**Table S1.** Operator’s characteristic, X-ray protection and X-ray protection strategy with regard to physician’s experience.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Early****(<5 y of experience)****(n=31)** | **Mid****(5-10 y of experience)****(n=41)** | **Mentor****(over 15 y of experience)****(n=23)** | **p** |
| **Operators’ characteristics** |
| Age [year] | 34 [33-38] | 40 [37-41] | 51 [47-53] | **<0.001** |
| Time of training [years] | 3 [1-3] | 6 [5-10] | 15 [7-20] | **<0.001** |
| **Operators’ X-ray protection** |
| Collimation | 26 (87%) | 33 (85%) | 18 (78%) | 0.70 |
| Minimizing the tube to intensifier distance | 31 (100%) | 38 (93%) | 21 (91%) | 0.28 |
| Lead apron | 30 (97%) | 41 (100%) | 22 (96%) | 0.45 |
| Lead thyroid shields | 29 (94%) | 40 (98%) | 22 (96%) | 0.71 |
| Lead glasses | 18 (60%) | 19 (49%) | 10 (44%) | 0.46 |
| Protective lead glass in the lab | 25 (81%) | 29 (71%) | 22 (96%) | 0.06 |
| Lead screen below the table | 29 (94%) | 39 (95%) | 21 (91%) | 0.84 |
| X-ray protective gloves | 0 (0%) | 0 (0%) | 1 (4.3%) | 0.21 |
| Protection cabin | 2 (6.5%) | 2 (5.1%) | 2 (10%) | 0.78 |
| Exposure control measures* Collar
* Chest skin
* Ring
* Eye
 | 9 (29%)30 (97%)10 (32%)3 (9.7%) | 12 (29%)38 (93%)8 (20%)2 (4.9%) | 8 (35%)22 (96%)5 (22%)2 (8.7%) | 0.880.730.440.72 |
| Average X-ray exposure dose over apron, mSv | 0.8 + 1.0*n=8* | 0.3 + 0.4*n=9* | 1.9 + 3.6*n=10* | 0.52 |
| Average X-ray exposure dose under apron, mSv | 7.4 + 3.4*n=14* | 2.6 + 4.8*n=15* | 4.9 + 6.7*n=13* | 0.35 |
| **Operators’ X-ray protection strategies** |
| A, T | 2 (6.5%) | 2 (4.9%) | 1 (4.3%) | 0.93 |
| A, T, G | 0 (0%) | 0 (0%) | 1 (4.3%) | 0.21 |
| A, T, G, S | 5 (16%) | 13 (32%) | 9 (39%) | 0.15 |
| A, T, G, S, Gs | 15 (48%) | 14 (34%) | 7 (30%) | 0.33 |
| A, T, G, S, Gs, Gv | 0 (0%) | 0 (0%) | 1 (4.3%) | 0.21 |
| A, T, G, S, Gs, C | 1 (3.2%) | 0 (0%) | 2 (8.7%) | 0.17 |
| A, T, G, S, C | 1 (3.2%) | 1 (2.4%) | 0 (0%) | 0.71 |
| T, G, S | 1 (3.2%) | 0 (0%) | 1 (4.3%) | 0.45 |
| A, G, S | 2 (6.5%) | 1 (2.4%) | 1 (4.3%) | 0.71 |
| A, T, S | 2 (6.5%) | 4 (9.8%) | 0 (0%) | 0.31 |
| A, T, S, Gs | 2 (6.5%) | 5 (12%) | 0 (0%) | 0.20 |
| A, T, S, C | 0 (0%) | 1 (2.4%) | 0 (0%) | 0.52 |

A – apron, T – thyroid, G – glass, Gs – glasses, Gv – gloves, S – screen, C – cabin

**Table S2.** Operator’s characteristic, X-ray protection and X-ray protection strategy with regard to physician’s activity expressed as number of procedures per month. Incomplete data due to insufficient reports.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Number of EP procedure as first operator per month** | **p** |
| **1-9****(n=29)** | **10-19****(n=24)** | **20-39****(n=21)** | **>40****(n=7)** |
| **Operators' characteristics** |
| Age [y] | 39 [35-47] | 39 [36-43] | 39 [33-43] | 41 [37-43] | 0.54 |
| Male [n (%)] | 25 (86%) | 19 (79%) | 17 (81%) | 16 (94%) | 0.58 |
| Time of training [y] | 5 [2-9] | 6 [2-9] | 3 [2-8] | 9 [4-11] | 0.28 |
| Operators' X-ray protection |
| Collimation | 24 (83%) | 21 (88%) | 16 (89%) | 15 (88%) | 0.92 |
| Minimizing the tube to intensifier distance | 27 (93%) | 23 (96%) | 21(100%) | 17 (100%) | 0.48 |
| Lead apron | 29 (100%) | 24 (100%) | 21 (100%) | 17 (100%) | 1.00 |
| Lead thyroid shields | 29 (100%) | 24 (100%) | 17 (81%) | 17 (100%) | **<0.01** |
| Lead glasses | 19 (66%) | 18 (75%) | 4 (22%) | 4 (24%) | **<0.01** |
| Protective lead glass in the lab | 25 (86%) | 19 (79%) | 17 (81%) | 11 (65%) | 0.39 |
| Lead screen below the table | 29 (100%) | 23 (96%) | 17 (81%) | 16 (94%) | 0.06 |
| X-ray protective gloves | 1 (3.4%) | 0 (0%) | 0 (0%) | 0 (0%) | 0.54 |
| Protection cabin | 1 (3.4%) | 1 (4.5%) | 3 (17%) | 1 (5.9%) | 0.34 |
| Exposure control measures* Collar
* Chest skin
* Ring
* Eye
 | 7 (24%)25 (86%)8 (28%)2 (6.9%) | 9 (38%)23 (96%)4 (17%)0 (0%) | 11 (52%)21 (100%)8 (19%)4 (19%) | 2 (12%)17 (100%)7 (41%)1 (5.9%) | **0.04**0.110.300.12 |
| Average X-ray exposure dose over apron, mSv | 1.0 + 2.1*n=11* | 0.5 + 0.7*n=10* | 0.3 + 0.5*n=4* | 5.0 + 7.1*n=2* | 0.70 |
| Average X-ray exposure dose under apron, mSv | 4.1 + 6.1*n=14* | 5.7 + 8.3*n=13* | 0.5 + 0.6*n=8* | 3.5 + 5.7*n=4* | 0.39 |
| Operators' X-ray protection strategies |
| A, T | 0 (0%) | 0 (0%) | 4 (19%) | 1 (5.9%) | **0.02** |
| A, T, G | 0 (0%) | 1 (4.2%) | 0 (0%) | 0 (0%) | 0.43 |
| A, T, G, S | 8 (28%) | 4 (17%) | 8 (38%) | 7 (41%) | 0.29 |
| A, T, G, S, Gs | 15 (52%) | 14 (58%) | 2 (9.5%) | 3 (18%) | **<0.01** |
| A, T, G, S, Gs, Gv | 1 (3.4%) | 0 (0%) | 0 (0%) | 0 (0%) | 0.54 |
| A, T, G, S, Gs, C | 0 (0%) | 0 (0%) | 2 (9.5%) | 1 (5.9%) | 0.20 |
| A, T, G, S, C | 1 (3.4%) | 0 (0%) | 1 (4.8%) | 0 (0%) | 0.63 |
| T, G, S | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1.00 |
| A, G, S | 0 (0%) | 0 (0%) | 4 (19%) | 0 (0%) | **<0.01** |
| A, T, S | 1 (3.4%) | 0 (0%) | 0 (0%) | 5 (29%) | **<0.01** |
| A, T, S, C | 0 (0%) | 1 (4.2%) | 0 (0%) | 0 (0%) | 0.43 |
| A, T, S, Gs | 3 (10%) | 4 (17%) | 0 (0%) | 0 (0%) | 0.11 |

A - apron, T - thyroid, G - glass, Gs - glasses, Gv - gloves, S - screen, C - cabin

**Table S3.** Operator’s sex and X-ray protection status and strategy.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Female electrophysiologists****(n=14)** | **Male electrophysiologists****(n=81)** | **p** |
| Age [y] | 36 [34-40] | 40 [36-47] | **0.02** |
| Time of training [y] | 3 [1-10] | 5 [2-11] | 0.08 |
| Collimation | 13 (93%) | 64 (82%) | 0.31 |
| Minimizing the tube to intensifier distance | 14 (100%) | 76 (94%) | 0.34 |
| Lead apron | 14 (100%) | 79 (98%) | 0.55 |
| Lead thyroid shields | 14 (100%) | 77 (95%) | 0.40 |
| Lead glasses | 7 (50%) | 40 (51%) | 0.40 |
| Protective lead glass in the lab | 13 (93%) | 63 (78%) | 0.20 |
| Lead screen below the table | 13 (93%) | 76 (94%) | 0.89 |
| X-ray protective gloves | 0 (0%) | 1 (1.2%) | 0.68 |
| Protection cabin | 0 (0%) | 6 (7.4%) | 0.32 |
| Exposure control measures* Collar
* Chest skin
* Ring
* Eye
 | 5 (36%)14 (100%)4 (21%)1 (7.1%) | 24 (30%)76 (94%)19 (24%)6 (7.4%) | 0.650.340.680.72 |
| Average X-ray exposure dose over apron, mSv | 0.2+0.4*n=6* | 1.3 + 2.5*n=21* | 0.52 |
| Average X-ray exposure dose under apron, mSv | 2.5+5.1*n=9* | 3.8 + 6.6*n=33* | 0.35 |
| Operators' X-ray protection strategies |
| A, T | 1 (7.1%) | 4 (4.9%) | 0.73 |
| A, T, G | 0 (0%) | 1 (1.2%) | 0.68 |
| A, T, G, S | 6 (43%) | 21 (26%) | 0.20 |
| A, T, G, S, Gs | 7 (50%) | 29 (36%) | 0.32 |
| A, T, G, S, Gs, Gv | 0 (0%) | 1 (1.2%) | 0.68 |
| A, T, G, S, Gs, C | 0 (0%) | 2 (8.7%) | 0.47 |
| A, T, G, S, C | 0 (0%) | 3 (3.7%) | 0.55 |
| T, G, S | 0 (0%) | 2 (2.5%) | 0.55 |
| A, G, S | 0 (0%) | 4 (4.9%) | 0.40 |
| A, T, S | 0 (0%) | 6 (7.4%) | 0.30 |
| A, T, S, Gs | 0 (0%) | 7 (8.6%) | 0.26 |
| A, T, S, C | 0 (0%) | 1 (1.2%) | 0.68 |

A - apron, T - thyroid, G - glass, Gs - glasses, Gv - gloves, S - screen, C - cabin

**Figure S1.** Operators’ sex distribution with regard to professional experience.