixty-five (63.1%) invited experts agreed to participate. and 36 experts completed both rounds (87.8%).

Experts suggested 9 additional statements after the first Delphi round.

Knowledge skills

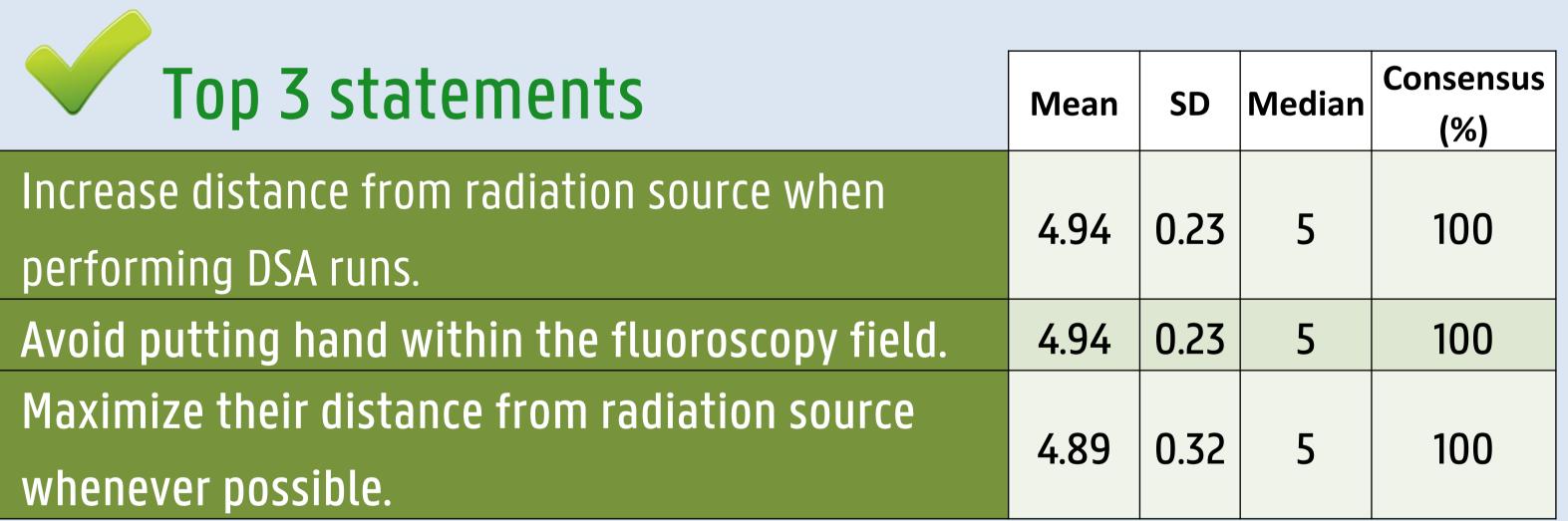
Statements seen as key competency: 30/33 (90.9%).



No consensus	Mean	SD	Median	Consensus (%)
The mechanism of X-ray production.	3.67	1.07	4	61.1
The electromagnetic spectrum & the position of x-rays.	3.56	1.16	4	63.9
The difference between flat panel detectors and old school image intensifiers.	3.83	0.85	4	77.8

Technical skills

Statements seen as key competency: 23/37 (82,1%).



No consensus	Mean	SD	Median	Consensus (%)
The C-arm movements & settings should only be controlled by people who are scrubbed in. §	4.11	1.26	5	72.2
Use a live-feedback personal dosimeter (e.g. dose-aware).	3.94	1.09	4	69.4
Vary fluoroscopy angles to limit patient Peak skin dose.	3.83	0.91	4	72.2

<u>Attitudes</u>

Statements seen as key competency: 20/25 (80%).

Top 3 statements	Mean	SD	Median	Consensus (%)
Use a lead apron and thyroid collar.	4.97	0.17	5	100
Only use X-rays when all team members are adequately protected.	4.92	0.37	5	97.2
Confirm adequate protection of other team members before using X-rays.	4.86	0.54	5	97.2

No consensus	Mean	SD	Median	Consensus (%)
Register the administered radiation doses in the patients file.	4.11	0.95	4	72.2
Consider the risk / benefits for each procedure (justification principle).	4.03	1.16	4	75
Inform patients of the radiation related risks.	3.42	1.20	4	52.8
Use leaded leg protection.	3.39	0.90	3	33.3
Use radio-protective gloves.	2.69	1.12	3	16.7

Conclusion: This multispecialty expert panel reached consensus about the key competencies in radiation protection. These results may serve to create practical and targeted training courses, enhancing radiation safety for patients and healthcare workers.

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