# DAP to effective dose conversion in cardiology and vascular/interventional radiology

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# 1 Introduction

The implementation of the European Directive 97/43/Euratom[1] into the Belgian legislation introduced a number of new tasks to the radiology departments. It was stated that the determination of radiation doses is an important issue in the framework of radiation protection of the patient. Special attention is given to high-dose procedures, like in interventional cardiology and vascular and interventional radiology. The medical physics expert plays a central role in this.

The need of dose auditing and patient dosimetry is emphasized in relation to optimization of radiological procedures. First of all, radiological departments are legally obliged to register dose-area-product (DAP) values for every patient undergoing high-dose procedures. As these procedures were considered as a priority, the Federal Agency of Nuclear Control financed a large national multi-centre project on dose evaluations for interventional cardiology and vascular/interventional radiology procedures a few years ago[2]. One of the conclusions in this project was that only DAP registration for optimization purposes is not always adequate. In fact, the project measurements showed that centers with similar average DAP-values, could still result in significant different average effective dose values. This was caused by a different use in copper filtration during the procedures. The additional calculation of effective dose could enable medical physicists to determine and evaluate dose values which will more connect to radiation risk evaluation, if necessary.

The effective dose can be calculated by multiplication of the registered DAP-values and appropriate conversion coefficients. In the past such coefficients have been calculated systematically for different anatomical regions and radiation projections for conventional radiological procedures. However, the use of these published conversion coefficients is not appropriate for the calculation of effective dose for interventional cardiology and vascular/interventional radiology procedures. First of all, the irradiated field sizes and regions deviate from those in conventional radiology. Moreover, the requested conversion coefficients according to the beam qualities used for these complex procedures are not included in the published conversion tables. In literature[3-7] some conversion coefficients can be found for specific interventional procedures, calculated according to the need of the specific study. In the framework of patient dose optimization, however, there is a need to the availability of systematic tables with conversion coefficients who will allow the calculation of the effective dose for the complete offer of interventional cardiology and vascular/interventional radiology procedures.

# 2 Aim of project

In current project systematic DAP-to-effective-dose conversion factors were calculated for complex procedures in interventional cardiology and vascular and interventional radiology. Calculations are performed by means of Monte-Carlo simulation

techniques and are taking into account the lastest recommendations of the ICRP with respect to the quantity "effective dose"[8]. Results are summarized in tables, in order to provide the medical physicist with sufficient data for efficient and simple effective dose calculations.

# 3 Materials and methods

## 3.1 Monte-Carlo code

A large variety of Monte-Carlo codes is available for medical physics calculations. For the purpose of current project (X-ray source simulations), the *MCNP-X (v 2.5.0)* code was used[9]. The *MCNP* code has been used previously in medical physics by different research groups and allows reliable dose calculations for photon radiation sources [6,7,10-12].

## 3.2 X-ray beam qualities

With respect to the definition of the X-ray spectrum, the IPEM 78 publication was used [13]. The IPEM 78 software tool generates X-ray spectra based on parameters kVp, filtration (material type and amount), anode angle and kV signal ripple. For interventional radiology procedures, an anode angle of 14° is be used, whereas for interventional cardiology procedures the spectra are generated based on an anode angle of 9°.

In clinical practice a large variety of X-ray spectra are being used, depending on the applied kVp and filtration settings. For the interventional applications in current project, kVp-values typically range from 60 to 130 kVp. Filtrations can be based on a single aluminum filtration (2.5-6 mmAl) or on a combination with copper (0.1-0.9 mmCu).

The tables below give an overview of all possible combinations of kVp and filtration settings, depending on the specific interventional application. For each combination, the corresponding half value layer was calculated with the IPEM 78 software tool.

**kVp and filter combinations in vascular/interventional radiology**

| | | **HVL (mmAl)** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **3** | | | | **4** | | | | **5** | | | | **6** | | | |
| | | **mmCu** | | | | **mmCu** | | | | **mmCu** | | | | **mmCu** | | | |
| | | **0** | **0,1** | **0,2** | **0,3** | **0** | **0,1** | **0,2** | **0,3** | **0** | **0,1** | **0,2** | **0,3** | **0** | **0,1** | **0,2** | **0,3** |
| **kVp** | **60** | 2,30 | 3,41 | 4,16 | 4,71 | 2,67 | 3,65 | 4,33 | 4,84 | 3,00 | 3,87 | 4,48 | 4,95 | 3,28 | 4,06 | 4,63 | 5,06 |
| | **70** | 2,66 | 3,98 | 4,88 | 5,53 | 3,10 | 4,26 | 5,08 | 5,68 | 3,48 | 4,52 | 5,26 | 5,82 | 3,82 | 4,75 | 5,43 | 5,95 |
| | **80** | 3,06 | 4,57 | 5,60 | 6,35 | 3,57 | 4,90 | 5,83 | 6,52 | 4,00 | 5,19 | 6,04 | 6,68 | 4,38 | 5,45 | 6,23 | 6,82 |
| | **90** | 3,49 | 5,15 | 6,27 | 7,07 | 4,04 | 5,51 | 6,51 | 7,25 | 4,52 | 5,82 | 6,73 | 7,41 | 4,93 | 6,10 | 6,94 | 7,57 |
| | **100** | 3,92 | 5,70 | 6,86 | 7,68 | 4,51 | 6,07 | 7,11 | 7,87 | 5,02 | 6,39 | 7,34 | 8,04 | 5,46 | 6,69 | 7,55 | 8,20 |

**kVp and filter combinations in interventional cardiology**

| | | HVL (mmAl) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2.5 | | | | | | 3 | | | | 4 | | | |
| | | mmCu | | | | | | mmCu | | | | mmCu | | | |
| | | 0 | 0.1 | 0.2 | 0.3 | 0.6 | 0.9 | 0 | 0.1 | 0.2 | 0.3 | 0 | 0.1 | 0.2 | 0.3 |
| kVp | 60 | 2.25 | 3.41 | 4.17 | 4.72 | 5.75 | 6.35 | 2.46 | 3.54 | 4.26 | 4.78 | 2.83 | 3.77 | 4.42 | 4.9 |
| | 70 | 2.65 | 4.02 | 4.92 | 5.57 | 6.80 | 7.52 | 2.89 | 4.16 | 5.02 | 5.64 | 3.32 | 4.43 | 5.21 | 5.79 |
| | 80 | 3.10 | 4.66 | 5.68 | 6.42 | 7.78 | 8.56 | 3.37 | 4.83 | 5.80 | 6.50 | 3.86 | 5.13 | 6.01 | 6.66 |
| | 90 | 3.57 | 5.28 | 6.38 | 7.16 | 8.57 | 9.37 | 3.88 | 5.46 | 6.50 | 7.25 | 4.41 | 5.79 | 6.73 | 7.41 |
| | 100 | 4.05 | 5.87 | 7.00 | 7.79 | 9.22 | 10.04 | 4.38 | 6.05 | 7.12 | 7.88 | 4.94 | 6.39 | 7.35 | 8.05 |
| | 110 | 4.53 | 6.41 | 7.55 | 8.35 | 9.79 | 10.63 | 4.87 | 6.60 | 7.68 | 8.44 | 5.46 | 6.94 | 7.91 | 8.61 |
| | 120 | 5.01 | 9.62 | 8.06 | 8.86 | 10.31 | 11.16 | 5.36 | 7.11 | 8.19 | 8.95 | 5.96 | 7.45 | 8.42 | 9.12 |
| | 130 | 5.48 | 7.40 | 8.54 | 9.33 | 10.79 | 11.66 | 5.84 | 7.59 | 8.67 | 9.42 | 6.44 | 7.93 | 8.90 | 9.59 |

It is practically impossible to simulate all possible kV/filtration combinations for all clinical projections. Therefore, in this project, the X-ray spectrum is described based on the quantity half-value layer (HVL, expressed in mmAl).

In the table below, the relevant HVL-ranges for the different clinical applications are represented. The simulations are based on this HVL-range in steps of 1mmAl HVL.

| Application | HVL-range (mmAl) |
|---|---|
| Head | 3.5 – 8.5 |
| Neck | 2.5 – 8.5 |
| Thorax | 2.5 – 8.5 |
| Abdomen | 2.5 – 8.5 |
| Pelvis | 2.5 – 8.5 |
| Legs | 2.5 – 6.5 |
| Cardiology | 2.5 – 11.5 |

## 3.3 X-ray beam fields and projections

The X-ray field sizes and projections are other important factors to be taken into account for the simulations. In the tables below, an overview of typical clinical settings is given for interventional radiology and interventional cardiology applications respectively.

**Projections and field sizes used for the simulations in interventional cardiology**

| | Projection | Projection | Field size at image |
|---|---|---|---|
| 1 | RAO 30 | CAUD 25 | 17 |
| 2 | RAO 30 | CAUD 0 | 17 |
| 3 | RAO 30 | CRAN 25 | 17 |
| 4 | LAO 45 | CRAN 25 | 17 |
| 5 | LAO 45 | CAUD 0 | 20 |
| 6 | LAO 45 | CAUD 25 | 17 |
| 7 | LAO 90 | CAUD 0 | 17 |
| 8 | LAO 0 | CAUD 25 | 17 |
| 9 | LAO 0 | CAUD 0 | 20 |
| 10 | LAO 15 | CAUD 0 | 17 |
| 11 | LAO 30 | CAUD 0 | 17 |
| 12 | RAO 30 | CAUD 0 | 20 |

**Projections and field sizes used for the simulations in vascular/interventional radiology**

| | Application | Projection | Field size at image |
|---|---|---|---|
| 1 | Head | LAO 45° | 28 |
| 2 | Head | RAO 45° | 28 |
| 3 | Head | PA | 28 |
| 4 | Head | LLAT | 28 |
| 5 | Head | RLAT | 28 |
| 6 | Neck | LAO 45° | 28 |
| 7 | Neck | RAO 45° | 28 |
| 8 | Neck | PA | 28 |
| 9 | Thorax | LAO 45° | 28 |
| 10 | Thorax | RAO 45° | 28 |
| 11 | Abdomen | LAO 45° | 40 |
| 12 | Abdomen | RAO 45° | 40 |
| 13 | Abdomen | PA | 40 |
| 14 | Abdomen | LLAT | 40 |
| 15 | Abdomen | RLAT | 40 |

| | | | |
|---|---|---|---|
| 16 | Pelvis | LAO 45° | 40 |
| 17 | Pelvis | RAO 45° | 40 |
| 18 | Pelvis | PA | 40 |
| 19 | Upper legs | PA | 40 |
| 20 | Upper legs | PA | 40 |

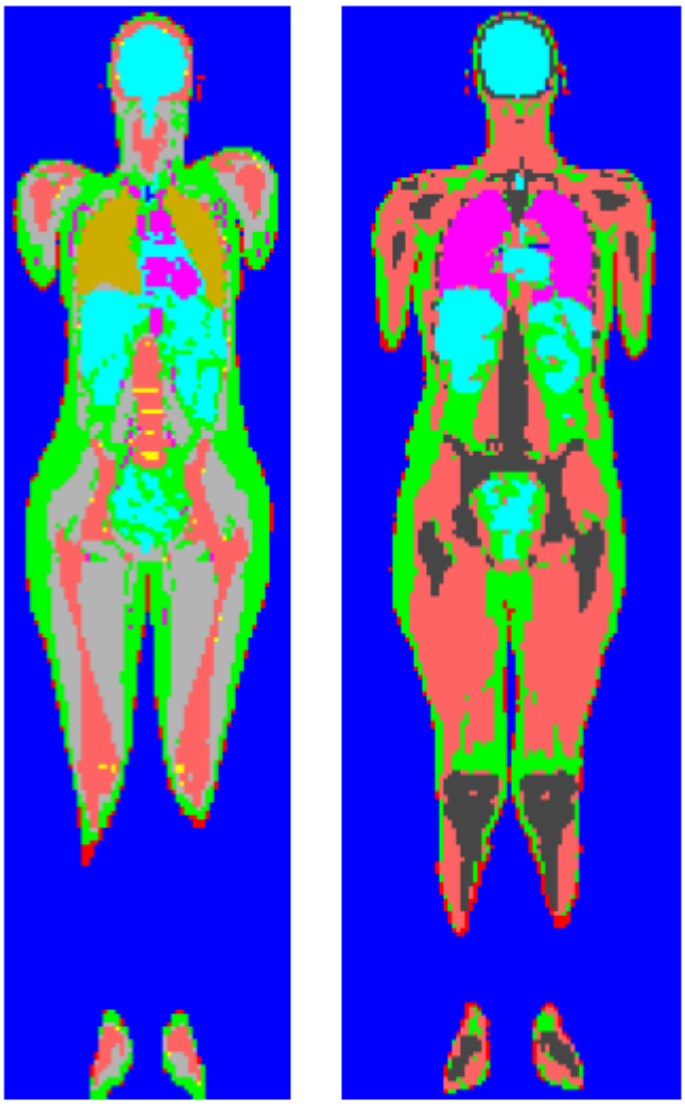
Taking into account the number of HVLs and the number of projections/field sizes, a total amount of 240 and 262 simulations were performed for interventional cardiology and vascular/interventional radiology applications respectively.

## 3.4 Anthropomorphic voxel-based phantoms

In the new recommendations of ICRP[8], significant changes in the calculation of the effective dose were made. First of all, a large number of additional radiation sensitive organs were defined (salivary glands, adipose tissue, connective tissue, extra thoracic airways, heart wall and lymphatic nodes). As a result, the tissue weighting factors were adjusted. Moreover, the ICRP now states that reference computational phantoms of the adult reference male and adult reference female should be based on medical tomographic images (voxel-phantoms). In these phantoms, the voxels that make up defined organs should be adjusted to approximate the organ masses assigned to the reference male and reference female in ICRP 89[8,14].

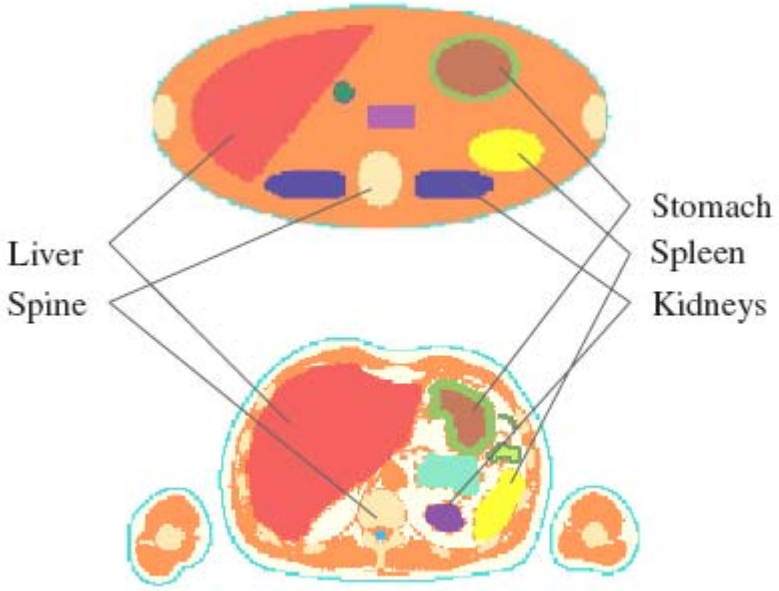
The choice of a voxel-phantom within this project was, however, not straightforeward. In fact, at the start of the project, the standard ICRP voxel phantoms[15] were not available. At that time, the MAX06 and FAX06 phantoms[16] were almost the only available voxel-phantoms with reference dimensions. Due to the large number of voxels, however, an unacceptable amount of computer memory would have been necessary.

More appropriate voxel-phantoms were found at the Helmholtz Zentrum München – German Research Center for Environmental Health. "Golem"[17] and "Laura" are voxel-phantoms that have body characteristics similar to the reference persons. Golem is constructed from voxels of 2.08 x 2.08 x 8.0 $mm^3$. His height is 176 cm and weight 68.9 kg. Laura is constructed from 1.875 x 1.875 x 5.0 $mm^3$ voxels. Her height is 167 cm and weight 59 kg. A cross section of both phantoms is given in the figure below. Both phantoms had a realistic number of voxels that could be handled by *MCNP-X*. Moreover, the dimensions and composition of these phantoms are really close to the standard phantoms that are suggested by the ICRP[15]. A collaboration agreement was signed with the German Research Center for Environmental Health in order to be able to use the Golem/Laura voxel family for the simulations.

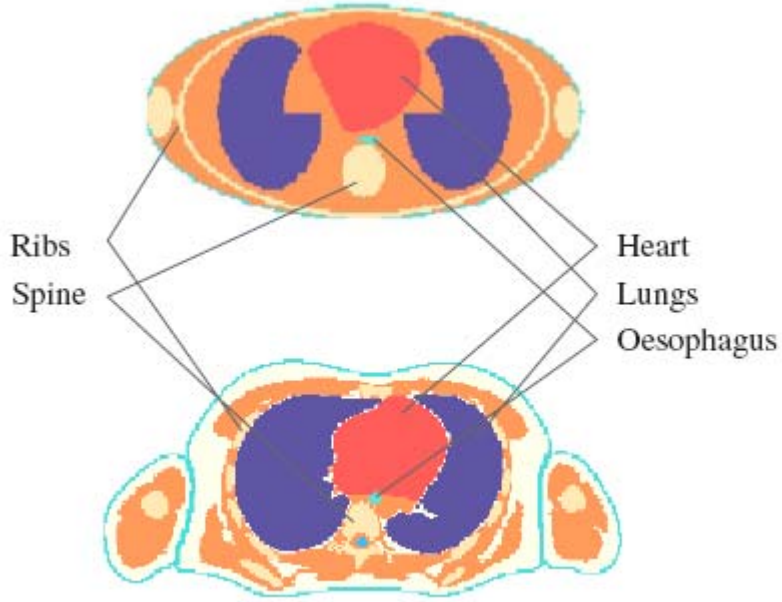


**Cross sections of the LAURA (left) and GOLEM (right) voxel phantoms**

Voxel-phantoms provide a more realistic representation of the human anatomy in comparison with the computational phantoms (Adam/Eva) that have been used until now. In the figures below axial slices through centre of the liver/heart of both the mathematical model and the Golem voxel-phantom are presented[18].




**Axial slices through centre of liver and stomach of the mathematical model Adam (top) and the voxel model Golem (bottom)[18]**




**Axial slices through centre of the heart of the mathematical model Adam (top) and the voxel model Golem (bottom) [18]**

## 3.5 DAP-to-organ-dose conversion factor calculation

For each X-ray projection and field size (see 3.3) and for all clinically relevant HVLs (see 3.2), organ doses were calculated for both Golem and Laura voxel-phantoms. Per simulation 10 000 000 particles were transported in MCNP-X (F6 tally), resulting in relative errors for the organs in the radiation field lower than 1%.

As red bone marrow and bone surface are not segmented within the Golem/Laura phantoms, correction factors to the mean skeleton dose were calculated based on the material composition and density of red bone marrow, yellow bone marrow and cortical bone structures throughout the human body[19].

For the gall bladder and small intestine no distinction is made between wall and contents in the Golem phantom. Golem does not have breast (glandular tissue) and salivary glands and both phantoms do not have oral mucosa nor lymphatic nodes. The dose to the oral mucosa was approximated by the dose to the tongue and the dose to the lymphatic nodes was approximated by that to other distributed tissue, like muscle or adipose tissue. The breast dose for Golem was not simulated.

Organ dose conversion factors for both female and male phantoms are presented in 4.3 and are expressed in mGy/Gycm².

## 3.6 DAP-to-effective-dose conversion factor calculation

After the simulation of the organ doses in both female and male voxel-phantoms, effective doses were calculated according to the new recommendations of the ICRP[8]:

$$E = \sum_T w_T \left[\frac{H_T^M + H_T^F}{2}\right]$$

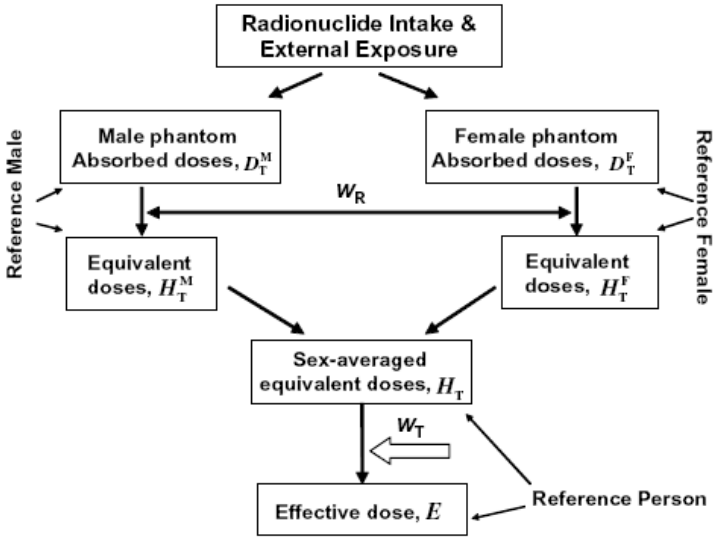
In the formula above, $w_T$ represent the latest tissue weighting factors[8] and the $H_T^M$ and $H_T^F$ denote the equivalent organ dose of tissue T in the male and female phantom respectively. The equivalent dose to the remainder is defined separately for the reference male and the reference female phantoms:

$$H_{remainder}^M = \frac{1}{13}\sum_T^{13} H_T^M$$
$$H_{remainder}^F = \frac{1}{13}\sum_T^{13} H_T^F$$

As Golem has no breast tissue included, the effective dose was calculated only based on the Laura breast dose, as recommended in the ICRP 74 publication[20]:

$$E = w_{breast} H_{breast,female} + \sum_{T \neq breast} w_T \left[\frac{H_T^M + H_T^F}{2}\right]$$

The figure below illustrates the calculation concept of the effective dose.




**Schematic overview, illustrating the calculation of the effective dose according to ICRP 103[8]**

The effective dose is only defined and estimated in a reference person. This quantity provides a value which takes account of the given exposure conditions but not of the characteristics of a specific individual[8]! In particular, the tissue weighting factors are mean values representing an average over many individuals of both sexes.

In addition to the effective dose, a *pseudo effective dose* was calculated for the male and female phantoms separately. This *pseudo effective dose* does only take into account the equivalent organ doses for the male or the female phantoms (no sex-averaging is applied).

Effective dose conversion factors are presented in 4.4 and are expressed in mSv/Gycm².

# 4 Results and discussion

## 4.1 Intercomparison

An inter-institute inter-comparison was perform to reveal possible differences in processing the voxel-based data. The simulations for this inter-comparison were based on the same input-file (PA thorax irradiation of the Golem phantom, field size 520cm², 70 kVp, 4 mm Al filtration, 10 000 000 particles). The results are presented in the table below:

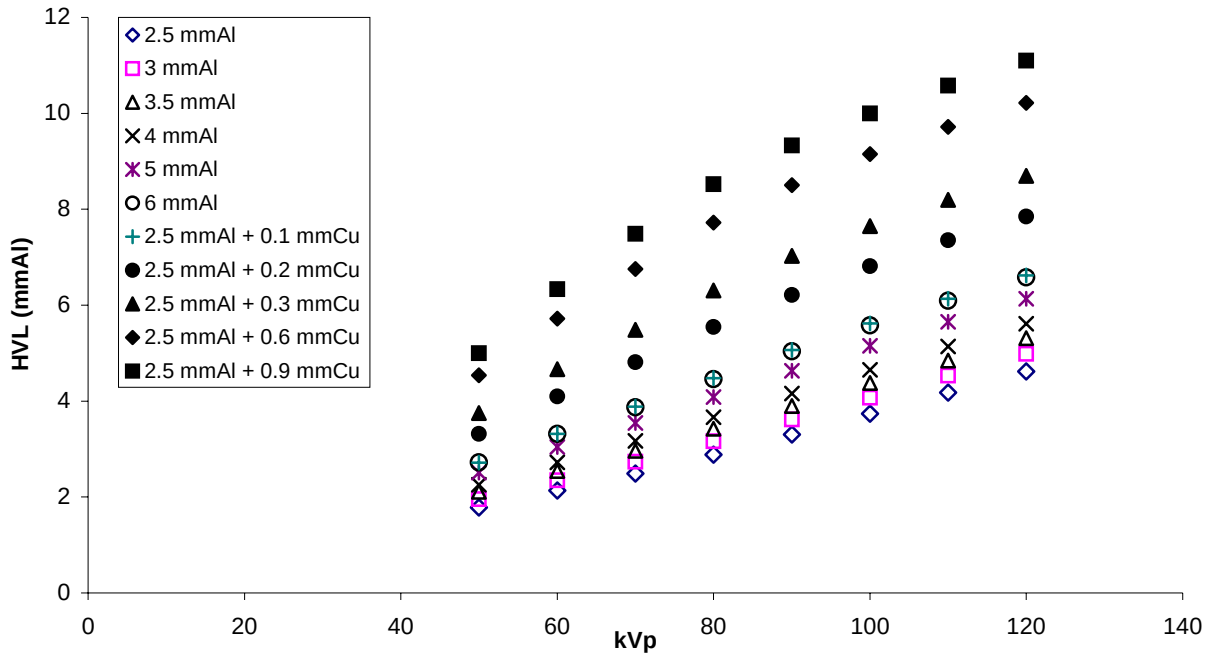
| | **organ dose D/DAP SCK/CEN [Gy/Gy cm²]** | **organ dose D/DAP UGent [Sv/Gy cm²]** |
|---|---|---|
| RBM | 1,96E-05 | 1,98E-05 |
| colon | 7,56E-06 | 7,55E-06 |
| lung | 1,30E-04 | 1,31E-04 |
| stomach | 9,93E-05 | 9,92E-05 |
| bladder | 1,23E-07 | 1,22E-07 |
| oesophagus | 2,39E-04 | 2,39E-04 |
| gonads | 1,47E-08 | 1,45E-08 |
| liver | 1,04E-04 | 1,03E-04 |
| thyroid | 1,03E-04 | 1,04E-04 |
| bone surface | 4,46E-04 | 4,50E-04 |
| brain | 1,53E-06 | 1,54E-06 |
| kidneys | 1,87E-05 | 1,86E-05 |
| salivary glands | 4,41E-08 | 4,39E-08 |
| skin | 4,19E-05 | 4,20E-05 |
| remainder: | 8,99E-05 | 8,95E-05 |
| **effective dose/DAP** | **6.72 Sv/Gycm²** | **6.72 Sv/Gycm²** |

The results show an excellent agreement between the SCK and UGent simulations with respect to the effective dose/DAP. Individual organ doses show small deviations < 1%.

## 4.2 HVL as beam quality marker

As the medical physics expert will measure HVL-values in a routine quality control set-up, X-ray spectra definitions based on HVL would be interesting to use. In fact, different kVp/filtration combinations may result in the same HVL-values as illustrated in the figure below below[1]. Therefore, the simulations are based on a HVL-range that is clinically relevant.

[1] Values calculated by means of the IPEM 78 report.




In order to test the feasibility of this approach, Monte-Carlo calculations were performed on a mathematical anthropomorphic phantom using different kVp/filtration settings – all resulting in the same HVL. The latter simulations showed that DAP-to-effective dose conversion factors simulated with the "HVL method" deviated maximum 5% of the values simulated with the exact spectrum.

## 4.3 Organ dose conversion coefficients

### 4.3.1 General remarks for the use of the tables

The subsequent tables give an overview of organ dose conversion coefficients for the the different projections and corresponding image detector field sizes that were considered.

Please remark that the projection angles represent the position of the image intensifier or flat panel detector relative to the patient in the transverse or sagital plane of the patient. The directions are denoted by cranial (CRAN) and caudal (CAUD) in the sagital plane when the image intensifier or flat panel detector is tilted respectively to patients head or feet. The directions in the transversal plane are denoted by Right Anterior Oblique (RAO) and Left Anterior Oblique (LAO) for the position of the image intensifier or flat panel detector at the right, respectively left side of the patient.

In order to select the correct organ dose conversion coefficients for a specific procedure, first select the appropriate organ region. Next, select the projection and detector field size that is close to the projection under investigation. Finally, select the conversion factor corresponding to the HVL value that is used in clinical practice.

Please remark that organ dose conversion factors should not be used for individual dosimetry of patients!

### 4.3.2 Organ dose conversion coefficients for interventional cardiology

| Projection RAO/LAO | Projection CRAN/CAUD | Field size at image detector (cm) |
|---|---|---|
| LAO 0 | CAUD 0 | 20 |
| LAO 0 | CAUD 25 | 17 |
| LAO 15 | CAUD 0 | 17 |
| LAO 30 | CAUD 0 | 17 |
| LAO 45 | CAUD 0 | 20 |
| LAO 45 | CAUD 25 | 17 |
| LAO 45 | CRAN 25 | 17 |
| LAO 90 | CAUD 0 | 17 |
| RAO 30 | CAUD 0 | 17 |
| RAO 30 | CAUD 0 | 20 |
| RAO 30 | CAUD 25 | 17 |
| RAO 30 | CRAN 25 | 17 |

| LAO 0° CAUD 0° (20cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.094 | 0.133 | 0.167 | 0.191 | 0.209 | 0.233 | 0.252 | 0.269 | 0.284 | 0.291 |
| **Adrenals** | 0.156 | 0.259 | 0.351 | 0.412 | 0.455 | 0.526 | 0.578 | 0.629 | 0.671 | 0.684 |
| **Brain** | * | * | * | * | * | * | * | * | 0.001 | 0.001 |
| **Colon** | * | 0.002 | 0.004 | 0.006 | 0.005 | 0.008 | 0.009 | 0.010 | 0.012 | 0.013 |
| **Extrathoracic airways** | 0.001 | 0.003 | 0.005 | 0.006 | 0.006 | 0.009 | 0.010 | 0.011 | 0.013 | 0.014 |
| **Gall bladder** | 0.008 | 0.021 | 0.036 | 0.045 | 0.044 | 0.061 | 0.071 | 0.079 | 0.089 | 0.096 |
| **Heart** | 0.478 | 0.817 | 1.129 | 1.341 | 1.457 | 1.727 | 1.917 | 2.075 | 2.238 | 2.350 |
| **Kidneys** | 0.014 | 0.029 | 0.045 | 0.056 | 0.057 | 0.074 | 0.085 | 0.093 | 0.104 | 0.111 |
| **Liver** | 0.030 | 0.059 | 0.087 | 0.105 | 0.112 | 0.138 | 0.156 | 0.171 | 0.187 | 0.195 |
| **Lungs** | 0.389 | 0.572 | 0.722 | 0.826 | 0.928 | 1.018 | 1.097 | 1.175 | 1.230 | 1.242 |
| **Lymph nodes** | 0.073 | 0.123 | 0.168 | 0.199 | 0.216 | 0.255 | 0.283 | 0.307 | 0.330 | 0.343 |
| **Muscle** | 0.090 | 0.124 | 0.152 | 0.172 | 0.187 | 0.208 | 0.223 | 0.238 | 0.250 | 0.256 |
| **Oesophagus** | 0.210 | 0.388 | 0.553 | 0.664 | 0.719 | 0.868 | 0.971 | 1.058 | 1.147 | 1.205 |
| **Oral mucosa** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 | 0.005 |
| **Pancreas** | 0.059 | 0.118 | 0.174 | 0.211 | 0.227 | 0.279 | 0.314 | 0.346 | 0.377 | 0.391 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.001 | 0.003 | 0.003 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 |
| **Bone** | 0.375 | 0.482 | 0.552 | 0.603 | 0.701 | 0.700 | 0.724 | 0.763 | 0.765 | 0.727 |
| **Skin** | 0.098 | 0.108 | 0.117 | 0.123 | 0.127 | 0.134 | 0.139 | 0.144 | 0.148 | 0.150 |
| **Small intestine** | * | 0.003 | 0.005 | 0.007 | 0.006 | 0.009 | 0.011 | 0.012 | 0.014 | 0.016 |
| **Spleen** | 0.046 | 0.084 | 0.120 | 0.143 | 0.156 | 0.187 | 0.207 | 0.227 | 0.245 | 0.252 |
| **Stomach** | 0.061 | 0.123 | 0.184 | 0.224 | 0.237 | 0.297 | 0.335 | 0.368 | 0.404 | 0.425 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.075 | 0.159 | 0.242 | 0.297 | 0.310 | 0.397 | 0.453 | 0.495 | 0.547 | 0.589 |
| **Thyroid** | 0.003 | 0.009 | 0.014 | 0.018 | 0.018 | 0.025 | 0.029 | 0.032 | 0.036 | 0.038 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.084 | 0.132 | 0.174 | 0.203 | 0.223 | 0.255 | 0.279 | 0.301 | 0.320 | 0.329 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.089 | 0.140 | 0.185 | 0.215 | 0.237 | 0.271 | 0.296 | 0.320 | 0.341 | 0.350 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 0° CAUD 0° (20cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.134 | 0.189 | 0.237 | 0.270 | 0.296 | 0.329 | 0.356 | 0.380 | 0.400 | 0.409 |
| **Adrenals** | 0.207 | 0.337 | 0.449 | 0.525 | 0.585 | 0.666 | 0.730 | 0.789 | 0.838 | 0.858 |
| **Brain** | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Breasts** | 0.041 | 0.081 | 0.120 | 0.146 | 0.154 | 0.194 | 0.220 | 0.240 | 0.264 | 0.282 |
| **Colon** | 0.001 | 0.004 | 0.007 | 0.009 | 0.009 | 0.013 | 0.015 | 0.017 | 0.019 | 0.022 |
| **Extrathoracic airways** | 0.005 | 0.011 | 0.017 | 0.021 | 0.021 | 0.029 | 0.033 | 0.036 | 0.041 | 0.046 |
| **Gall bladder** | 0.014 | 0.033 | 0.054 | 0.067 | 0.067 | 0.091 | 0.104 | 0.116 | 0.130 | 0.139 |
| **Heart** | 0.429 | 0.744 | 1.037 | 1.235 | 1.339 | 1.595 | 1.775 | 1.923 | 2.078 | 2.185 |
| **Kidneys** | 0.022 | 0.045 | 0.068 | 0.083 | 0.087 | 0.111 | 0.125 | 0.138 | 0.151 | 0.159 |
| **Liver** | 0.051 | 0.097 | 0.142 | 0.171 | 0.183 | 0.226 | 0.253 | 0.278 | 0.303 | 0.316 |
| **Lungs** | 0.647 | 0.939 | 1.180 | 1.347 | 1.511 | 1.654 | 1.779 | 1.901 | 1.989 | 2.008 |
| **Lymph nodes** | 0.085 | 0.142 | 0.194 | 0.228 | 0.249 | 0.292 | 0.323 | 0.351 | 0.377 | 0.391 |
| **Muscle** | 0.108 | 0.148 | 0.182 | 0.206 | 0.225 | 0.249 | 0.268 | 0.285 | 0.300 | 0.307 |
| **Oesophagus** | 0.361 | 0.656 | 0.933 | 1.118 | 1.207 | 1.458 | 1.630 | 1.776 | 1.925 | 2.021 |
| **Oral mucosa** | * | 0.003 | 0.005 | 0.007 | 0.006 | 0.009 | 0.011 | 0.012 | 0.014 | 0.016 |
| **Female gonads** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 |
| **Pancreas** | 0.081 | 0.158 | 0.229 | 0.276 | 0.298 | 0.363 | 0.407 | 0.448 | 0.486 | 0.502 |
| **Salivary glands** | * | 0.002 | 0.004 | 0.005 | 0.005 | 0.007 | 0.008 | 0.009 | 0.010 | 0.012 |
| **Bone** | 0.444 | 0.568 | 0.649 | 0.707 | 0.822 | 0.819 | 0.847 | 0.892 | 0.892 | 0.847 |
| **Skin** | 0.109 | 0.120 | 0.130 | 0.137 | 0.142 | 0.150 | 0.155 | 0.160 | 0.165 | 0.168 |
| **Small intestine** | 0.002 | 0.005 | 0.008 | 0.011 | 0.010 | 0.015 | 0.018 | 0.020 | 0.023 | 0.026 |
| **Spleen** | 0.047 | 0.085 | 0.119 | 0.142 | 0.156 | 0.185 | 0.205 | 0.224 | 0.241 | 0.246 |
| **Stomach** | 0.083 | 0.164 | 0.241 | 0.291 | 0.312 | 0.385 | 0.433 | 0.476 | 0.519 | 0.541 |
| **Thymus** | 0.072 | 0.152 | 0.233 | 0.285 | 0.297 | 0.382 | 0.435 | 0.477 | 0.528 | 0.567 |
| **Thyroid** | 0.006 | 0.014 | 0.023 | 0.029 | 0.029 | 0.040 | 0.046 | 0.051 | 0.057 | 0.062 |
| **Urinary bladder** | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Uterus** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 | 0.005 | 0.006 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.135 | 0.210 | 0.275 | 0.320 | 0.352 | 0.402 | 0.439 | 0.474 | 0.504 | 0.517 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.141 | 0.220 | 0.290 | 0.337 | 0.371 | 0.425 | 0.465 | 0.501 | 0.533 | 0.548 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| LAO 0° CAUD 25° (17cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.105 | 0.150 | 0.189 | 0.216 | 0.236 | 0.265 | 0.287 | 0.306 | 0.324 | 0.332 |
| **Adrenals** | 0.045 | 0.091 | 0.139 | 0.169 | 0.175 | 0.225 | 0.256 | 0.281 | 0.311 | 0.331 |
| **Brain** | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Colon** | * | 0.002 | 0.003 | 0.004 | 0.003 | 0.005 | 0.007 | 0.007 | 0.008 | 0.010 |
| **Extrathoracic airways** | 0.002 | 0.004 | 0.007 | 0.008 | 0.008 | 0.011 | 0.014 | 0.015 | 0.017 | 0.020 |
| **Gall bladder** | 0.005 | 0.015 | 0.025 | 0.032 | 0.031 | 0.044 | 0.052 | 0.058 | 0.066 | 0.073 |
| **Heart** | 0.383 | 0.687 | 0.976 | 1.172 | 1.254 | 1.526 | 1.710 | 1.854 | 2.018 | 2.148 |
| **Kidneys** | 0.006 | 0.015 | 0.024 | 0.031 | 0.030 | 0.042 | 0.049 | 0.054 | 0.061 | 0.067 |
| **Liver** | 0.018 | 0.039 | 0.060 | 0.074 | 0.076 | 0.099 | 0.114 | 0.125 | 0.139 | 0.150 |
| **Lungs** | 0.344 | 0.542 | 0.711 | 0.826 | 0.923 | 1.040 | 1.133 | 1.223 | 1.294 | 1.314 |
| **Lymph nodes** | 0.056 | 0.100 | 0.141 | 0.169 | 0.180 | 0.219 | 0.245 | 0.267 | 0.290 | 0.305 |
| **Muscle** | 0.086 | 0.119 | 0.148 | 0.168 | 0.183 | 0.204 | 0.220 | 0.234 | 0.248 | 0.255 |
| **Oesophagus** | 0.192 | 0.372 | 0.548 | 0.664 | 0.704 | 0.877 | 0.989 | 1.083 | 1.186 | 1.255 |
| **Oral mucosa** | * | * | 0.002 | 0.003 | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.007 |
| **Pancreas** | 0.032 | 0.069 | 0.107 | 0.132 | 0.135 | 0.178 | 0.203 | 0.224 | 0.249 | 0.266 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.009 | 0.010 | 0.011 |
| **Bone** | 0.417 | 0.537 | 0.617 | 0.675 | 0.784 | 0.785 | 0.812 | 0.856 | 0.858 | 0.816 |
| **Skin** | 0.106 | 0.116 | 0.125 | 0.131 | 0.135 | 0.142 | 0.147 | 0.152 | 0.156 | 0.158 |
| **Small intestine** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.007 | 0.008 | 0.010 | 0.011 |
| **Spleen** | 0.027 | 0.053 | 0.079 | 0.096 | 0.101 | 0.127 | 0.143 | 0.158 | 0.173 | 0.183 |
| **Stomach** | 0.048 | 0.105 | 0.163 | 0.201 | 0.206 | 0.271 | 0.309 | 0.341 | 0.379 | 0.406 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.058 | 0.129 | 0.198 | 0.243 | 0.255 | 0.327 | 0.372 | 0.412 | 0.454 | 0.478 |
| **Thyroid** | 0.004 | 0.011 | 0.019 | 0.024 | 0.023 | 0.033 | 0.038 | 0.042 | 0.048 | 0.051 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | 0.001 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.077 | 0.126 | 0.170 | 0.200 | 0.218 | 0.255 | 0.281 | 0.305 | 0.327 | 0.338 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.080 | 0.131 | 0.178 | 0.209 | 0.227 | 0.266 | 0.294 | 0.318 | 0.342 | 0.354 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 0° CAUD 25° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.146 | 0.209 | 0.263 | 0.300 | 0.328 | 0.368 | 0.398 | 0.426 | 0.450 | 0.462 |
| **Adrenals** | 0.053 | 0.105 | 0.153 | 0.186 | 0.200 | 0.246 | 0.276 | 0.303 | 0.330 | 0.348 |
| **Brain** | * | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 |
| **Breasts** | 0.026 | 0.054 | 0.083 | 0.102 | 0.105 | 0.137 | 0.156 | 0.172 | 0.190 | 0.205 |
| **Colon** | * | 0.002 | 0.004 | 0.006 | 0.005 | 0.008 | 0.010 | 0.011 | 0.012 | 0.014 |
| **Extrathoracic airways** | 0.005 | 0.013 | 0.024 | 0.030 | 0.027 | 0.042 | 0.050 | 0.056 | 0.065 | 0.071 |
| **Gall bladder** | 0.007 | 0.018 | 0.030 | 0.038 | 0.037 | 0.053 | 0.062 | 0.068 | 0.078 | 0.087 |
| **Heart** | 0.338 | 0.617 | 0.886 | 1.068 | 1.136 | 1.396 | 1.569 | 1.703 | 1.859 | 1.983 |
| **Kidneys** | 0.007 | 0.018 | 0.029 | 0.037 | 0.036 | 0.051 | 0.059 | 0.065 | 0.073 | 0.081 |
| **Liver** | 0.033 | 0.070 | 0.109 | 0.134 | 0.138 | 0.180 | 0.205 | 0.226 | 0.251 | 0.269 |
| **Lungs** | 0.551 | 0.862 | 1.126 | 1.307 | 1.462 | 1.641 | 1.786 | 1.925 | 2.034 | 2.068 |
| **Lymph nodes** | 0.062 | 0.110 | 0.155 | 0.185 | 0.198 | 0.240 | 0.268 | 0.291 | 0.316 | 0.332 |
| **Muscle** | 0.105 | 0.145 | 0.180 | 0.204 | 0.222 | 0.247 | 0.267 | 0.284 | 0.299 | 0.308 |
| **Oesophagus** | 0.336 | 0.642 | 0.935 | 1.129 | 1.204 | 1.487 | 1.672 | 1.828 | 1.996 | 2.110 |
| **Oral mucosa** | * | 0.003 | 0.007 | 0.009 | 0.008 | 0.012 | 0.015 | 0.016 | 0.019 | 0.021 |
| **Female gonads** | * | * | * | 0.001 | * | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 |
| **Pancreas** | 0.037 | 0.079 | 0.123 | 0.151 | 0.156 | 0.203 | 0.232 | 0.256 | 0.284 | 0.301 |
| **Salivary glands** | 0.001 | 0.004 | 0.006 | 0.008 | 0.008 | 0.011 | 0.012 | 0.014 | 0.016 | 0.017 |
| **Bone** | 0.482 | 0.621 | 0.712 | 0.778 | 0.904 | 0.904 | 0.936 | 0.987 | 0.989 | 0.941 |
| **Skin** | 0.118 | 0.129 | 0.139 | 0.146 | 0.151 | 0.158 | 0.164 | 0.169 | 0.174 | 0.176 |
| **Small intestine** | * | 0.003 | 0.005 | 0.007 | 0.006 | 0.009 | 0.011 | 0.012 | 0.014 | 0.017 |
| **Spleen** | 0.023 | 0.046 | 0.068 | 0.082 | 0.087 | 0.109 | 0.123 | 0.135 | 0.148 | 0.156 |
| **Stomach** | 0.059 | 0.126 | 0.195 | 0.239 | 0.247 | 0.321 | 0.366 | 0.403 | 0.446 | 0.477 |
| **Thymus** | 0.060 | 0.129 | 0.197 | 0.241 | 0.253 | 0.323 | 0.367 | 0.404 | 0.445 | 0.474 |
| **Thyroid** | 0.007 | 0.019 | 0.032 | 0.040 | 0.039 | 0.055 | 0.064 | 0.071 | 0.080 | 0.086 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | 0.001 |
| **Uterus** | * | * | 0.001 | 0.002 | 0.001 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.118 | 0.193 | 0.261 | 0.307 | 0.335 | 0.391 | 0.430 | 0.466 | 0.500 | 0.517 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.121 | 0.199 | 0.269 | 0.317 | 0.345 | 0.404 | 0.445 | 0.482 | 0.517 | 0.536 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| LAO 15° CAUD 0° (17cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.098 | 0.139 | 0.175 | 0.200 | 0.219 | 0.244 | 0.264 | 0.282 | 0.298 | 0.305 |
| **Adrenals** | 0.123 | 0.214 | 0.299 | 0.355 | 0.384 | 0.459 | 0.510 | 0.556 | 0.601 | 0.621 |
| **Brain** | * | * | * | * | * | * | * | * | 0.001 | 0.001 |
| **Colon** | * | 0.002 | 0.004 | 0.005 | 0.005 | 0.007 | 0.009 | 0.010 | 0.011 | 0.013 |
| **Extrathoracic airways** | * | 0.003 | 0.005 | 0.006 | 0.006 | 0.009 | 0.011 | 0.012 | 0.014 | 0.015 |
| **Gall bladder** | 0.011 | 0.024 | 0.038 | 0.048 | 0.047 | 0.065 | 0.075 | 0.082 | 0.092 | 0.100 |
| **Heart** | 0.422 | 0.753 | 1.068 | 1.280 | 1.373 | 1.665 | 1.863 | 2.022 | 2.197 | 2.331 |
| **Kidneys** | 0.012 | 0.027 | 0.042 | 0.052 | 0.052 | 0.070 | 0.080 | 0.088 | 0.098 | 0.105 |
| **Liver** | 0.037 | 0.069 | 0.098 | 0.117 | 0.127 | 0.153 | 0.170 | 0.186 | 0.202 | 0.209 |
| **Lungs** | 0.435 | 0.662 | 0.850 | 0.979 | 1.100 | 1.219 | 1.319 | 1.419 | 1.491 | 1.505 |
| **Lymph nodes** | 0.065 | 0.113 | 0.157 | 0.187 | 0.202 | 0.242 | 0.270 | 0.293 | 0.317 | 0.332 |
| **Muscle** | 0.087 | 0.120 | 0.148 | 0.168 | 0.182 | 0.203 | 0.219 | 0.233 | 0.246 | 0.253 |
| **Oesophagus** | 0.223 | 0.413 | 0.593 | 0.713 | 0.768 | 0.933 | 1.045 | 1.140 | 1.239 | 1.303 |
| **Oral mucosa** | * | * | 0.001 | 0.002 | 0.001 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 |
| **Pancreas** | 0.042 | 0.091 | 0.139 | 0.170 | 0.178 | 0.228 | 0.259 | 0.286 | 0.315 | 0.334 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.001 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 |
| **Bone** | 0.404 | 0.519 | 0.595 | 0.650 | 0.756 | 0.755 | 0.781 | 0.822 | 0.823 | 0.783 |
| **Skin** | 0.099 | 0.109 | 0.118 | 0.124 | 0.128 | 0.135 | 0.140 | 0.145 | 0.149 | 0.151 |
| **Small intestine** | * | 0.002 | 0.005 | 0.006 | 0.005 | 0.008 | 0.010 | 0.011 | 0.013 | 0.015 |
| **Spleen** | 0.024 | 0.051 | 0.077 | 0.095 | 0.099 | 0.126 | 0.144 | 0.158 | 0.175 | 0.185 |
| **Stomach** | 0.043 | 0.097 | 0.155 | 0.193 | 0.194 | 0.261 | 0.300 | 0.331 | 0.370 | 0.400 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.078 | 0.161 | 0.245 | 0.299 | 0.311 | 0.400 | 0.454 | 0.500 | 0.552 | 0.587 |
| **Thyroid** | 0.003 | 0.008 | 0.013 | 0.017 | 0.016 | 0.023 | 0.027 | 0.030 | 0.035 | 0.038 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | 0.001 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.089 | 0.142 | 0.189 | 0.221 | 0.243 | 0.280 | 0.307 | 0.332 | 0.354 | 0.364 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.093 | 0.148 | 0.198 | 0.231 | 0.254 | 0.293 | 0.322 | 0.348 | 0.372 | 0.383 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 15° CAUD 0° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.131 | 0.187 | 0.235 | 0.269 | 0.295 | 0.329 | 0.356 | 0.380 | 0.401 | 0.411 |
| **Adrenals** | 0.180 | 0.302 | 0.407 | 0.478 | 0.535 | 0.611 | 0.671 | 0.727 | 0.774 | 0.794 |
| **Brain** | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Breasts** | 0.035 | 0.071 | 0.108 | 0.133 | 0.137 | 0.177 | 0.202 | 0.221 | 0.245 | 0.265 |
| **Colon** | 0.001 | 0.004 | 0.007 | 0.009 | 0.008 | 0.012 | 0.014 | 0.016 | 0.018 | 0.021 |
| **Extrathoracic airways** | 0.004 | 0.010 | 0.017 | 0.021 | 0.021 | 0.028 | 0.033 | 0.036 | 0.041 | 0.045 |
| **Gall bladder** | 0.016 | 0.036 | 0.057 | 0.071 | 0.072 | 0.097 | 0.111 | 0.122 | 0.137 | 0.149 |
| **Heart** | 0.404 | 0.725 | 1.029 | 1.235 | 1.326 | 1.608 | 1.801 | 1.954 | 2.124 | 2.255 |
| **Kidneys** | 0.020 | 0.042 | 0.064 | 0.078 | 0.081 | 0.104 | 0.118 | 0.130 | 0.144 | 0.152 |
| **Liver** | 0.069 | 0.122 | 0.171 | 0.203 | 0.223 | 0.263 | 0.292 | 0.319 | 0.343 | 0.353 |
| **Lungs** | 0.743 | 1.093 | 1.384 | 1.584 | 1.776 | 1.954 | 2.105 | 2.257 | 2.365 | 2.385 |
| **Lymph nodes** | 0.078 | 0.133 | 0.184 | 0.218 | 0.236 | 0.281 | 0.312 | 0.339 | 0.366 | 0.382 |
| **Muscle** | 0.107 | 0.146 | 0.180 | 0.204 | 0.221 | 0.246 | 0.265 | 0.282 | 0.297 | 0.305 |
| **Oesophagus** | 0.396 | 0.720 | 1.025 | 1.228 | 1.326 | 1.603 | 1.791 | 1.952 | 2.117 | 2.221 |
| **Oral mucosa** | * | 0.002 | 0.005 | 0.006 | 0.005 | 0.009 | 0.010 | 0.012 | 0.014 | 0.016 |
| **Female gonads** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.007 | 0.007 | 0.008 | 0.009 |
| **Pancreas** | 0.056 | 0.118 | 0.178 | 0.217 | 0.228 | 0.290 | 0.329 | 0.363 | 0.399 | 0.420 |
| **Salivary glands** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.006 | 0.008 | 0.008 | 0.010 | 0.011 |
| **Bone** | 0.455 | 0.587 | 0.674 | 0.737 | 0.858 | 0.857 | 0.886 | 0.934 | 0.935 | 0.889 |
| **Skin** | 0.110 | 0.121 | 0.131 | 0.138 | 0.142 | 0.150 | 0.156 | 0.160 | 0.165 | 0.167 |
| **Small intestine** | 0.001 | 0.004 | 0.008 | 0.010 | 0.009 | 0.014 | 0.017 | 0.019 | 0.022 | 0.025 |
| **Spleen** | 0.022 | 0.046 | 0.069 | 0.085 | 0.089 | 0.113 | 0.128 | 0.142 | 0.156 | 0.164 |
| **Stomach** | 0.055 | 0.125 | 0.197 | 0.243 | 0.250 | 0.328 | 0.376 | 0.416 | 0.462 | 0.493 |
| **Thymus** | 0.076 | 0.158 | 0.240 | 0.293 | 0.307 | 0.391 | 0.444 | 0.489 | 0.539 | 0.570 |
| **Thyroid** | 0.005 | 0.012 | 0.021 | 0.026 | 0.026 | 0.036 | 0.042 | 0.047 | 0.053 | 0.058 |
| **Urinary bladder** | * | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Uterus** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 | 0.005 | 0.006 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.145 | 0.227 | 0.300 | 0.349 | 0.383 | 0.439 | 0.480 | 0.519 | 0.552 | 0.567 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.149 | 0.235 | 0.311 | 0.363 | 0.398 | 0.457 | 0.501 | 0.541 | 0.577 | 0.594 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| LAO 30° CAUD 0° (17cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.086 | 0.123 | 0.155 | 0.177 | 0.193 | 0.217 | 0.235 | 0.085 | 0.265 | 0.272 |
| **Adrenals** | 0.128 | 0.219 | 0.301 | 0.357 | 0.391 | 0.459 | 0.507 | 0.235 | 0.592 | 0.610 |
| **Brain** | * | * | * | * | * | * | * | 0.001 | 0.001 | 0.001 |
| **Colon** | * | 0.002 | 0.004 | 0.006 | 0.005 | 0.008 | 0.009 | 0.009 | 0.012 | 0.013 |
| **Extrathoracic airways** | * | 0.003 | 0.005 | 0.006 | 0.006 | 0.009 | 0.010 | 0.013 | 0.013 | 0.015 |
| **Gall bladder** | 0.013 | 0.029 | 0.046 | 0.057 | 0.058 | 0.077 | 0.088 | 0.088 | 0.108 | 0.116 |
| **Heart** | 0.498 | 0.844 | 1.163 | 1.379 | 1.495 | 1.772 | 1.967 | 1.520 | 2.294 | 2.412 |
| **Kidneys** | 0.013 | 0.029 | 0.044 | 0.054 | 0.056 | 0.073 | 0.083 | 0.057 | 0.102 | 0.108 |
| **Liver** | 0.055 | 0.092 | 0.126 | 0.148 | 0.164 | 0.189 | 0.208 | 0.245 | 0.241 | 0.246 |
| **Lungs** | 0.540 | 0.726 | 0.874 | 0.979 | 1.093 | 1.168 | 1.241 | 1.489 | 1.360 | 1.366 |
| **Lymph nodes** | 0.087 | 0.138 | 0.184 | 0.215 | 0.233 | 0.272 | 0.299 | 0.245 | 0.346 | 0.360 |
| **Muscle** | 0.086 | 0.118 | 0.146 | 0.166 | 0.180 | 0.201 | 0.216 | 0.198 | 0.242 | 0.249 |
| **Oesophagus** | 0.239 | 0.422 | 0.593 | 0.707 | 0.764 | 0.918 | 1.022 | 0.355 | 1.204 | 1.260 |
| **Oral mucosa** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 |
| **Pancreas** | 0.038 | 0.082 | 0.127 | 0.156 | 0.161 | 0.209 | 0.238 | 0.166 | 0.291 | 0.310 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.003 | 0.003 | 0.003 | 0.005 | 0.005 | 0.007 | 0.007 | 0.008 |
| **Bone** | 0.359 | 0.463 | 0.532 | 0.582 | 0.675 | 0.677 | 0.701 | 0.857 | 0.742 | 0.706 |
| **Skin** | 0.104 | 0.114 | 0.123 | 0.130 | 0.134 | 0.141 | 0.146 | 0.163 | 0.155 | 0.157 |
| **Small intestine** | * | 0.003 | 0.005 | 0.006 | 0.006 | 0.009 | 0.011 | 0.010 | 0.014 | 0.016 |
| **Spleen** | 0.013 | 0.032 | 0.053 | 0.066 | 0.066 | 0.090 | 0.104 | 0.061 | 0.129 | 0.140 |
| **Stomach** | 0.033 | 0.081 | 0.133 | 0.166 | 0.164 | 0.227 | 0.263 | 0.195 | 0.327 | 0.356 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.122 | 0.226 | 0.323 | 0.388 | 0.422 | 0.507 | 0.567 | 0.427 | 0.669 | 0.704 |
| **Thyroid** | 0.003 | 0.009 | 0.015 | 0.019 | 0.018 | 0.026 | 0.030 | 0.034 | 0.038 | 0.042 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.101 | 0.147 | 0.188 | 0.216 | 0.236 | 0.267 | 0.290 | 0.261 | 0.329 | 0.338 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.105 | 0.154 | 0.198 | 0.228 | 0.249 | 0.282 | 0.306 | 0.277 | 0.348 | 0.358 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 30° CAUD 0° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.105 | 0.150 | 0.189 | 0.216 | 0.236 | 0.265 | 0.287 | 0.307 | 0.324 | 0.333 |
| **Adrenals** | 0.166 | 0.279 | 0.379 | 0.445 | 0.495 | 0.570 | 0.626 | 0.683 | 0.728 | 0.741 |
| **Brain** | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Breasts** | 0.043 | 0.085 | 0.127 | 0.154 | 0.162 | 0.205 | 0.232 | 0.254 | 0.279 | 0.300 |
| **Colon** | 0.002 | 0.004 | 0.008 | 0.010 | 0.009 | 0.013 | 0.016 | 0.017 | 0.020 | 0.022 |
| **Extrathoracic airways** | 0.004 | 0.011 | 0.018 | 0.023 | 0.022 | 0.031 | 0.036 | 0.039 | 0.045 | 0.052 |
| **Gall bladder** | 0.022 | 0.047 | 0.072 | 0.088 | 0.093 | 0.117 | 0.133 | 0.147 | 0.162 | 0.171 |
| **Heart** | 0.572 | 0.948 | 1.291 | 1.525 | 1.663 | 1.950 | 2.156 | 2.327 | 2.501 | 2.622 |
| **Kidneys** | 0.021 | 0.043 | 0.065 | 0.079 | 0.084 | 0.105 | 0.119 | 0.131 | 0.143 | 0.150 |
| **Liver** | 0.094 | 0.154 | 0.206 | 0.240 | 0.270 | 0.306 | 0.334 | 0.363 | 0.384 | 0.388 |
| **Lungs** | 0.813 | 1.070 | 1.273 | 1.418 | 1.581 | 1.678 | 1.775 | 1.870 | 1.932 | 1.939 |
| **Lymph nodes** | 0.117 | 0.179 | 0.235 | 0.272 | 0.298 | 0.341 | 0.373 | 0.401 | 0.427 | 0.442 |
| **Muscle** | 0.108 | 0.147 | 0.181 | 0.205 | 0.224 | 0.247 | 0.266 | 0.282 | 0.297 | 0.303 |
| **Oesophagus** | 0.460 | 0.781 | 1.069 | 1.266 | 1.389 | 1.626 | 1.799 | 1.946 | 2.090 | 2.183 |
| **Oral mucosa** | * | 0.003 | 0.005 | 0.007 | 0.006 | 0.010 | 0.012 | 0.013 | 0.015 | 0.018 |
| **Female gonads** | * | * | * | 0.001 | * | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 |
| **Pancreas** | 0.054 | 0.112 | 0.170 | 0.207 | 0.217 | 0.276 | 0.312 | 0.344 | 0.379 | 0.398 |
| **Salivary glands** | * | 0.003 | 0.004 | 0.005 | 0.005 | 0.007 | 0.009 | 0.010 | 0.011 | 0.012 |
| **Bone** | 0.379 | 0.488 | 0.562 | 0.614 | 0.712 | 0.714 | 0.740 | 0.781 | 0.784 | 0.747 |
| **Skin** | 0.114 | 0.126 | 0.136 | 0.143 | 0.148 | 0.156 | 0.161 | 0.166 | 0.171 | 0.173 |
| **Small intestine** | 0.002 | 0.005 | 0.009 | 0.011 | 0.011 | 0.016 | 0.018 | 0.020 | 0.023 | 0.026 |
| **Spleen** | 0.012 | 0.028 | 0.046 | 0.057 | 0.058 | 0.078 | 0.089 | 0.099 | 0.111 | 0.119 |
| **Stomach** | 0.047 | 0.109 | 0.175 | 0.218 | 0.220 | 0.295 | 0.340 | 0.375 | 0.420 | 0.453 |
| **Thymus** | 0.132 | 0.240 | 0.341 | 0.409 | 0.444 | 0.534 | 0.597 | 0.649 | 0.703 | 0.739 |
| **Thyroid** | 0.007 | 0.015 | 0.023 | 0.029 | 0.029 | 0.039 | 0.044 | 0.048 | 0.053 | 0.058 |
| **Urinary bladder** | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Uterus** | * | 0.001 | 0.002 | 0.003 | 0.002 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.154 | 0.222 | 0.282 | 0.323 | 0.354 | 0.397 | 0.431 | 0.460 | 0.486 | 0.499 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.160 | 0.233 | 0.298 | 0.342 | 0.374 | 0.422 | 0.458 | 0.490 | 0.519 | 0.534 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| LAO 45° CAUD 0° (20cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.062 | 0.088 | 0.111 | 0.127 | 0.138 | 0.155 | 0.168 | 0.179 | 0.190 | 0.195 |
| **Adrenals** | 0.133 | 0.225 | 0.307 | 0.361 | 0.399 | 0.463 | 0.509 | 0.556 | 0.594 | 0.603 |
| **Brain** | * | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Colon** | 0.001 | 0.003 | 0.005 | 0.006 | 0.006 | 0.009 | 0.010 | 0.011 | 0.013 | 0.014 |
| **Extrathoracic airways** | 0.002 | 0.004 | 0.007 | 0.008 | 0.008 | 0.012 | 0.013 | 0.015 | 0.017 | 0.019 |
| **Gall bladder** | 0.017 | 0.036 | 0.054 | 0.067 | 0.070 | 0.089 | 0.101 | 0.111 | 0.123 | 0.130 |
| **Heart** | 0.607 | 0.978 | 1.311 | 1.539 | 1.691 | 1.954 | 2.150 | 2.315 | 2.475 | 2.581 |
| **Kidneys** | 0.016 | 0.032 | 0.048 | 0.059 | 0.062 | 0.078 | 0.089 | 0.098 | 0.107 | 0.113 |
| **Liver** | 0.074 | 0.121 | 0.160 | 0.186 | 0.210 | 0.236 | 0.257 | 0.279 | 0.295 | 0.297 |
| **Lungs** | 0.878 | 1.141 | 1.344 | 1.492 | 1.665 | 1.754 | 1.849 | 1.941 | 1.998 | 2.004 |
| **Lymph nodes** | 0.116 | 0.172 | 0.222 | 0.256 | 0.280 | 0.317 | 0.345 | 0.370 | 0.392 | 0.403 |
| **Muscle** | 0.087 | 0.120 | 0.147 | 0.167 | 0.183 | 0.202 | 0.217 | 0.231 | 0.243 | 0.248 |
| **Oesophagus** | 0.229 | 0.386 | 0.527 | 0.623 | 0.685 | 0.799 | 0.883 | 0.955 | 1.023 | 1.065 |
| **Oral mucosa** | * | 0.001 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 |
| **Pancreas** | 0.045 | 0.092 | 0.139 | 0.169 | 0.178 | 0.225 | 0.255 | 0.281 | 0.309 | 0.324 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.004 | 0.004 | 0.004 | 0.006 | 0.007 | 0.008 | 0.009 | 0.010 |
| **Bone** | 0.293 | 0.373 | 0.427 | 0.465 | 0.536 | 0.539 | 0.558 | 0.587 | 0.590 | 0.563 |
| **Skin** | 0.112 | 0.122 | 0.132 | 0.138 | 0.143 | 0.150 | 0.155 | 0.160 | 0.164 | 0.166 |
| **Small intestine** | 0.001 | 0.003 | 0.006 | 0.007 | 0.006 | 0.010 | 0.012 | 0.013 | 0.015 | 0.017 |
| **Spleen** | 0.011 | 0.028 | 0.047 | 0.059 | 0.058 | 0.081 | 0.093 | 0.104 | 0.117 | 0.127 |
| **Stomach** | 0.040 | 0.091 | 0.144 | 0.178 | 0.183 | 0.241 | 0.277 | 0.305 | 0.339 | 0.366 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.152 | 0.275 | 0.392 | 0.469 | 0.508 | 0.612 | 0.683 | 0.745 | 0.807 | 0.843 |
| **Thyroid** | 0.005 | 0.011 | 0.019 | 0.023 | 0.023 | 0.032 | 0.037 | 0.041 | 0.046 | 0.049 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | 0.001 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.139 | 0.193 | 0.239 | 0.270 | 0.299 | 0.328 | 0.352 | 0.374 | 0.392 | 0.399 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.145 | 0.203 | 0.251 | 0.285 | 0.314 | 0.346 | 0.372 | 0.396 | 0.415 | 0.423 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 45° CAUD 0° (20cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.081 | 0.112 | 0.139 | 0.157 | 0.172 | 0.191 | 0.206 | 0.220 | 0.232 | 0.237 |
| **Adrenals** | 0.159 | 0.264 | 0.355 | 0.417 | 0.467 | 0.532 | 0.584 | 0.632 | 0.671 | 0.685 |
| **Brain** | * | * | * | 0.001 | * | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Breasts** | 0.054 | 0.103 | 0.151 | 0.183 | 0.195 | 0.242 | 0.272 | 0.297 | 0.325 | 0.346 |
| **Colon** | 0.002 | 0.005 | 0.008 | 0.010 | 0.010 | 0.014 | 0.017 | 0.019 | 0.021 | 0.024 |
| **Extrathoracic airways** | 0.005 | 0.013 | 0.022 | 0.027 | 0.027 | 0.037 | 0.043 | 0.048 | 0.054 | 0.059 |
| **Gall bladder** | 0.026 | 0.054 | 0.082 | 0.099 | 0.105 | 0.132 | 0.150 | 0.165 | 0.181 | 0.190 |
| **Heart** | 0.628 | 1.015 | 1.360 | 1.597 | 1.759 | 2.029 | 2.232 | 2.403 | 2.567 | 2.673 |
| **Kidneys** | 0.023 | 0.045 | 0.067 | 0.081 | 0.086 | 0.108 | 0.121 | 0.134 | 0.146 | 0.153 |
| **Liver** | 0.121 | 0.194 | 0.254 | 0.295 | 0.334 | 0.372 | 0.404 | 0.437 | 0.460 | 0.462 |
| **Lungs** | 1.088 | 1.430 | 1.697 | 1.891 | 2.115 | 2.235 | 2.361 | 2.481 | 2.558 | 2.573 |
| **Lymph nodes** | 0.139 | 0.207 | 0.265 | 0.305 | 0.337 | 0.378 | 0.411 | 0.440 | 0.465 | 0.478 |
| **Muscle** | 0.108 | 0.148 | 0.182 | 0.205 | 0.225 | 0.248 | 0.266 | 0.283 | 0.297 | 0.303 |
| **Oesophagus** | 0.427 | 0.695 | 0.929 | 1.091 | 1.207 | 1.386 | 1.522 | 1.641 | 1.750 | 1.809 |
| **Oral mucosa** | * | 0.004 | 0.007 | 0.009 | 0.009 | 0.013 | 0.015 | 0.016 | 0.019 | 0.021 |
| **Female gonads** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.007 | 0.008 | 0.009 | 0.010 |
| **Pancreas** | 0.063 | 0.124 | 0.181 | 0.219 | 0.237 | 0.290 | 0.326 | 0.357 | 0.389 | 0.406 |
| **Salivary glands** | 0.001 | 0.003 | 0.006 | 0.007 | 0.007 | 0.009 | 0.011 | 0.012 | 0.013 | 0.014 |
| **Bone** | 0.333 | 0.418 | 0.473 | 0.513 | 0.590 | 0.590 | 0.608 | 0.639 | 0.640 | 0.609 |
| **Skin** | 0.118 | 0.130 | 0.141 | 0.148 | 0.153 | 0.161 | 0.167 | 0.173 | 0.178 | 0.180 |
| **Small intestine** | 0.002 | 0.006 | 0.010 | 0.012 | 0.012 | 0.017 | 0.020 | 0.022 | 0.025 | 0.028 |
| **Spleen** | 0.011 | 0.026 | 0.042 | 0.052 | 0.052 | 0.071 | 0.082 | 0.090 | 0.101 | 0.109 |
| **Stomach** | 0.057 | 0.127 | 0.196 | 0.241 | 0.251 | 0.324 | 0.368 | 0.407 | 0.450 | 0.477 |
| **Thymus** | 0.154 | 0.280 | 0.398 | 0.476 | 0.519 | 0.621 | 0.694 | 0.754 | 0.816 | 0.857 |
| **Thyroid** | 0.007 | 0.017 | 0.026 | 0.033 | 0.034 | 0.045 | 0.051 | 0.056 | 0.063 | 0.068 |
| **Urinary bladder** | * | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Uterus** | * | 0.001 | 0.002 | 0.003 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.185 | 0.262 | 0.326 | 0.371 | 0.411 | 0.452 | 0.487 | 0.518 | 0.544 | 0.555 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.193 | 0.275 | 0.345 | 0.394 | 0.435 | 0.482 | 0.520 | 0.554 | 0.583 | 0.596 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| LAO 45° CAUD 25° (17cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.074 | 0.104 | 0.129 | 0.147 | 0.160 | 0.179 | 0.193 | 0.206 | 0.218 | 0.223 |
| **Adrenals** | 0.044 | 0.090 | 0.135 | 0.165 | 0.173 | 0.219 | 0.248 | 0.272 | 0.299 | 0.316 |
| **Brain** | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 |
| **Colon** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.009 | 0.010 | 0.011 |
| **Extrathoracic airways** | 0.002 | 0.006 | 0.010 | 0.013 | 0.013 | 0.018 | 0.021 | 0.023 | 0.026 | 0.028 |
| **Gall bladder** | 0.009 | 0.023 | 0.036 | 0.045 | 0.046 | 0.062 | 0.071 | 0.078 | 0.088 | 0.095 |
| **Heart** | 0.423 | 0.728 | 1.011 | 1.203 | 1.305 | 1.553 | 1.727 | 1.868 | 2.017 | 2.129 |
| **Kidneys** | 0.007 | 0.016 | 0.026 | 0.032 | 0.032 | 0.043 | 0.050 | 0.055 | 0.062 | 0.069 |
| **Liver** | 0.034 | 0.064 | 0.091 | 0.108 | 0.118 | 0.142 | 0.158 | 0.173 | 0.187 | 0.193 |
| **Lungs** | 0.443 | 0.618 | 0.759 | 0.858 | 0.966 | 1.039 | 1.109 | 1.176 | 1.222 | 1.232 |
| **Lymph nodes** | 0.085 | 0.135 | 0.179 | 0.209 | 0.228 | 0.264 | 0.290 | 0.313 | 0.334 | 0.347 |
| **Muscle** | 0.085 | 0.119 | 0.149 | 0.169 | 0.185 | 0.206 | 0.222 | 0.236 | 0.249 | 0.255 |
| **Oesophagus** | 0.202 | 0.353 | 0.494 | 0.589 | 0.638 | 0.762 | 0.848 | 0.921 | 0.996 | 1.043 |
| **Oral mucosa** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.009 | 0.010 | 0.011 |
| **Pancreas** | 0.024 | 0.054 | 0.087 | 0.108 | 0.108 | 0.146 | 0.167 | 0.185 | 0.207 | 0.223 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | 0.002 | 0.004 | 0.006 | 0.007 | 0.007 | 0.010 | 0.012 | 0.013 | 0.014 | 0.016 |
| **Bone** | 0.353 | 0.436 | 0.490 | 0.529 | 0.606 | 0.603 | 0.620 | 0.649 | 0.648 | 0.617 |
| **Skin** | 0.119 | 0.130 | 0.140 | 0.146 | 0.151 | 0.158 | 0.163 | 0.168 | 0.173 | 0.175 |
| **Small intestine** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.009 | 0.009 | 0.011 | 0.013 |
| **Spleen** | 0.008 | 0.020 | 0.034 | 0.043 | 0.041 | 0.059 | 0.069 | 0.077 | 0.087 | 0.097 |
| **Stomach** | 0.012 | 0.030 | 0.051 | 0.064 | 0.062 | 0.087 | 0.101 | 0.111 | 0.126 | 0.139 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.100 | 0.192 | 0.279 | 0.336 | 0.363 | 0.442 | 0.495 | 0.543 | 0.590 | 0.613 |
| **Thyroid** | 0.009 | 0.020 | 0.031 | 0.037 | 0.040 | 0.050 | 0.057 | 0.062 | 0.068 | 0.073 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.082 | 0.121 | 0.154 | 0.177 | 0.195 | 0.218 | 0.237 | 0.253 | 0.267 | 0.274 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.085 | 0.127 | 0.162 | 0.187 | 0.206 | 0.231 | 0.251 | 0.269 | 0.284 | 0.292 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 45° CAUD 25° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.118 | 0.157 | 0.191 | 0.214 | 0.233 | 0.256 | 0.274 | 0.291 | 0.305 | 0.310 |
| **Adrenals** | 0.047 | 0.092 | 0.138 | 0.168 | 0.176 | 0.222 | 0.251 | 0.275 | 0.302 | 0.317 |
| **Brain** | * | 0.001 | 0.002 | 0.003 | 0.002 | 0.004 | 0.004 | 0.005 | 0.005 | 0.006 |
| **Breasts** | 0.036 | 0.072 | 0.106 | 0.129 | 0.137 | 0.171 | 0.193 | 0.211 | 0.231 | 0.245 |
| **Colon** | 0.001 | 0.003 | 0.005 | 0.007 | 0.006 | 0.010 | 0.011 | 0.013 | 0.015 | 0.016 |
| **Extrathoracic airways** | 0.010 | 0.024 | 0.038 | 0.047 | 0.049 | 0.063 | 0.072 | 0.080 | 0.088 | 0.095 |
| **Gall bladder** | 0.013 | 0.030 | 0.048 | 0.060 | 0.061 | 0.081 | 0.092 | 0.102 | 0.113 | 0.122 |
| **Heart** | 0.401 | 0.705 | 0.988 | 1.180 | 1.279 | 1.530 | 1.705 | 1.847 | 1.998 | 2.114 |
| **Kidneys** | 0.008 | 0.019 | 0.031 | 0.038 | 0.038 | 0.052 | 0.060 | 0.066 | 0.074 | 0.081 |
| **Liver** | 0.048 | 0.088 | 0.125 | 0.150 | 0.164 | 0.196 | 0.219 | 0.240 | 0.259 | 0.268 |
| **Lungs** | 0.577 | 0.999 | 1.248 | 1.423 | 1.604 | 1.743 | 1.871 | 1.992 | 2.078 | 2.106 |
| **Lymph nodes** | 0.094 | 0.150 | 0.201 | 0.235 | 0.258 | 0.298 | 0.328 | 0.354 | 0.378 | 0.393 |
| **Muscle** | 0.096 | 0.138 | 0.173 | 0.198 | 0.218 | 0.243 | 0.263 | 0.280 | 0.295 | 0.303 |
| **Oesophagus** | 0.348 | 0.603 | 0.833 | 0.989 | 1.086 | 1.276 | 1.415 | 1.533 | 1.648 | 1.723 |
| **Oral mucosa** | 0.002 | 0.007 | 0.012 | 0.015 | 0.014 | 0.020 | 0.023 | 0.026 | 0.029 | 0.032 |
| **Female gonads** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.006 |
| **Pancreas** | 0.030 | 0.067 | 0.105 | 0.130 | 0.133 | 0.175 | 0.200 | 0.222 | 0.247 | 0.263 |
| **Salivary glands** | 0.003 | 0.006 | 0.009 | 0.011 | 0.011 | 0.015 | 0.018 | 0.019 | 0.022 | 0.024 |
| **Bone** | 0.482 | 0.578 | 0.636 | 0.680 | 0.777 | 0.762 | 0.776 | 0.807 | 0.799 | 0.756 |
| **Skin** | 0.125 | 0.138 | 0.149 | 0.156 | 0.161 | 0.170 | 0.176 | 0.181 | 0.186 | 0.189 |
| **Small intestine** | 0.001 | 0.003 | 0.006 | 0.008 | 0.007 | 0.011 | 0.013 | 0.015 | 0.017 | 0.019 |
| **Spleen** | 0.006 | 0.017 | 0.028 | 0.035 | 0.035 | 0.049 | 0.057 | 0.062 | 0.071 | 0.078 |
| **Stomach** | 0.018 | 0.041 | 0.067 | 0.084 | 0.084 | 0.114 | 0.132 | 0.145 | 0.162 | 0.179 |
| **Thymus** | 0.107 | 0.209 | 0.305 | 0.367 | 0.397 | 0.484 | 0.544 | 0.596 | 0.647 | 0.677 |
| **Thyroid** | 0.014 | 0.031 | 0.047 | 0.057 | 0.062 | 0.077 | 0.087 | 0.096 | 0.105 | 0.111 |
| **Urinary bladder** | * | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 |
| **Uterus** | * | * | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 | 0.005 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.115 | 0.194 | 0.249 | 0.287 | 0.319 | 0.357 | 0.388 | 0.416 | 0.439 | 0.451 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.120 | 0.202 | 0.261 | 0.302 | 0.334 | 0.376 | 0.410 | 0.439 | 0.465 | 0.478 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| LAO 45° CRAN 25° (17cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.062 | 0.089 | 0.112 | 0.128 | 0.139 | 0.157 | 0.170 | 0.182 | 0.192 | 0.198 |
| **Adrenals** | 0.663 | 0.947 | 1.176 | 1.337 | 1.518 | 1.632 | 1.744 | 1.859 | 1.929 | 1.933 |
| **Brain** | * | * | * | * | * | * | * | * | 0.001 | 0.001 |
| **Colon** | 0.002 | 0.005 | 0.009 | 0.011 | 0.011 | 0.015 | 0.018 | 0.020 | 0.023 | 0.025 |
| **Extrathoracic airways** | 0.001 | 0.003 | 0.005 | 0.007 | 0.006 | 0.009 | 0.011 | 0.012 | 0.013 | 0.015 |
| **Gall bladder** | 0.032 | 0.065 | 0.097 | 0.118 | 0.126 | 0.157 | 0.176 | 0.195 | 0.213 | 0.220 |
| **Heart** | 0.444 | 0.740 | 1.010 | 1.193 | 1.302 | 1.528 | 1.690 | 1.825 | 1.961 | 2.057 |
| **Kidneys** | 0.072 | 0.118 | 0.159 | 0.186 | 0.208 | 0.237 | 0.260 | 0.282 | 0.300 | 0.304 |
| **Liver** | 0.284 | 0.400 | 0.494 | 0.559 | 0.630 | 0.679 | 0.725 | 0.772 | 0.802 | 0.805 |
| **Lungs** | 0.476 | 0.630 | 0.750 | 0.837 | 0.934 | 0.993 | 1.051 | 1.107 | 1.144 | 1.151 |
| **Lymph nodes** | 0.098 | 0.152 | 0.200 | 0.233 | 0.254 | 0.292 | 0.320 | 0.344 | 0.367 | 0.380 |
| **Muscle** | 0.087 | 0.119 | 0.146 | 0.165 | 0.180 | 0.199 | 0.214 | 0.228 | 0.239 | 0.245 |
| **Oesophagus** | 0.210 | 0.362 | 0.502 | 0.597 | 0.651 | 0.770 | 0.854 | 0.925 | 0.997 | 1.043 |
| **Oral mucosa** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 | 0.005 | 0.006 |
| **Pancreas** | 0.065 | 0.129 | 0.189 | 0.229 | 0.246 | 0.303 | 0.340 | 0.374 | 0.407 | 0.425 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.003 | 0.004 | 0.003 | 0.005 | 0.006 | 0.007 | 0.008 | 0.009 |
| **Bone** | 0.242 | 0.313 | 0.362 | 0.396 | 0.455 | 0.462 | 0.481 | 0.509 | 0.514 | 0.492 |
| **Skin** | 0.121 | 0.132 | 0.141 | 0.148 | 0.153 | 0.159 | 0.164 | 0.169 | 0.173 | 0.175 |
| **Small intestine** | 0.002 | 0.006 | 0.010 | 0.013 | 0.013 | 0.018 | 0.021 | 0.024 | 0.027 | 0.030 |
| **Spleen** | 0.011 | 0.028 | 0.047 | 0.059 | 0.058 | 0.080 | 0.093 | 0.103 | 0.117 | 0.128 |
| **Stomach** | 0.028 | 0.067 | 0.109 | 0.136 | 0.136 | 0.185 | 0.213 | 0.236 | 0.265 | 0.285 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.144 | 0.266 | 0.382 | 0.462 | 0.494 | 0.604 | 0.679 | 0.735 | 0.802 | 0.857 |
| **Thyroid** | 0.004 | 0.008 | 0.013 | 0.016 | 0.016 | 0.022 | 0.026 | 0.028 | 0.032 | 0.036 |
| **Urinary bladder** | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.102 | 0.146 | 0.184 | 0.210 | 0.231 | 0.257 | 0.278 | 0.297 | 0.313 | 0.320 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.107 | 0.154 | 0.195 | 0.223 | 0.245 | 0.274 | 0.296 | 0.317 | 0.334 | 0.342 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 45° CRAN 25° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.075 | 0.104 | 0.130 | 0.148 | 0.161 | 0.180 | 0.195 | 0.208 | 0.220 | 0.225 |
| **Adrenals** | 0.897 | 1.292 | 1.606 | 1.828 | 2.076 | 2.235 | 2.394 | 2.546 | 2.646 | 2.675 |
| **Brain** | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Breasts** | 0.039 | 0.077 | 0.114 | 0.139 | 0.146 | 0.184 | 0.208 | 0.227 | 0.249 | 0.268 |
| **Colon** | 0.004 | 0.011 | 0.017 | 0.021 | 0.022 | 0.029 | 0.034 | 0.037 | 0.042 | 0.045 |
| **Extrathoracic airways** | 0.004 | 0.009 | 0.015 | 0.019 | 0.019 | 0.026 | 0.030 | 0.033 | 0.037 | 0.042 |
| **Gall bladder** | 0.056 | 0.108 | 0.157 | 0.189 | 0.205 | 0.249 | 0.278 | 0.306 | 0.331 | 0.342 |
| **Heart** | 0.441 | 0.737 | 1.007 | 1.191 | 1.301 | 1.526 | 1.689 | 1.824 | 1.960 | 2.056 |
| **Kidneys** | 0.137 | 0.215 | 0.279 | 0.323 | 0.366 | 0.405 | 0.439 | 0.474 | 0.498 | 0.498 |
| **Liver** | 0.550 | 0.768 | 0.941 | 1.063 | 1.198 | 1.286 | 1.372 | 1.456 | 1.512 | 1.521 |
| **Lungs** | 0.638 | 1.025 | 1.231 | 1.379 | 1.542 | 1.643 | 1.744 | 1.839 | 1.903 | 1.919 |
| **Lymph nodes** | 0.114 | 0.177 | 0.233 | 0.271 | 0.297 | 0.341 | 0.373 | 0.402 | 0.428 | 0.442 |
| **Muscle** | 0.106 | 0.144 | 0.177 | 0.199 | 0.218 | 0.240 | 0.258 | 0.274 | 0.288 | 0.294 |
| **Oesophagus** | 0.366 | 0.609 | 0.829 | 0.978 | 1.073 | 1.252 | 1.383 | 1.494 | 1.602 | 1.671 |
| **Oral mucosa** | * | 0.004 | 0.007 | 0.008 | 0.009 | 0.012 | 0.013 | 0.015 | 0.016 | 0.018 |
| **Female gonads** | 0.001 | 0.004 | 0.007 | 0.008 | 0.008 | 0.012 | 0.014 | 0.015 | 0.017 | 0.018 |
| **Pancreas** | 0.088 | 0.170 | 0.247 | 0.297 | 0.322 | 0.391 | 0.437 | 0.480 | 0.521 | 0.540 |
| **Salivary glands** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.008 | 0.010 | 0.011 |
| **Bone** | 0.251 | 0.321 | 0.370 | 0.405 | 0.463 | 0.470 | 0.488 | 0.516 | 0.521 | 0.499 |
| **Skin** | 0.130 | 0.141 | 0.151 | 0.158 | 0.164 | 0.171 | 0.177 | 0.182 | 0.186 | 0.188 |
| **Small intestine** | 0.005 | 0.013 | 0.021 | 0.026 | 0.025 | 0.035 | 0.041 | 0.045 | 0.051 | 0.055 |
| **Spleen** | 0.010 | 0.026 | 0.042 | 0.053 | 0.053 | 0.073 | 0.084 | 0.093 | 0.105 | 0.113 |
| **Stomach** | 0.049 | 0.113 | 0.179 | 0.222 | 0.226 | 0.300 | 0.344 | 0.381 | 0.424 | 0.455 |
| **Thymus** | 0.149 | 0.271 | 0.387 | 0.466 | 0.499 | 0.608 | 0.683 | 0.740 | 0.806 | 0.863 |
| **Thyroid** | 0.003 | 0.010 | 0.016 | 0.021 | 0.020 | 0.029 | 0.034 | 0.037 | 0.042 | 0.047 |
| **Urinary bladder** | * | * | 0.001 | 0.001 | * | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 |
| **Uterus** | * | 0.003 | 0.005 | 0.006 | 0.005 | 0.008 | 0.010 | 0.011 | 0.013 | 0.014 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.151 | 0.240 | 0.302 | 0.346 | 0.382 | 0.425 | 0.459 | 0.490 | 0.516 | 0.529 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.156 | 0.249 | 0.316 | 0.362 | 0.399 | 0.446 | 0.483 | 0.517 | 0.545 | 0.560 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| LAO 90° CAUD 0° (17cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.065 | 0.099 | 0.130 | 0.150 | 0.163 | 0.188 | 0.206 | 0.222 | 0.237 | 0.245 |
| **Adrenals** | 0.036 | 0.076 | 0.115 | 0.141 | 0.149 | 0.189 | 0.214 | 0.235 | 0.259 | 0.275 |
| **Brain** | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Colon** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.009 | 0.010 | 0.012 |
| **Extrathoracic airways** | 0.001 | 0.003 | 0.006 | 0.007 | 0.007 | 0.010 | 0.012 | 0.013 | 0.015 | 0.017 |
| **Gall bladder** | 0.010 | 0.025 | 0.040 | 0.050 | 0.050 | 0.069 | 0.079 | 0.088 | 0.098 | 0.106 |
| **Heart** | 0.310 | 0.559 | 0.797 | 0.958 | 1.025 | 1.250 | 1.401 | 1.520 | 1.655 | 1.763 |
| **Kidneys** | 0.007 | 0.016 | 0.026 | 0.033 | 0.032 | 0.045 | 0.052 | 0.057 | 0.065 | 0.071 |
| **Liver** | 0.073 | 0.136 | 0.193 | 0.231 | 0.253 | 0.302 | 0.336 | 0.368 | 0.397 | 0.409 |
| **Lungs** | 0.385 | 0.601 | 0.789 | 0.918 | 1.019 | 1.154 | 1.261 | 1.353 | 1.436 | 1.483 |
| **Lymph nodes** | 0.057 | 0.096 | 0.133 | 0.158 | 0.171 | 0.204 | 0.226 | 0.245 | 0.265 | 0.279 |
| **Muscle** | 0.065 | 0.094 | 0.120 | 0.138 | 0.150 | 0.170 | 0.185 | 0.198 | 0.210 | 0.217 |
| **Oesophagus** | 0.059 | 0.119 | 0.177 | 0.216 | 0.228 | 0.287 | 0.325 | 0.355 | 0.391 | 0.418 |
| **Oral mucosa** | * | 0.001 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 |
| **Pancreas** | 0.021 | 0.049 | 0.078 | 0.097 | 0.098 | 0.131 | 0.150 | 0.166 | 0.186 | 0.201 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.006 | 0.007 | 0.008 | 0.009 |
| **Bone** | 0.507 | 0.613 | 0.675 | 0.724 | 0.835 | 0.813 | 0.827 | 0.857 | 0.846 | 0.800 |
| **Skin** | 0.111 | 0.122 | 0.132 | 0.139 | 0.144 | 0.152 | 0.157 | 0.163 | 0.167 | 0.169 |
| **Small intestine** | * | 0.002 | 0.004 | 0.005 | 0.005 | 0.007 | 0.009 | 0.010 | 0.011 | 0.013 |
| **Spleen** | 0.006 | 0.015 | 0.027 | 0.034 | 0.032 | 0.047 | 0.055 | 0.061 | 0.070 | 0.079 |
| **Stomach** | 0.021 | 0.053 | 0.088 | 0.111 | 0.108 | 0.151 | 0.176 | 0.195 | 0.220 | 0.240 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.076 | 0.149 | 0.218 | 0.263 | 0.284 | 0.347 | 0.389 | 0.427 | 0.464 | 0.484 |
| **Thyroid** | 0.003 | 0.008 | 0.015 | 0.019 | 0.017 | 0.026 | 0.031 | 0.034 | 0.040 | 0.044 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.071 | 0.113 | 0.151 | 0.178 | 0.194 | 0.225 | 0.248 | 0.267 | 0.286 | 0.298 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.074 | 0.119 | 0.159 | 0.187 | 0.204 | 0.237 | 0.261 | 0.282 | 0.302 | 0.315 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| LAO 90° CAUD 0° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.090 | 0.128 | 0.161 | 0.184 | 0.201 | 0.225 | 0.244 | 0.261 | 0.275 | 0.283 |
| **Adrenals** | 0.046 | 0.095 | 0.141 | 0.171 | 0.184 | 0.227 | 0.257 | 0.282 | 0.308 | 0.326 |
| **Brain** | * | * | * | * | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Breasts** | 0.207 | 0.305 | 0.386 | 0.441 | 0.499 | 0.545 | 0.586 | 0.629 | 0.657 | 0.660 |
| **Colon** | 0.002 | 0.004 | 0.007 | 0.009 | 0.008 | 0.013 | 0.015 | 0.016 | 0.019 | 0.021 |
| **Extrathoracic airways** | 0.004 | 0.010 | 0.018 | 0.023 | 0.021 | 0.032 | 0.038 | 0.042 | 0.048 | 0.055 |
| **Gall bladder** | 0.020 | 0.046 | 0.071 | 0.087 | 0.092 | 0.117 | 0.133 | 0.147 | 0.161 | 0.170 |
| **Heart** | 0.513 | 0.874 | 1.203 | 1.429 | 1.558 | 1.838 | 2.041 | 2.203 | 2.373 | 2.502 |
| **Kidneys** | 0.009 | 0.022 | 0.036 | 0.045 | 0.045 | 0.061 | 0.071 | 0.078 | 0.088 | 0.094 |
| **Liver** | 0.121 | 0.211 | 0.289 | 0.341 | 0.382 | 0.440 | 0.484 | 0.528 | 0.562 | 0.571 |
| **Lungs** | 0.607 | 0.900 | 1.146 | 1.318 | 1.474 | 1.631 | 1.765 | 1.884 | 1.981 | 2.029 |
| **Lymph nodes** | 0.083 | 0.136 | 0.183 | 0.215 | 0.235 | 0.274 | 0.302 | 0.326 | 0.349 | 0.364 |
| **Muscle** | 0.094 | 0.131 | 0.164 | 0.186 | 0.203 | 0.227 | 0.245 | 0.261 | 0.275 | 0.283 |
| **Oesophagus** | 0.099 | 0.196 | 0.286 | 0.346 | 0.374 | 0.457 | 0.513 | 0.562 | 0.612 | 0.639 |
| **Oral mucosa** | * | 0.004 | 0.007 | 0.009 | 0.009 | 0.013 | 0.015 | 0.016 | 0.019 | 0.021 |
| **Female gonads** | * | * | * | 0.001 | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 |
| **Pancreas** | 0.037 | 0.079 | 0.121 | 0.148 | 0.156 | 0.199 | 0.225 | 0.249 | 0.274 | 0.290 |
| **Salivary glands** | 0.001 | 0.003 | 0.005 | 0.007 | 0.006 | 0.009 | 0.010 | 0.012 | 0.013 | 0.014 |
| **Bone** | 0.468 | 0.568 | 0.629 | 0.675 | 0.778 | 0.761 | 0.776 | 0.806 | 0.798 | 0.754 |
| **Skin** | 0.135 | 0.149 | 0.161 | 0.169 | 0.176 | 0.184 | 0.190 | 0.196 | 0.201 | 0.203 |
| **Small intestine** | 0.002 | 0.005 | 0.008 | 0.010 | 0.010 | 0.014 | 0.017 | 0.018 | 0.021 | 0.024 |
| **Spleen** | 0.007 | 0.018 | 0.029 | 0.037 | 0.036 | 0.051 | 0.059 | 0.066 | 0.074 | 0.082 |
| **Stomach** | 0.042 | 0.096 | 0.154 | 0.191 | 0.194 | 0.258 | 0.296 | 0.327 | 0.365 | 0.393 |
| **Thymus** | 0.125 | 0.232 | 0.330 | 0.395 | 0.431 | 0.516 | 0.575 | 0.629 | 0.680 | 0.704 |
| **Thyroid** | 0.007 | 0.017 | 0.026 | 0.033 | 0.034 | 0.045 | 0.051 | 0.057 | 0.063 | 0.069 |
| **Urinary bladder** | * | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Uterus** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 | 0.005 | 0.006 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.118 | 0.182 | 0.238 | 0.276 | 0.305 | 0.346 | 0.378 | 0.406 | 0.431 | 0.444 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.137 | 0.211 | 0.276 | 0.320 | 0.354 | 0.401 | 0.437 | 0.470 | 0.499 | 0.513 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CAUD 0° (17cm) male | HVL (mm Al) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** | **9.5** | **10.5** | **11.5** |
| **RBM** | 0.083 | 0.117 | 0.147 | 0.167 | 0.183 | 0.204 | 0.221 | 0.236 | 0.249 | 0.255 |
| **Adrenals** | 0.132 | 0.222 | 0.299 | 0.351 | 0.395 | 0.449 | 0.492 | 0.534 | 0.567 | 0.580 |
| **Brain** | * | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 |
| **Colon** | * | 0.003 | 0.005 | 0.006 | 0.006 | 0.008 | 0.010 | 0.011 | 0.013 | 0.014 |
| **Extrathoracic airways** | 0.001 | 0.003 | 0.006 | 0.007 | 0.007 | 0.010 | 0.012 | 0.013 | 0.015 | 0.017 |
| **Gall bladder** | 0.009 | 0.022 | 0.036 | 0.046 | 0.046 | 0.062 | 0.072 | 0.079 | 0.089 | 0.097 |
| **Heart** | 0.941 | 1.450 | 1.888 | 2.191 | 2.437 | 2.744 | 2.990 | 3.205 | 3.394 | 3.501 |
| **Kidneys** | 0.015 | 0.030 | 0.045 | 0.055 | 0.058 | 0.074 | 0.084 | 0.092 | 0.101 | 0.108 |
| **Liver** | 0.026 | 0.055 | 0.085 | 0.104 | 0.108 | 0.139 | 0.158 | 0.174 | 0.192 | 0.203 |
| **Lungs** | 0.687 | 0.887 | 1.042 | 1.154 | 1.285 | 1.354 | 1.426 | 1.498 | 1.541 | 1.544 |
| **Lymph nodes** | 0.130 | 0.194 | 0.250 | 0.288 | 0.318 | 0.357 | 0.388 | 0.416 | 0.440 | 0.450 |
| **Muscle** | 0.093 | 0.128 | 0.157 | 0.178 | 0.195 | 0.215 | 0.230 | 0.245 | 0.257 | 0.262 |
| **Oesophagus** | 0.262 | 0.445 | 0.608 | 0.719 | 0.793 | 0.924 | 1.021 | 1.106 | 1.185 | 1.230 |
| **Oral mucosa** | * | * | 0.002 | 0.003 | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.006 |
| **Pancreas** | 0.089 | 0.162 | 0.227 | 0.270 | 0.301 | 0.351 | 0.389 | 0.426 | 0.456 | 0.465 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.006 | 0.007 | 0.008 | 0.009 |
| **Bone** | 0.285 | 0.364 | 0.417 | 0.454 | 0.524 | 0.527 | 0.546 | 0.575 | 0.578 | 0.552 |
| **Skin** | 0.103 | 0.113 | 0.122 | 0.128 | 0.133 | 0.140 | 0.145 | 0.149 | 0.153 | 0.155 |
| **Small intestine** | 0.001 | 0.003 | 0.006 | 0.007 | 0.007 | 0.010 | 0.012 | 0.013 | 0.015 | 0.017 |
| **Spleen** | 0.091 | 0.151 | 0.202 | 0.236 | 0.267 | 0.301 | 0.329 | 0.358 | 0.378 | 0.381 |
| **Stomach** | 0.123 | 0.227 | 0.321 | 0.383 | 0.419 | 0.500 | 0.556 | 0.609 | 0.656 | 0.676 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.142 | 0.261 | 0.373 | 0.447 | 0.483 | 0.585 | 0.654 | 0.713 | 0.774 | 0.814 |
| **Thyroid** | 0.004 | 0.010 | 0.016 | 0.020 | 0.019 | 0.027 | 0.031 | 0.034 | 0.038 | 0.042 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.129 | 0.183 | 0.229 | 0.261 | 0.288 | 0.319 | 0.344 | 0.367 | 0.386 | 0.393 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.138 | 0.197 | 0.248 | 0.283 | 0.312 | 0.346 | 0.373 | 0.399 | 0.419 | 0.427 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CAUD 0° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.130 | 0.181 | 0.225 | 0.255 | 0.279 | 0.310 | 0.335 | 0.357 | 0.376 | 0.384 |
| **Adrenals** | 0.160 | 0.265 | 0.357 | 0.418 | 0.467 | 0.533 | 0.583 | 0.636 | 0.675 | 0.680 |
| **Brain** | * | * | * | 0.001 | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Breasts** | 0.049 | 0.094 | 0.138 | 0.167 | 0.178 | 0.220 | 0.248 | 0.271 | 0.296 | 0.314 |
| **Colon** | 0.002 | 0.005 | 0.008 | 0.010 | 0.010 | 0.014 | 0.017 | 0.018 | 0.021 | 0.023 |
| **Extrathoracic airways** | 0.005 | 0.012 | 0.020 | 0.025 | 0.025 | 0.034 | 0.040 | 0.044 | 0.049 | 0.054 |
| **Gall bladder** | 0.013 | 0.031 | 0.050 | 0.063 | 0.063 | 0.085 | 0.098 | 0.109 | 0.121 | 0.129 |
| **Heart** | 0.968 | 1.499 | 1.959 | 2.278 | 2.530 | 2.858 | 3.119 | 3.344 | 3.545 | 3.664 |
| **Kidneys** | 0.022 | 0.045 | 0.066 | 0.080 | 0.085 | 0.106 | 0.120 | 0.132 | 0.144 | 0.151 |
| **Liver** | 0.034 | 0.071 | 0.107 | 0.130 | 0.137 | 0.173 | 0.196 | 0.216 | 0.238 | 0.250 |
| **Lungs** | 1.021 | 1.319 | 1.549 | 1.717 | 1.915 | 2.014 | 2.121 | 2.224 | 2.288 | 2.295 |
| **Lymph nodes** | 0.161 | 0.237 | 0.302 | 0.347 | 0.385 | 0.430 | 0.466 | 0.498 | 0.526 | 0.537 |
| **Muscle** | 0.115 | 0.157 | 0.193 | 0.217 | 0.239 | 0.262 | 0.281 | 0.298 | 0.312 | 0.317 |
| **Oesophagus** | 0.494 | 0.805 | 1.078 | 1.264 | 1.405 | 1.607 | 1.764 | 1.904 | 2.027 | 2.089 |
| **Oral mucosa** | * | 0.004 | 0.007 | 0.009 | 0.008 | 0.012 | 0.014 | 0.015 | 0.018 | 0.021 |
| **Female gonads** | 0.001 | 0.003 | 0.004 | 0.005 | 0.007 | 0.007 | 0.007 | 0.008 | 0.008 | 0.009 |
| **Pancreas** | 0.125 | 0.218 | 0.300 | 0.355 | 0.395 | 0.458 | 0.505 | 0.551 | 0.589 | 0.599 |
| **Salivary glands** | 0.001 | 0.003 | 0.005 | 0.006 | 0.006 | 0.008 | 0.010 | 0.011 | 0.012 | 0.014 |
| **Bone** | 0.311 | 0.393 | 0.448 | 0.487 | 0.560 | 0.562 | 0.581 | 0.612 | 0.614 | 0.585 |
| **Skin** | 0.113 | 0.125 | 0.135 | 0.142 | 0.147 | 0.155 | 0.161 | 0.166 | 0.171 | 0.173 |
| **Small intestine** | 0.002 | 0.006 | 0.010 | 0.012 | 0.011 | 0.017 | 0.020 | 0.022 | 0.025 | 0.028 |
| **Spleen** | 0.099 | 0.161 | 0.212 | 0.246 | 0.279 | 0.311 | 0.337 | 0.366 | 0.385 | 0.385 |
| **Stomach** | 0.180 | 0.324 | 0.452 | 0.536 | 0.596 | 0.696 | 0.770 | 0.843 | 0.903 | 0.921 |
| **Thymus** | 0.153 | 0.279 | 0.397 | 0.475 | 0.513 | 0.620 | 0.692 | 0.755 | 0.818 | 0.854 |
| **Thyroid** | 0.008 | 0.018 | 0.028 | 0.034 | 0.036 | 0.046 | 0.052 | 0.058 | 0.064 | 0.068 |
| **Urinary bladder** | * | * | * | * | * | * | * | 0.001 | 0.001 | 0.002 |
| **Uterus** | * | * | 0.002 | 0.003 | 0.002 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.197 | 0.280 | 0.350 | 0.399 | 0.442 | 0.487 | 0.524 | 0.559 | 0.586 | 0.596 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.208 | 0.299 | 0.375 | 0.428 | 0.474 | 0.524 | 0.565 | 0.603 | 0.634 | 0.645 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CAUD 0° (20cm) male | HVL (mm Al) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** | **9.5** | **10.5** | **11.5** |
| **RBM** | 0.087 | 0.124 | 0.156 | 0.178 | 0.195 | 0.218 | 0.236 | 0.253 | 0.267 | 0.274 |
| **Adrenals** | 0.141 | 0.237 | 0.320 | 0.376 | 0.420 | 0.481 | 0.528 | 0.574 | 0.611 | 0.622 |
| **Brain** | * | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 |
| **Colon** | 0.001 | 0.003 | 0.005 | 0.006 | 0.006 | 0.009 | 0.010 | 0.011 | 0.013 | 0.015 |
| **Extrathoracic airways** | 0.002 | 0.004 | 0.007 | 0.009 | 0.009 | 0.012 | 0.014 | 0.016 | 0.018 | 0.019 |
| **Gall bladder** | 0.009 | 0.022 | 0.036 | 0.044 | 0.044 | 0.061 | 0.070 | 0.078 | 0.087 | 0.095 |
| **Heart** | 0.847 | 1.307 | 1.702 | 1.977 | 2.200 | 2.477 | 2.700 | 2.894 | 3.064 | 3.165 |
| **Kidneys** | 0.015 | 0.031 | 0.048 | 0.058 | 0.061 | 0.078 | 0.088 | 0.097 | 0.107 | 0.113 |
| **Liver** | 0.027 | 0.057 | 0.087 | 0.106 | 0.111 | 0.142 | 0.161 | 0.178 | 0.196 | 0.208 |
| **Lungs** | 0.681 | 0.881 | 1.036 | 1.149 | 1.277 | 1.348 | 1.422 | 1.493 | 1.538 | 1.544 |
| **Lymph nodes** | 0.125 | 0.187 | 0.240 | 0.276 | 0.305 | 0.343 | 0.373 | 0.400 | 0.423 | 0.433 |
| **Muscle** | 0.091 | 0.125 | 0.154 | 0.174 | 0.191 | 0.210 | 0.225 | 0.239 | 0.251 | 0.256 |
| **Oesophagus** | 0.245 | 0.414 | 0.567 | 0.670 | 0.735 | 0.861 | 0.951 | 1.030 | 1.106 | 1.150 |
| **Oral mucosa** | * | 0.001 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 |
| **Pancreas** | 0.092 | 0.165 | 0.231 | 0.274 | 0.302 | 0.355 | 0.393 | 0.431 | 0.462 | 0.471 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.007 | 0.007 | 0.008 | 0.009 |
| **Bone** | 0.298 | 0.382 | 0.439 | 0.479 | 0.554 | 0.557 | 0.577 | 0.608 | 0.611 | 0.583 |
| **Skin** | 0.103 | 0.114 | 0.123 | 0.129 | 0.134 | 0.140 | 0.146 | 0.150 | 0.154 | 0.156 |
| **Small intestine** | 0.001 | 0.003 | 0.006 | 0.007 | 0.006 | 0.010 | 0.012 | 0.013 | 0.015 | 0.017 |
| **Spleen** | 0.097 | 0.159 | 0.210 | 0.244 | 0.277 | 0.310 | 0.338 | 0.367 | 0.387 | 0.388 |
| **Stomach** | 0.134 | 0.241 | 0.338 | 0.401 | 0.440 | 0.521 | 0.578 | 0.633 | 0.681 | 0.699 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.166 | 0.296 | 0.416 | 0.497 | 0.542 | 0.645 | 0.719 | 0.781 | 0.844 | 0.886 |
| **Thyroid** | 0.005 | 0.012 | 0.019 | 0.024 | 0.024 | 0.032 | 0.037 | 0.041 | 0.045 | 0.049 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | 0.001 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.129 | 0.184 | 0.230 | 0.262 | 0.290 | 0.321 | 0.346 | 0.369 | 0.388 | 0.395 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.138 | 0.198 | 0.248 | 0.283 | 0.312 | 0.346 | 0.373 | 0.399 | 0.419 | 0.427 |

(*) values <0.001 mGy/Gycm²

($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication

(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CAUD 0° (20cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.147 | 0.205 | 0.255 | 0.289 | 0.316 | 0.352 | 0.379 | 0.404 | 0.426 | 0.436 |
| **Adrenals** | 0.170 | 0.278 | 0.374 | 0.438 | 0.486 | 0.557 | 0.610 | 0.664 | 0.706 | 0.718 |
| **Brain** | * | * | * | 0.001 | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Breasts** | 0.048 | 0.094 | 0.138 | 0.167 | 0.178 | 0.220 | 0.248 | 0.271 | 0.296 | 0.314 |
| **Colon** | 0.002 | 0.005 | 0.008 | 0.011 | 0.010 | 0.015 | 0.017 | 0.019 | 0.021 | 0.024 |
| **Extrathoracic airways** | 0.005 | 0.012 | 0.019 | 0.024 | 0.023 | 0.033 | 0.039 | 0.042 | 0.048 | 0.054 |
| **Gall bladder** | 0.012 | 0.030 | 0.049 | 0.061 | 0.061 | 0.084 | 0.097 | 0.107 | 0.121 | 0.130 |
| **Heart** | 0.823 | 1.284 | 1.684 | 1.961 | 2.176 | 2.465 | 2.693 | 2.891 | 3.067 | 3.168 |
| **Kidneys** | 0.023 | 0.046 | 0.068 | 0.083 | 0.088 | 0.110 | 0.123 | 0.136 | 0.149 | 0.155 |
| **Liver** | 0.034 | 0.071 | 0.107 | 0.131 | 0.138 | 0.174 | 0.197 | 0.217 | 0.239 | 0.252 |
| **Lungs** | 0.961 | 1.254 | 1.483 | 1.648 | 1.837 | 1.942 | 2.050 | 2.153 | 2.220 | 2.233 |
| **Lymph nodes** | 0.149 | 0.222 | 0.284 | 0.327 | 0.363 | 0.406 | 0.441 | 0.472 | 0.499 | 0.510 |
| **Muscle** | 0.111 | 0.152 | 0.186 | 0.210 | 0.231 | 0.254 | 0.272 | 0.290 | 0.303 | 0.309 |
| **Oesophagus** | 0.443 | 0.734 | 0.990 | 1.165 | 1.291 | 1.487 | 1.636 | 1.769 | 1.888 | 1.950 |
| **Oral mucosa** | 0.002 | 0.004 | 0.007 | 0.009 | 0.009 | 0.012 | 0.015 | 0.016 | 0.018 | 0.021 |
| **Female gonads** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.007 | 0.008 | 0.009 | 0.009 |
| **Pancreas** | 0.126 | 0.223 | 0.307 | 0.364 | 0.407 | 0.470 | 0.518 | 0.567 | 0.605 | 0.615 |
| **Salivary glands** | 0.001 | 0.003 | 0.005 | 0.007 | 0.007 | 0.009 | 0.011 | 0.012 | 0.013 | 0.014 |
| **Bone** | 0.347 | 0.438 | 0.497 | 0.540 | 0.622 | 0.622 | 0.642 | 0.675 | 0.676 | 0.644 |
| **Skin** | 0.113 | 0.125 | 0.135 | 0.142 | 0.148 | 0.155 | 0.161 | 0.166 | 0.171 | 0.173 |
| **Small intestine** | 0.002 | 0.006 | 0.010 | 0.013 | 0.012 | 0.017 | 0.020 | 0.022 | 0.026 | 0.029 |
| **Spleen** | 0.101 | 0.163 | 0.214 | 0.248 | 0.282 | 0.313 | 0.340 | 0.369 | 0.388 | 0.388 |
| **Stomach** | 0.191 | 0.336 | 0.464 | 0.550 | 0.612 | 0.711 | 0.785 | 0.856 | 0.915 | 0.936 |
| **Thymus** | 0.160 | 0.291 | 0.414 | 0.496 | 0.537 | 0.648 | 0.725 | 0.788 | 0.854 | 0.902 |
| **Thyroid** | 0.008 | 0.018 | 0.028 | 0.035 | 0.035 | 0.047 | 0.054 | 0.060 | 0.067 | 0.071 |
| **Urinary bladder** | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Uterus** | * | * | 0.002 | 0.003 | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.007 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.191 | 0.274 | 0.343 | 0.392 | 0.434 | 0.480 | 0.517 | 0.552 | 0.580 | 0.591 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.201 | 0.291 | 0.367 | 0.419 | 0.464 | 0.515 | 0.556 | 0.594 | 0.625 | 0.637 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CAUD 25° (17cm) male | HVL (mm Al) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** | **9.5** | **10.5** | **11.5** |
| **RBM** | 0.065 | 0.092 | 0.115 | 0.131 | 0.143 | 0.160 | 0.173 | 0.185 | 0.195 | 0.200 |
| **Adrenals** | 0.056 | 0.109 | 0.157 | 0.189 | 0.206 | 0.249 | 0.278 | 0.305 | 0.331 | 0.346 |
| **Brain** | * | * | * | 0.001 | * | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Colon** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.009 | 0.010 | 0.012 |
| **Extrathoracic airways** | 0.002 | 0.005 | 0.008 | 0.010 | 0.010 | 0.015 | 0.017 | 0.019 | 0.022 | 0.024 |
| **Gall bladder** | 0.007 | 0.018 | 0.029 | 0.037 | 0.036 | 0.051 | 0.059 | 0.065 | 0.073 | 0.080 |
| **Heart** | 0.678 | 1.090 | 1.457 | 1.709 | 1.882 | 2.168 | 2.384 | 2.563 | 2.738 | 2.855 |
| **Kidneys** | 0.008 | 0.018 | 0.029 | 0.036 | 0.035 | 0.048 | 0.056 | 0.061 | 0.069 | 0.075 |
| **Liver** | 0.018 | 0.038 | 0.059 | 0.073 | 0.075 | 0.099 | 0.113 | 0.124 | 0.138 | 0.149 |
| **Lungs** | 0.406 | 0.549 | 0.662 | 0.743 | 0.832 | 0.888 | 0.943 | 0.996 | 1.031 | 1.037 |
| **Lymph nodes** | 0.101 | 0.156 | 0.205 | 0.239 | 0.262 | 0.300 | 0.328 | 0.353 | 0.376 | 0.389 |
| **Muscle** | 0.094 | 0.129 | 0.159 | 0.179 | 0.197 | 0.217 | 0.233 | 0.248 | 0.260 | 0.265 |
| **Oesophagus** | 0.226 | 0.395 | 0.549 | 0.654 | 0.713 | 0.846 | 0.940 | 1.018 | 1.099 | 1.151 |
| **Oral mucosa** | * | 0.002 | 0.003 | 0.004 | 0.003 | 0.005 | 0.006 | 0.007 | 0.008 | 0.008 |
| **Pancreas** | 0.052 | 0.102 | 0.151 | 0.183 | 0.196 | 0.242 | 0.272 | 0.299 | 0.326 | 0.341 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | 0.001 | 0.003 | 0.005 | 0.006 | 0.006 | 0.008 | 0.010 | 0.011 | 0.012 | 0.013 |
| **Bone** | 0.304 | 0.385 | 0.440 | 0.479 | 0.551 | 0.553 | 0.573 | 0.603 | 0.606 | 0.577 |
| **Skin** | 0.112 | 0.123 | 0.132 | 0.138 | 0.143 | 0.150 | 0.155 | 0.160 | 0.164 | 0.166 |
| **Small intestine** | * | 0.002 | 0.004 | 0.006 | 0.005 | 0.008 | 0.009 | 0.010 | 0.012 | 0.014 |
| **Spleen** | 0.049 | 0.089 | 0.125 | 0.148 | 0.163 | 0.193 | 0.214 | 0.234 | 0.251 | 0.258 |
| **Stomach** | 0.066 | 0.130 | 0.191 | 0.231 | 0.247 | 0.305 | 0.342 | 0.376 | 0.410 | 0.429 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.093 | 0.179 | 0.261 | 0.314 | 0.338 | 0.414 | 0.464 | 0.509 | 0.554 | 0.579 |
| **Thyroid** | 0.007 | 0.016 | 0.025 | 0.031 | 0.033 | 0.041 | 0.047 | 0.051 | 0.056 | 0.059 |
| **Urinary bladder** | * | * | * | * | * | * | * | * | * | 0.001 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.083 | 0.123 | 0.158 | 0.182 | 0.201 | 0.226 | 0.246 | 0.264 | 0.279 | 0.286 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.089 | 0.133 | 0.172 | 0.198 | 0.218 | 0.246 | 0.267 | 0.287 | 0.303 | 0.312 |

(*) values <0.001 mGy/Gycm²

($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication

(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CAUD 25° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.085 | 0.115 | 0.142 | 0.160 | 0.174 | 0.192 | 0.207 | 0.220 | 0.231 | 0.236 |
| **Adrenals** | 0.057 | 0.108 | 0.156 | 0.189 | 0.202 | 0.248 | 0.279 | 0.304 | 0.331 | 0.347 |
| **Brain** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 | 0.005 |
| **Breasts** | 0.038 | 0.075 | 0.110 | 0.133 | 0.143 | 0.176 | 0.198 | 0.218 | 0.238 | 0.250 |
| **Colon** | 0.001 | 0.003 | 0.006 | 0.008 | 0.007 | 0.010 | 0.012 | 0.014 | 0.016 | 0.018 |
| **Extrathoracic airways** | 0.009 | 0.019 | 0.031 | 0.038 | 0.038 | 0.051 | 0.059 | 0.065 | 0.073 | 0.079 |
| **Gall bladder** | 0.009 | 0.021 | 0.036 | 0.045 | 0.043 | 0.061 | 0.071 | 0.078 | 0.089 | 0.099 |
| **Heart** | 0.632 | 1.045 | 1.416 | 1.671 | 1.837 | 2.134 | 2.356 | 2.539 | 2.721 | 2.846 |
| **Kidneys** | 0.009 | 0.022 | 0.035 | 0.044 | 0.044 | 0.059 | 0.068 | 0.075 | 0.084 | 0.091 |
| **Liver** | 0.027 | 0.058 | 0.090 | 0.111 | 0.114 | 0.149 | 0.170 | 0.187 | 0.207 | 0.222 |
| **Lungs** | 0.558 | 0.773 | 0.946 | 1.068 | 1.201 | 1.290 | 1.376 | 1.458 | 1.514 | 1.529 |
| **Lymph nodes** | 0.113 | 0.176 | 0.232 | 0.270 | 0.298 | 0.340 | 0.372 | 0.401 | 0.426 | 0.440 |
| **Muscle** | 0.109 | 0.152 | 0.188 | 0.213 | 0.235 | 0.258 | 0.278 | 0.296 | 0.310 | 0.317 |
| **Oesophagus** | 0.405 | 0.689 | 0.942 | 1.114 | 1.230 | 1.431 | 1.580 | 1.714 | 1.836 | 1.904 |
| **Oral mucosa** | 0.002 | 0.007 | 0.011 | 0.014 | 0.014 | 0.019 | 0.022 | 0.025 | 0.028 | 0.030 |
| **Female gonads** | * | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.006 | 0.006 | 0.007 | 0.008 |
| **Pancreas** | 0.064 | 0.124 | 0.180 | 0.217 | 0.236 | 0.285 | 0.320 | 0.350 | 0.380 | 0.396 |
| **Salivary glands** | 0.002 | 0.005 | 0.008 | 0.010 | 0.010 | 0.014 | 0.016 | 0.018 | 0.020 | 0.021 |
| **Bone** | 0.393 | 0.483 | 0.540 | 0.582 | 0.666 | 0.661 | 0.679 | 0.710 | 0.708 | 0.672 |
| **Skin** | 0.121 | 0.133 | 0.144 | 0.151 | 0.157 | 0.165 | 0.171 | 0.176 | 0.181 | 0.183 |
| **Small intestine** | 0.001 | 0.004 | 0.007 | 0.009 | 0.008 | 0.012 | 0.014 | 0.016 | 0.018 | 0.021 |
| **Spleen** | 0.043 | 0.078 | 0.109 | 0.129 | 0.143 | 0.167 | 0.185 | 0.203 | 0.217 | 0.222 |
| **Stomach** | 0.085 | 0.164 | 0.239 | 0.288 | 0.311 | 0.379 | 0.426 | 0.467 | 0.507 | 0.530 |
| **Thymus** | 0.099 | 0.191 | 0.277 | 0.334 | 0.362 | 0.440 | 0.493 | 0.539 | 0.585 | 0.613 |
| **Thyroid** | 0.011 | 0.024 | 0.038 | 0.047 | 0.050 | 0.064 | 0.073 | 0.080 | 0.089 | 0.095 |
| **Urinary bladder** | * | * | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Uterus** | * | * | 0.001 | 0.002 | 0.001 | 0.003 | 0.003 | 0.004 | 0.005 | 0.006 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.119 | 0.179 | 0.231 | 0.267 | 0.295 | 0.333 | 0.362 | 0.388 | 0.411 | 0.422 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.125 | 0.191 | 0.248 | 0.286 | 0.316 | 0.358 | 0.390 | 0.419 | 0.444 | 0.456 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CRAN 25° (17cm) male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.070 | 0.099 | 0.124 | 0.142 | 0.154 | 0.174 | 0.188 | 0.201 | 0.213 | 0.219 |
| **Adrenals** | 0.651 | 0.923 | 1.138 | 1.290 | 1.459 | 1.568 | 1.674 | 1.782 | 1.849 | 1.855 |
| **Brain** | * | * | * | * | * | * | * | * | 0.001 | 0.001 |
| **Colon** | 0.002 | 0.004 | 0.008 | 0.010 | 0.009 | 0.013 | 0.016 | 0.017 | 0.020 | 0.022 |
| **Extrathoracic airways** | 0.001 | 0.003 | 0.005 | 0.007 | 0.006 | 0.009 | 0.011 | 0.012 | 0.014 | 0.015 |
| **Gall bladder** | 0.012 | 0.028 | 0.045 | 0.056 | 0.056 | 0.076 | 0.088 | 0.097 | 0.109 | 0.118 |
| **Heart** | 0.703 | 1.117 | 1.481 | 1.731 | 1.914 | 2.188 | 2.399 | 2.579 | 2.746 | 2.850 |
| **Kidneys** | 0.057 | 0.096 | 0.131 | 0.154 | 0.170 | 0.197 | 0.216 | 0.236 | 0.252 | 0.255 |
| **Liver** | 0.026 | 0.056 | 0.087 | 0.106 | 0.110 | 0.143 | 0.162 | 0.179 | 0.198 | 0.210 |
| **Lungs** | 0.410 | 0.539 | 0.640 | 0.713 | 0.794 | 0.844 | 0.893 | 0.940 | 0.972 | 0.976 |
| **Lymph nodes** | 0.122 | 0.188 | 0.246 | 0.285 | 0.315 | 0.358 | 0.390 | 0.420 | 0.446 | 0.457 |
| **Muscle** | 0.098 | 0.134 | 0.164 | 0.186 | 0.204 | 0.224 | 0.240 | 0.255 | 0.268 | 0.273 |
| **Oesophagus** | 0.255 | 0.434 | 0.598 | 0.708 | 0.775 | 0.910 | 1.007 | 1.093 | 1.174 | 1.220 |
| **Oral mucosa** | * | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 | 0.005 | 0.006 |
| **Pancreas** | 0.164 | 0.283 | 0.385 | 0.454 | 0.507 | 0.583 | 0.640 | 0.698 | 0.744 | 0.753 |
| **Prostate** | * | * | * | * | * | * | * | * | * | * |
| **Salivary glands** | * | 0.002 | 0.003 | 0.003 | 0.003 | 0.005 | 0.006 | 0.006 | 0.007 | 0.008 |
| **Bone** | 0.266 | 0.342 | 0.395 | 0.433 | 0.498 | 0.504 | 0.524 | 0.553 | 0.558 | 0.534 |
| **Skin** | 0.113 | 0.123 | 0.132 | 0.138 | 0.143 | 0.150 | 0.155 | 0.159 | 0.163 | 0.165 |
| **Small intestine** | 0.002 | 0.005 | 0.009 | 0.012 | 0.011 | 0.016 | 0.019 | 0.021 | 0.024 | 0.027 |
| **Spleen** | 0.272 | 0.408 | 0.515 | 0.588 | 0.678 | 0.728 | 0.780 | 0.839 | 0.870 | 0.857 |
| **Stomach** | 0.131 | 0.242 | 0.342 | 0.407 | 0.450 | 0.531 | 0.589 | 0.646 | 0.694 | 0.709 |
| **Male gonads** | * | * | * | * | * | * | * | * | * | * |
| **Thymus** | 0.206 | 0.375 | 0.537 | 0.646 | 0.688 | 0.844 | 0.948 | 1.028 | 1.122 | 1.203 |
| **Thyroid** | 0.004 | 0.008 | 0.014 | 0.017 | 0.017 | 0.023 | 0.027 | 0.030 | 0.033 | 0.037 |
| **Urinary bladder** | * | * | * | * | * | * | * | 0.001 | 0.001 | 0.002 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.099 | 0.147 | 0.188 | 0.217 | 0.239 | 0.269 | 0.292 | 0.313 | 0.331 | 0.338 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.110 | 0.164 | 0.210 | 0.242 | 0.267 | 0.300 | 0.325 | 0.349 | 0.369 | 0.377 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| RAO 30° CRAN 25° (17cm) female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 | 9.5 | 10.5 | 11.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **RBM** | 0.141 | 0.196 | 0.244 | 0.277 | 0.301 | 0.337 | 0.363 | 0.388 | 0.409 | 0.419 |
| **Adrenals** | 1.080 | 1.510 | 1.851 | 2.093 | 2.370 | 2.534 | 2.701 | 2.863 | 2.964 | 2.982 |
| **Brain** | * | * | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Breasts** | 0.037 | 0.073 | 0.109 | 0.132 | 0.140 | 0.175 | 0.198 | 0.217 | 0.238 | 0.254 |
| **Colon** | 0.003 | 0.008 | 0.014 | 0.018 | 0.017 | 0.024 | 0.028 | 0.031 | 0.035 | 0.038 |
| **Extrathoracic airways** | 0.005 | 0.011 | 0.019 | 0.023 | 0.023 | 0.032 | 0.037 | 0.041 | 0.047 | 0.050 |
| **Gall bladder** | 0.018 | 0.042 | 0.067 | 0.083 | 0.084 | 0.112 | 0.129 | 0.143 | 0.159 | 0.169 |
| **Heart** | 0.652 | 1.051 | 1.405 | 1.649 | 1.818 | 2.092 | 2.300 | 2.475 | 2.642 | 2.753 |
| **Kidneys** | 0.120 | 0.190 | 0.248 | 0.287 | 0.325 | 0.361 | 0.391 | 0.424 | 0.445 | 0.447 |
| **Liver** | 0.039 | 0.083 | 0.127 | 0.155 | 0.163 | 0.208 | 0.236 | 0.260 | 0.286 | 0.303 |
| **Lungs** | 0.560 | 0.745 | 0.892 | 0.997 | 1.112 | 1.185 | 1.256 | 1.325 | 1.371 | 1.380 |
| **Lymph nodes** | 0.147 | 0.227 | 0.296 | 0.343 | 0.381 | 0.430 | 0.469 | 0.505 | 0.535 | 0.548 |
| **Muscle** | 0.120 | 0.164 | 0.202 | 0.227 | 0.250 | 0.274 | 0.294 | 0.312 | 0.327 | 0.334 |
| **Oesophagus** | 0.458 | 0.758 | 1.027 | 1.210 | 1.333 | 1.546 | 1.704 | 1.841 | 1.969 | 2.046 |
| **Oral mucosa** | * | 0.005 | 0.008 | 0.010 | 0.010 | 0.014 | 0.016 | 0.018 | 0.020 | 0.023 |
| **Female gonads** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.009 | 0.010 | 0.012 |
| **Pancreas** | 0.251 | 0.422 | 0.567 | 0.664 | 0.749 | 0.848 | 0.927 | 1.009 | 1.068 | 1.076 |
| **Salivary glands** | * | 0.002 | 0.004 | 0.005 | 0.005 | 0.007 | 0.009 | 0.009 | 0.011 | 0.012 |
| **Bone** | 0.292 | 0.370 | 0.423 | 0.461 | 0.528 | 0.533 | 0.552 | 0.581 | 0.585 | 0.559 |
| **Skin** | 0.123 | 0.135 | 0.145 | 0.152 | 0.157 | 0.164 | 0.170 | 0.175 | 0.180 | 0.182 |
| **Small intestine** | 0.004 | 0.011 | 0.018 | 0.023 | 0.023 | 0.031 | 0.036 | 0.040 | 0.046 | 0.049 |
| **Spleen** | 0.523 | 0.739 | 0.906 | 1.023 | 1.169 | 1.240 | 1.318 | 1.404 | 1.449 | 1.435 |
| **Stomach** | 0.194 | 0.348 | 0.487 | 0.578 | 0.641 | 0.751 | 0.831 | 0.910 | 0.976 | 0.995 |
| **Thymus** | 0.186 | 0.343 | 0.494 | 0.596 | 0.636 | 0.780 | 0.877 | 0.953 | 1.040 | 1.107 |
| **Thyroid** | 0.004 | 0.011 | 0.018 | 0.023 | 0.023 | 0.032 | 0.037 | 0.041 | 0.047 | 0.051 |
| **Urinary bladder** | * | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 |
| **Uterus** | * | 0.002 | 0.004 | 0.005 | 0.004 | 0.007 | 0.008 | 0.009 | 0.011 | 0.012 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.150 | 0.224 | 0.288 | 0.332 | 0.367 | 0.413 | 0.448 | 0.481 | 0.509 | 0.520 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.165 | 0.247 | 0.318 | 0.367 | 0.405 | 0.456 | 0.495 | 0.532 | 0.563 | 0.575 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

### 4.3.3 Organ dose conversion coefficients for vascular and interventional radiology - head

| Projection | Field size at image Intensifier (cm) |
|---|---|
| LAO 45° | 28 |
| RAO 45° | 28 |
| PA | 28 |
| LLAT | 28 |
| RLAT | 28 |

| Head PA male | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.019 | 0.023 | 0.027 | 0.030 | 0.034 | 0.036 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.467 | 1.835 | 2.181 | 2.436 | 2.791 | 2.972 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.224 | 0.294 | 0.368 | 0.430 | 0.543 | 0.618 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.001 | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | * | 0.001 | 0.002 |
| **Lungs** | * | * | * | 0.001 | 0.002 | 0.002 |
| **Lymph nodes** | 0.023 | 0.027 | 0.031 | 0.033 | 0.038 | 0.040 |
| **Muscle** | 0.023 | 0.027 | 0.031 | 0.033 | 0.038 | 0.040 |
| **Oesophagus** | 0.005 | 0.006 | 0.008 | 0.009 | 0.011 | 0.013 |
| **Oral mucosa** | 0.078 | 0.103 | 0.128 | 0.150 | 0.190 | 0.215 |
| **Pancreas** | * | * | * | * | * | * |
| **Prostate** | * | * | * | * | * | * |
| **Salivary glands** | 0.446 | 0.540 | 0.634 | 0.701 | 0.806 | 0.862 |
| **Bone** | 0.553 | 0.645 | 0.726 | 0.779 | 0.826 | 0.830 |
| **Skin** | 0.282 | 0.298 | 0.312 | 0.321 | 0.336 | 0.341 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | 0.001 | 0.001 | 0.001 | 0.001 |
| **Stomach** | * | * | * | * | * | 0.001 |
| **Male gonads** | * | * | * | * | * | * |
| **Thymus** | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.010 |
| **Thyroid** | 0.009 | 0.011 | 0.015 | 0.017 | 0.024 | 0.027 |
| **Urinary bladder** | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.020 | 0.024 | 0.027 | 0.030 | 0.034 | 0.035 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.034 | 0.041 | 0.048 | 0.053 | 0.061 | 0.065 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Head PA female | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.038 | 0.045 | 0.051 | 0.055 | 0.058 | 0.060 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.126 | 1.432 | 1.732 | 1.960 | 2.307 | 2.548 |
| **Breasts** | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.189 | 0.247 | 0.305 | 0.355 | 0.447 | 0.519 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | * | 0.001 | 0.001 |
| **Lungs** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Lymph nodes** | 0.024 | 0.028 | 0.031 | 0.033 | 0.037 | 0.040 |
| **Muscle** | 0.024 | 0.028 | 0.031 | 0.033 | 0.037 | 0.040 |
| **Oesophagus** | 0.005 | 0.007 | 0.009 | 0.010 | 0.014 | 0.017 |
| **Oral mucosa** | 0.090 | 0.118 | 0.149 | 0.172 | 0.224 | 0.262 |
| **Female gonads** | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * | * |
| **Salivary glands** | 0.784 | 0.913 | 1.027 | 1.107 | 1.220 | 1.306 |
| **Bone** | 0.501 | 0.591 | 0.672 | 0.727 | 0.783 | 0.811 |
| **Skin** | 0.465 | 0.488 | 0.509 | 0.524 | 0.549 | 0.569 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | * | * | 0.001 | 0.002 |
| **Stomach** | * | * | * | * | * | * |
| **Thymus** | 0.004 | 0.005 | 0.007 | 0.008 | 0.011 | 0.013 |
| **Thyroid** | 0.012 | 0.016 | 0.020 | 0.023 | 0.031 | 0.038 |
| **Urinary bladder** | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.022 | 0.026 | 0.030 | 0.032 | 0.036 | 0.039 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.037 | 0.045 | 0.052 | 0.057 | 0.065 | 0.071 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Head LAO 45° male | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.020 | 0.025 | 0.029 | 0.033 | 0.036 | 0.038 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.801 | 2.271 | 2.641 | 3.000 | 3.351 | 3.561 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.346 | 0.484 | 0.587 | 0.691 | 0.804 | 0.894 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | * | * | 0.001 |
| **Lungs** | * | * | * | 0.001 | 0.001 | 0.002 |
| **Lymph nodes** | 0.022 | 0.026 | 0.030 | 0.033 | 0.037 | 0.039 |
| **Muscle** | 0.022 | 0.026 | 0.030 | 0.033 | 0.037 | 0.039 |
| **Oesophagus** | 0.004 | 0.007 | 0.007 | 0.009 | 0.011 | 0.014 |
| **Oral mucosa** | 0.117 | 0.163 | 0.198 | 0.233 | 0.271 | 0.302 |
| **Pancreas** | * | * | * | * | * | * |
| **Prostate** | * | * | * | * | * | * |
| **Salivary glands** | 0.349 | 0.433 | 0.497 | 0.562 | 0.627 | 0.671 |
| **Bone** | 0.584 | 0.673 | 0.747 | 0.814 | 0.872 | 0.883 |
| **Skin** | 0.257 | 0.273 | 0.286 | 0.298 | 0.310 | 0.319 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Stomach** | * | * | * | * | * | * |
| **Male gonads** | * | * | * | * | * | * |
| **Thymus** | 0.003 | 0.004 | 0.005 | 0.007 | 0.008 | 0.009 |
| **Thyroid** | 0.009 | 0.012 | 0.016 | 0.019 | 0.024 | 0.027 |
| **Urinary bladder** | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.022 | 0.026 | 0.030 | 0.034 | 0.037 | 0.039 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.038 | 0.047 | 0.054 | 0.061 | 0.068 | 0.073 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Head LAO 45° female | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.038 | 0.045 | 0.050 | 0.055 | 0.059 | 0.059 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.365 | 1.781 | 2.103 | 1.960 | 2.747 | 2.957 |
| **Breasts** | * | 0.001 | 0.002 | 0.003 | 0.003 | 0.003 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.168 | 0.245 | 0.299 | 0.355 | 0.417 | 0.478 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | * | * | 0.001 |
| **Lungs** | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Lymph nodes** | 0.020 | 0.024 | 0.027 | 0.033 | 0.032 | 0.034 |
| **Muscle** | 0.020 | 0.024 | 0.027 | 0.033 | 0.032 | 0.034 |
| **Oesophagus** | 0.004 | 0.007 | 0.009 | 0.010 | 0.013 | 0.015 |
| **Oral mucosa** | 0.078 | 0.115 | 0.139 | 0.168 | 0.200 | 0.230 |
| **Female gonads** | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * | * |
| **Salivary glands** | 0.414 | 0.497 | 0.560 | 1.107 | 0.684 | 0.737 |
| **Bone** | 0.496 | 0.579 | 0.649 | 0.727 | 0.770 | 0.788 |
| **Skin** | 0.405 | 0.429 | 0.447 | 0.524 | 0.482 | 0.498 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | 0.001 | 0.001 | 0.001 | 0.002 |
| **Stomach** | * | * | * | * | * | * |
| **Thymus** | 0.003 | 0.005 | 0.007 | 0.008 | 0.009 | 0.012 |
| **Thyroid** | 0.009 | 0.015 | 0.018 | 0.023 | 0.027 | 0.032 |
| **Urinary bladder** | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.022 | 0.027 | 0.031 | 0.034 | 0.038 | 0.040 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.035 | 0.043 | 0.050 | 0.056 | 0.063 | 0.067 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Head RAO 45° male | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.021 | 0.024 | 0.028 | 0.032 | 0.035 | 0.038 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.929 | 2.302 | 2.707 | 3.063 | 3.385 | 3.650 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.382 | 0.452 | 0.558 | 0.659 | 0.804 | 0.894 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.001 | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | 0.001 | 0.001 | 0.002 |
| **Lungs** | * | * | * | 0.001 | 0.001 | 0.002 |
| **Lymph nodes** | 0.020 | 0.023 | 0.026 | 0.030 | 0.034 | 0.036 |
| **Muscle** | 0.020 | 0.023 | 0.026 | 0.030 | 0.034 | 0.036 |
| **Oesophagus** | 0.005 | 0.005 | 0.007 | 0.009 | 0.011 | 0.014 |
| **Oral mucosa** | 0.123 | 0.146 | 0.180 | 0.212 | 0.259 | 0.288 |
| **Pancreas** | * | * | * | * | * | * |
| **Prostate** | * | * | * | * | * | * |
| **Salivary glands** | 0.290 | 0.336 | 0.397 | 0.452 | 0.529 | 0.576 |
| **Bone** | 0.577 | 0.674 | 0.754 | 0.818 | 0.835 | 0.872 |
| **Skin** | 0.253 | 0.265 | 0.279 | 0.290 | 0.304 | 0.314 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | * | * | 0.001 | 0.001 |
| **Stomach** | * | * | * | * | * | * |
| **Male gonads** | * | * | * | * | * | * |
| **Thymus** | 0.003 | 0.004 | 0.005 | 0.006 | 0.009 | 0.010 |
| **Thyroid** | 0.010 | 0.011 | 0.013 | 0.017 | 0.024 | 0.028 |
| **Urinary bladder** | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.023 | 0.026 | 0.030 | 0.034 | 0.037 | 0.040 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.039 | 0.046 | 0.053 | 0.060 | 0.067 | 0.072 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Head RAO 45° female<br>Organ doses (mGy/Gycm²) | HVL (mmAl)<br>3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|
| **RBM** | 0.040 | 0.047 | 0.054 | 0.059 | 0.059 | 0.063 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.358 | 1.719 | 2.066 | 2.388 | 2.746 | 2.984 |
| **Breasts** | 0.001 | 0.002 | 0.002 | 0.002 | 0.004 | 0.004 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.203 | 0.263 | 0.324 | 0.386 | 0.493 | 0.546 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.001 | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | * | 0.001 | 0.001 |
| **Lungs** | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Lymph nodes** | 0.021 | 0.025 | 0.028 | 0.030 | 0.034 | 0.036 |
| **Muscle** | 0.021 | 0.025 | 0.028 | 0.030 | 0.034 | 0.036 |
| **Oesophagus** | 0.005 | 0.007 | 0.008 | 0.010 | 0.014 | 0.016 |
| **Oral mucosa** | 0.087 | 0.118 | 0.146 | 0.173 | 0.227 | 0.257 |
| **Female gonads** | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * | * |
| **Salivary glands** | 0.624 | 0.708 | 0.783 | 0.850 | 0.942 | 0.995 |
| **Bone** | 0.536 | 0.629 | 0.711 | 0.778 | 0.807 | 0.849 |
| **Skin** | 0.443 | 0.465 | 0.485 | 0.502 | 0.529 | 0.543 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | * | * | 0.001 | 0.001 |
| **Stomach** | * | * | * | * | * | * |
| **Thymus** | 0.004 | 0.005 | 0.007 | 0.008 | 0.012 | 0.014 |
| **Thyroid** | 0.011 | 0.015 | 0.018 | 0.022 | 0.031 | 0.034 |
| **Urinary bladder** | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.023 | 0.028 | 0.032 | 0.035 | 0.039 | 0.041 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.038 | 0.046 | 0.053 | 0.060 | 0.067 | 0.072 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Head LLAT male | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.019 | 0.024 | 0.028 | 0.029 | 0.033 | 0.036 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.882 | 2.391 | 2.721 | 2.885 | 3.292 | 3.533 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.447 | 0.609 | 0.706 | 0.759 | 0.889 | 0.969 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | * | * | 0.001 |
| **Lungs** | * | * | 0.001 | 0.001 | 0.001 | 0.002 |
| **Lymph nodes** | 0.028 | 0.034 | 0.037 | 0.039 | 0.044 | 0.046 |
| **Muscle** | 0.028 | 0.034 | 0.037 | 0.039 | 0.044 | 0.046 |
| **Oesophagus** | 0.005 | 0.008 | 0.010 | 0.011 | 0.014 | 0.015 |
| **Oral mucosa** | 0.121 | 0.165 | 0.191 | 0.206 | 0.241 | 0.263 |
| **Pancreas** | * | * | * | * | * | * |
| **Prostate** | * | * | * | * | * | * |
| **Salivary glands** | 0.836 | 0.962 | 1.042 | 1.084 | 1.181 | 1.237 |
| **Bone** | 0.564 | 0.648 | 0.713 | 0.742 | 0.811 | 0.850 |
| **Skin** | 0.242 | 0.262 | 0.273 | 0.279 | 0.294 | 0.302 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 |
| **Stomach** | * | * | * | * | 0.001 | 0.001 |
| **Male gonads** | * | * | 0.000 | 0.000 | 0.000 | 0.000 |
| **Thymus** | 0.003 | 0.005 | 0.007 | 0.008 | 0.009 | 0.012 |
| **Thyroid** | 0.010 | 0.016 | 0.018 | 0.020 | 0.025 | 0.029 |
| **Urinary bladder** | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.022 | 0.027 | 0.030 | 0.032 | 0.036 | 0.038 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.044 | 0.055 | 0.061 | 0.065 | 0.073 | 0.078 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Head LLAT female | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.042 | 0.049 | 0.054 | 0.056 | 0.062 | 0.065 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.602 | 2.141 | 2.468 | 2.642 | 3.069 | 3.331 |
| **Breasts** | 0.002 | 0.003 | 0.004 | 0.004 | 0.005 | 0.006 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.405 | 0.557 | 0.645 | 0.692 | 0.806 | 0.883 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 | 0.005 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | * | * | * | 0.001 | 0.001 |
| **Lungs** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Lymph nodes** | 0.026 | 0.032 | 0.035 | 0.037 | 0.041 | 0.043 |
| **Muscle** | 0.026 | 0.032 | 0.035 | 0.037 | 0.041 | 0.043 |
| **Oesophagus** | 0.006 | 0.011 | 0.013 | 0.014 | 0.018 | 0.020 |
| **Oral mucosa** | 0.138 | 0.209 | 0.246 | 0.266 | 0.322 | 0.358 |
| **Female gonads** | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * | * |
| **Salivary glands** | 0.765 | 0.890 | 0.964 | 1.005 | 1.098 | 1.155 |
| **Bone** | 0.588 | 0.686 | 0.759 | 0.792 | 0.873 | 0.919 |
| **Skin** | 0.417 | 0.448 | 0.465 | 0.475 | 0.498 | 0.513 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Stomach** | * | * | * | * | 0.001 | 0.001 |
| **Thymus** | 0.004 | 0.007 | 0.010 | 0.011 | 0.013 | 0.015 |
| **Thyroid** | 0.013 | 0.022 | 0.025 | 0.027 | 0.035 | 0.042 |
| **Urinary bladder** | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.025 | 0.031 | 0.035 | 0.037 | 0.042 | 0.045 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.045 | 0.057 | 0.064 | 0.068 | 0.077 | 0.083 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Head RLAT male | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.020 | 0.025 | 0.028 | 0.031 | 0.034 | 0.037 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.974 | 2.445 | 2.743 | 3.089 | 3.367 | 3.615 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.449 | 0.586 | 0.660 | 0.764 | 0.860 | 0.939 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Lungs** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Lymph nodes** | 0.024 | 0.029 | 0.032 | 0.035 | 0.039 | 0.042 |
| **Muscle** | 0.024 | 0.029 | 0.032 | 0.035 | 0.039 | 0.042 |
| **Oesophagus** | 0.005 | 0.008 | 0.009 | 0.010 | 0.012 | 0.014 |
| **Oral mucosa** | 0.125 | 0.164 | 0.184 | 0.214 | 0.240 | 0.262 |
| **Pancreas** | * | * | * | * | * | * |
| **Prostate** | * | * | * | * | * | * |
| **Salivary glands** | 0.726 | 0.837 | 0.895 | 0.975 | 1.047 | 1.103 |
| **Bone** | 0.573 | 0.659 | 0.732 | 0.795 | 0.823 | 0.861 |
| **Skin** | 0.247 | 0.265 | 0.274 | 0.286 | 0.297 | 0.306 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | * | * | * | 0.001 |
| **Stomach** | * | * | * | * | * | * |
| **Male gonads** | * | * | * | * | * | * |
| **Thymus** | 0.004 | 0.005 | 0.006 | 0.008 | 0.011 | 0.012 |
| **Thyroid** | 0.011 | 0.015 | 0.018 | 0.021 | 0.026 | 0.029 |
| **Urinary bladder** | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.023 | 0.027 | 0.030 | 0.034 | 0.037 | 0.039 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.044 | 0.054 | 0.060 | 0.066 | 0.072 | 0.077 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Head RLAT female | HVL (mmAl) | | | | | |
|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.047 | 0.055 | 0.061 | 0.067 | 0.069 | 0.073 |
| **Adrenals** | * | * | * | * | * | * |
| **Brain** | 1.810 | 2.321 | 2.617 | 3.003 | 3.344 | 3.630 |
| **Breasts** | 0.004 | 0.005 | 0.005 | 0.006 | 0.007 | 0.007 |
| **Colon** | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.479 | 0.625 | 0.696 | 0.803 | 0.912 | 0.994 |
| **Gall bladder** | * | * | * | * | * | * |
| **Heart** | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 |
| **Kidneys** | * | * | * | * | * | * |
| **Liver** | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Lungs** | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Lymph nodes** | 0.030 | 0.035 | 0.038 | 0.042 | 0.045 | 0.048 |
| **Muscle** | 0.030 | 0.035 | 0.038 | 0.042 | 0.045 | 0.048 |
| **Oesophagus** | 0.008 | 0.011 | 0.012 | 0.015 | 0.018 | 0.021 |
| **Oral mucosa** | 0.177 | 0.241 | 0.268 | 0.316 | 0.369 | 0.410 |
| **Female gonads** | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * | * |
| **Salivary glands** | 1.077 | 1.212 | 1.286 | 1.375 | 1.459 | 1.523 |
| **Bone** | 0.663 | 0.771 | 0.858 | 0.939 | 0.979 | 1.030 |
| **Skin** | 0.474 | 0.504 | 0.519 | 0.539 | 0.562 | 0.578 |
| **Small intestine** | * | * | * | * | * | * |
| **Spleen** | * | * | * | * | * | * |
| **Stomach** | * | * | * | * | * | * |
| **Thymus** | 0.006 | 0.009 | 0.009 | 0.012 | 0.014 | 0.017 |
| **Thyroid** | 0.018 | 0.025 | 0.028 | 0.035 | 0.042 | 0.046 |
| **Urinary bladder** | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.029 | 0.035 | 0.039 | 0.043 | 0.047 | 0.050 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.054 | 0.066 | 0.072 | 0.081 | 0.088 | 0.095 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

### 4.3.4 Organ dose conversion coefficients for vascular and interventional radiology - neck

| Projection | Field size at image Intensifier (cm) |
|---|---|
| LAO 45° | 28 |
| RAO 45° | 28 |
| PA | 28 |

| Neck PA male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.009 | 0.015 | 0.018 | 0.022 | 0.025 | 0.029 | 0.032 |
| **Adrenals** | * | 0.002 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 |
| **Brain** | 0.076 | 0.127 | 0.161 | 0.194 | 0.220 | 0.260 | 0.288 |
| **Colon** | * | * | * | * | * | 0.001 | 0.002 |
| **Extrathoracic airways** | 0.069 | 0.139 | 0.182 | 0.225 | 0.261 | 0.324 | 0.370 |
| **Gall bladder** | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.004 |
| **Heart** | 0.006 | 0.012 | 0.016 | 0.020 | 0.023 | 0.030 | 0.034 |
| **Kidneys** | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.003 |
| **Liver** | 0.001 | 0.003 | 0.004 | 0.005 | 0.007 | 0.008 | 0.010 |
| **Lungs** | 0.004 | 0.007 | 0.009 | 0.011 | 0.013 | 0.016 | 0.018 |
| **Lymph nodes** | 0.106 | 0.130 | 0.148 | 0.164 | 0.174 | 0.188 | 0.196 |
| **Muscle** | 0.106 | 0.130 | 0.148 | 0.164 | 0.174 | 0.188 | 0.196 |
| **Oesophagus** | 0.111 | 0.189 | 0.243 | 0.297 | 0.336 | 0.400 | 0.441 |
| **Oral mucosa** | 0.045 | 0.090 | 0.118 | 0.145 | 0.168 | 0.209 | 0.239 |
| **Pancreas** | * | * | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 |
| **Prostate** | * | * | * | * | * | * | * |
| **Salivary glands** | 1.399 | 1.813 | 2.132 | 2.407 | 2.601 | 2.839 | 3.003 |
| **Bone** | 0.261 | 0.381 | 0.470 | 0.551 | 0.610 | 0.673 | 0.706 |
| **Skin** | 0.246 | 0.266 | 0.283 | 0.296 | 0.305 | 0.317 | 0.326 |
| **Small intestine** | * | * | * | * | * | * | 0.001 |
| **Spleen** | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.009 | 0.011 |
| **Stomach** | * | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.007 |
| **Male gonads** | * | * | * | * | * | * | * |
| **Thymus** | 0.042 | 0.078 | 0.099 | 0.122 | 0.145 | 0.171 | 0.192 |
| **Thyroid** | 0.300 | 0.477 | 0.604 | 0.721 | 0.809 | 0.939 | 1.024 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.029 | 0.045 | 0.056 | 0.067 | 0.075 | 0.087 | 0.095 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.042 | 0.061 | 0.075 | 0.088 | 0.098 | 0.111 | 0.121 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Neck PA female | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.016 | 0.023 | 0.028 | 0.033 | 0.037 | 0.041 | 0.044 |
| **Adrenals** | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Brain** | 0.186 | 0.313 | 0.399 | 0.483 | 0.548 | 0.652 | 0.725 |
| **Breasts** | 0.003 | 0.006 | 0.009 | 0.011 | 0.013 | 0.015 | 0.018 |
| **Colon** | * | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.384 | 0.670 | 0.857 | 1.042 | 1.188 | 1.428 | 1.602 |
| **Gall bladder** | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Heart** | 0.004 | 0.009 | 0.012 | 0.015 | 0.017 | 0.021 | 0.025 |
| **Kidneys** | * | * | * | * | 0.001 | 0.001 | 0.002 |
| **Liver** | 0.001 | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.007 |
| **Lungs** | 0.003 | 0.006 | 0.007 | 0.009 | 0.010 | 0.012 | 0.014 |
| **Lymph nodes** | 0.097 | 0.116 | 0.130 | 0.142 | 0.150 | 0.161 | 0.168 |
| **Muscle** | 0.097 | 0.116 | 0.130 | 0.142 | 0.150 | 0.161 | 0.168 |
| **Oesophagus** | 0.069 | 0.126 | 0.164 | 0.198 | 0.227 | 0.276 | 0.310 |
| **Oral mucosa** | 0.332 | 0.603 | 0.774 | 0.946 | 1.082 | 1.313 | 1.478 |
| **Female gonads** | * | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * | 0.001 | 0.001 |
| **Salivary glands** | 1.728 | 2.165 | 2.505 | 2.795 | 2.994 | 3.255 | 3.428 |
| **Bone** | 0.343 | 0.489 | 0.595 | 0.694 | 0.764 | 0.842 | 0.883 |
| **Skin** | 0.407 | 0.439 | 0.464 | 0.485 | 0.500 | 0.520 | 0.536 |
| **Small intestine** | * | * | * | * | * | * | * |
| **Spleen** | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 |
| **Stomach** | * | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 |
| **Thymus** | 0.028 | 0.053 | 0.069 | 0.085 | 0.100 | 0.120 | 0.134 |
| **Thyroid** | 0.153 | 0.254 | 0.324 | 0.394 | 0.444 | 0.523 | 0.578 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.023 | 0.035 | 0.043 | 0.051 | 0.058 | 0.067 | 0.073 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.047 | 0.068 | 0.083 | 0.097 | 0.107 | 0.123 | 0.134 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Neck LAO 45° male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.010 | 0.013 | 0.017 | 0.020 | 0.023 | 0.026 | 0.028 |
| **Adrenals** | * | 0.002 | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 |
| **Brain** | 0.069 | 0.099 | 0.136 | 0.159 | 0.185 | 0.212 | 0.231 |
| **Colon** | * | * | * | * | * | 0.001 | 0.001 |
| **Extrathoracic airways** | 0.093 | 0.138 | 0.195 | 0.228 | 0.268 | 0.309 | 0.342 |
| **Gall bladder** | * | * | * | 0.001 | 0.002 | 0.003 | 0.003 |
| **Heart** | 0.007 | 0.011 | 0.016 | 0.019 | 0.023 | 0.027 | 0.030 |
| **Kidneys** | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Liver** | 0.001 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 |
| **Lungs** | 0.004 | 0.006 | 0.008 | 0.010 | 0.012 | 0.014 | 0.015 |
| **Lymph nodes** | 0.102 | 0.121 | 0.139 | 0.152 | 0.164 | 0.176 | 0.182 |
| **Muscle** | 0.102 | 0.121 | 0.139 | 0.152 | 0.164 | 0.176 | 0.182 |
| **Oesophagus** | 0.142 | 0.198 | 0.264 | 0.306 | 0.354 | 0.400 | 0.430 |
| **Oral mucosa** | 0.087 | 0.128 | 0.181 | 0.211 | 0.249 | 0.286 | 0.317 |
| **Pancreas** | * | * | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 |
| **Prostate** | * | * | * | * | * | * | * |
| **Salivary glands** | 1.639 | 1.928 | 2.226 | 2.424 | 2.622 | 2.803 | 2.908 |
| **Bone** | 0.270 | 0.353 | 0.437 | 0.498 | 0.561 | 0.619 | 0.639 |
| **Skin** | 0.197 | 0.211 | 0.227 | 0.236 | 0.246 | 0.255 | 0.261 |
| **Small intestine** | * | * | * | * | * | * | * |
| **Spleen** | 0.002 | 0.004 | 0.005 | 0.006 | 0.008 | 0.010 | 0.011 |
| **Stomach** | 0.001 | 0.002 | 0.003 | 0.004 | 0.004 | 0.006 | 0.006 |
| **Male gonads** | * | * | * | * | * | * | * |
| **Thymus** | 0.046 | 0.067 | 0.095 | 0.111 | 0.130 | 0.149 | 0.163 |
| **Thyroid** | 0.312 | 0.422 | 0.548 | 0.629 | 0.721 | 0.810 | 0.864 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.031 | 0.041 | 0.053 | 0.061 | 0.070 | 0.078 | 0.084 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.046 | 0.059 | 0.074 | 0.083 | 0.094 | 0.104 | 0.110 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Neck LAO 45° female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.018 | 0.023 | 0.030 | 0.034 | 0.038 | 0.043 | 0.045 |
| **Adrenals** | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 |
| **Brain** | 0.189 | 0.273 | 0.374 | 0.440 | 0.510 | 0.586 | 0.640 |
| **Breasts** | 0.004 | 0.007 | 0.010 | 0.012 | 0.014 | 0.016 | 0.018 |
| **Colon** | * | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.775 | 1.031 | 1.331 | 1.522 | 1.725 | 1.940 | 2.092 |
| **Gall bladder** | * | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Heart** | 0.006 | 0.009 | 0.014 | 0.017 | 0.020 | 0.023 | 0.027 |
| **Kidneys** | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 |
| **Liver** | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.005 | 0.006 |
| **Lungs** | 0.004 | 0.006 | 0.008 | 0.009 | 0.011 | 0.013 | 0.014 |
| **Lymph nodes** | 0.100 | 0.117 | 0.133 | 0.144 | 0.155 | 0.165 | 0.171 |
| **Muscle** | 0.100 | 0.117 | 0.133 | 0.144 | 0.155 | 0.165 | 0.171 |
| **Oesophagus** | 0.096 | 0.137 | 0.185 | 0.214 | 0.246 | 0.281 | 0.306 |
| **Oral mucosa** | 1.073 | 1.388 | 1.730 | 1.958 | 2.195 | 2.425 | 2.581 |
| **Female gonads** | * | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | 0.001 | 0.001 | 0.001 |
| **Salivary glands** | 2.242 | 2.581 | 2.932 | 3.160 | 3.386 | 3.601 | 3.733 |
| **Bone** | 0.435 | 0.557 | 0.677 | 0.767 | 0.855 | 0.936 | 0.963 |
| **Skin** | 0.382 | 0.406 | 0.432 | 0.449 | 0.465 | 0.481 | 0.493 |
| **Small intestine** | * | * | * | * | * | * | * |
| **Spleen** | 0.002 | 0.003 | 0.004 | 0.005 | 0.005 | 0.007 | 0.008 |
| **Stomach** | * | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 |
| **Thymus** | 0.037 | 0.058 | 0.077 | 0.093 | 0.110 | 0.126 | 0.139 |
| **Thyroid** | 0.166 | 0.237 | 0.314 | 0.368 | 0.421 | 0.477 | 0.512 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.026 | 0.035 | 0.045 | 0.051 | 0.058 | 0.065 | 0.070 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.066 | 0.083 | 0.102 | 0.114 | 0.127 | 0.140 | 0.149 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Neck RAO 45° male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.010 | 0.015 | 0.018 | 0.021 | 0.024 | 0.028 | 0.031 |
| **Adrenals** | * | 0.002 | 0.002 | 0.002 | 0.003 | 0.005 | 0.005 |
| **Brain** | 0.070 | 0.109 | 0.129 | 0.157 | 0.183 | 0.215 | 0.235 |
| **Colon** | * | * | * | * | * | 0.001 | 0.001 |
| **Extrathoracic airways** | 0.091 | 0.148 | 0.175 | 0.215 | 0.254 | 0.309 | 0.343 |
| **Gall bladder** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Heart** | 0.007 | 0.012 | 0.014 | 0.018 | 0.021 | 0.027 | 0.030 |
| **Kidneys** | * | * | * | 0.001 | 0.002 | 0.002 | 0.002 |
| **Liver** | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.008 | 0.009 |
| **Lungs** | 0.004 | 0.007 | 0.008 | 0.010 | 0.012 | 0.014 | 0.016 |
| **Lymph nodes** | 0.102 | 0.122 | 0.138 | 0.153 | 0.165 | 0.175 | 0.183 |
| **Muscle** | 0.102 | 0.122 | 0.138 | 0.153 | 0.165 | 0.175 | 0.183 |
| **Oesophagus** | 0.127 | 0.191 | 0.228 | 0.275 | 0.320 | 0.370 | 0.404 |
| **Oral mucosa** | 0.082 | 0.132 | 0.156 | 0.192 | 0.227 | 0.276 | 0.307 |
| **Pancreas** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.003 | 0.003 |
| **Prostate** | * | * | * | * | * | * | * |
| **Salivary glands** | 1.710 | 2.029 | 2.307 | 2.549 | 2.746 | 2.914 | 3.049 |
| **Bone** | 0.298 | 0.394 | 0.474 | 0.553 | 0.620 | 0.655 | 0.698 |
| **Skin** | 0.206 | 0.222 | 0.236 | 0.248 | 0.257 | 0.267 | 0.273 |
| **Small intestine** | * | * | * | * | * | * | 0.001 |
| **Spleen** | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.008 | 0.009 |
| **Stomach** | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 | 0.006 | 0.006 |
| **Male gonads** | * | * | * | * | * | * | * |
| **Thymus** | 0.049 | 0.077 | 0.093 | 0.115 | 0.136 | 0.162 | 0.177 |
| **Thyroid** | 0.343 | 0.479 | 0.570 | 0.672 | 0.765 | 0.848 | 0.915 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.032 | 0.045 | 0.053 | 0.062 | 0.071 | 0.080 | 0.086 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.048 | 0.063 | 0.074 | 0.085 | 0.096 | 0.106 | 0.114 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Neck RAO 45° female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.020 | 0.027 | 0.032 | 0.037 | 0.042 | 0.046 | 0.050 |
| **Adrenals** | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.003 | 0.003 |
| **Brain** | 0.199 | 0.308 | 0.365 | 0.442 | 0.516 | 0.610 | 0.668 |
| **Breasts** | 0.005 | 0.009 | 0.010 | 0.013 | 0.015 | 0.019 | 0.020 |
| **Colon** | * | * | * | * | * | * | * |
| **Extrathoracic airways** | 0.800 | 1.129 | 1.320 | 1.553 | 1.760 | 2.020 | 2.184 |
| **Gall bladder** | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 |
| **Heart** | 0.005 | 0.010 | 0.012 | 0.014 | 0.018 | 0.023 | 0.025 |
| **Kidneys** | * | * | * | * | * | 0.001 | 0.002 |
| **Liver** | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.007 | 0.008 |
| **Lungs** | 0.004 | 0.006 | 0.007 | 0.009 | 0.011 | 0.013 | 0.014 |
| **Lymph nodes** | 0.099 | 0.116 | 0.130 | 0.142 | 0.152 | 0.162 | 0.169 |
| **Muscle** | 0.099 | 0.116 | 0.130 | 0.142 | 0.152 | 0.162 | 0.169 |
| **Oesophagus** | 0.096 | 0.149 | 0.177 | 0.213 | 0.249 | 0.294 | 0.320 |
| **Oral mucosa** | 1.059 | 1.427 | 1.678 | 1.948 | 2.180 | 2.445 | 2.614 |
| **Female gonads** | * | * | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * | 0.001 | 0.002 |
| **Salivary glands** | 2.601 | 2.982 | 3.314 | 3.597 | 3.824 | 4.045 | 4.201 |
| **Bone** | 0.527 | 0.672 | 0.801 | 0.921 | 1.021 | 1.065 | 1.127 |
| **Skin** | 0.405 | 0.432 | 0.454 | 0.474 | 0.490 | 0.510 | 0.522 |
| **Small intestine** | * | * | * | * | * | * | * |
| **Spleen** | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 |
| **Stomach** | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.004 |
| **Thymus** | 0.041 | 0.067 | 0.080 | 0.095 | 0.114 | 0.134 | 0.149 |
| **Thyroid** | 0.225 | 0.319 | 0.379 | 0.445 | 0.512 | 0.573 | 0.621 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.031 | 0.042 | 0.049 | 0.057 | 0.065 | 0.073 | 0.079 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.073 | 0.095 | 0.109 | 0.124 | 0.138 | 0.153 | 0.163 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

### 4.3.5 Organ dose conversion coefficients for vascular and interventional radiology -thorax

| Projection | Field size at image Intensifier (cm) |
|---|---|
| LAO 45° | 28 |
| RAO 45° | 28 |

| Thorax LAO 45° male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.017 | 0.024 | 0.033 | 0.038 | 0.044 | 0.050 | 0.055 |
| **Adrenals** | 0.013 | 0.021 | 0.031 | 0.038 | 0.046 | 0.056 | 0.062 |
| **Brain** | 0.002 | 0.004 | 0.006 | 0.007 | 0.008 | 0.010 | 0.012 |
| **Colon** | 0.002 | 0.004 | 0.006 | 0.008 | 0.009 | 0.011 | 0.013 |
| **Extrathoracic airways** | 0.001 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.009 |
| **Gall bladder** | 0.002 | 0.005 | 0.008 | 0.011 | 0.012 | 0.014 | 0.016 |
| **Heart** | 0.162 | 0.240 | 0.333 | 0.392 | 0.459 | 0.531 | 0.583 |
| **Kidneys** | 0.005 | 0.008 | 0.013 | 0.015 | 0.018 | 0.023 | 0.026 |
| **Liver** | 0.012 | 0.020 | 0.032 | 0.038 | 0.046 | 0.054 | 0.063 |
| **Lungs** | 0.068 | 0.095 | 0.128 | 0.149 | 0.173 | 0.197 | 0.213 |
| **Lymph nodes** | 0.116 | 0.141 | 0.167 | 0.185 | 0.203 | 0.220 | 0.231 |
| **Muscle** | 0.116 | 0.141 | 0.167 | 0.185 | 0.203 | 0.220 | 0.231 |
| **Oesophagus** | 0.271 | 0.395 | 0.548 | 0.639 | 0.748 | 0.862 | 0.947 |
| **Oral mucosa** | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 |
| **Pancreas** | 0.006 | 0.010 | 0.017 | 0.021 | 0.025 | 0.029 | 0.036 |
| **Prostate** | * | * | * | * | * | * | * |
| **Salivary glands** | 0.010 | 0.016 | 0.023 | 0.027 | 0.033 | 0.038 | 0.043 |
| **Bone** | 0.449 | 0.569 | 0.692 | 0.778 | 0.865 | 0.945 | 0.973 |
| **Skin** | 0.051 | 0.056 | 0.061 | 0.065 | 0.068 | 0.072 | 0.075 |
| **Small intestine** | 0.002 | 0.004 | 0.006 | 0.008 | 0.009 | 0.011 | 0.013 |
| **Spleen** | 0.038 | 0.060 | 0.086 | 0.101 | 0.122 | 0.142 | 0.159 |
| **Stomach** | 0.021 | 0.034 | 0.050 | 0.059 | 0.071 | 0.085 | 0.097 |
| **Male gonads** | * | * | * | * | * | * | * |
| **Thymus** | 0.290 | 0.430 | 0.608 | 0.714 | 0.846 | 0.975 | 1.073 |
| **Thyroid** | 0.130 | 0.201 | 0.299 | 0.356 | 0.426 | 0.501 | 0.565 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.041 | 0.060 | 0.083 | 0.097 | 0.113 | 0.130 | 0.144 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.042 | 0.060 | 0.082 | 0.096 | 0.112 | 0.129 | 0.142 |

(*) values <0.001 mGy/Gycm²

($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication

(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Thorax LAO 45° female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.022 | 0.030 | 0.040 | 0.046 | 0.053 | 0.060 | 0.065 |
| **Adrenals** | 0.015 | 0.025 | 0.036 | 0.042 | 0.052 | 0.060 | 0.068 |
| **Brain** | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.008 |
| **Breasts** | 0.074 | 0.110 | 0.156 | 0.184 | 0.215 | 0.250 | 0.276 |
| **Colon** | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Extrathoracic airways** | 0.010 | 0.017 | 0.026 | 0.030 | 0.037 | 0.043 | 0.050 |
| **Gall bladder** | 0.008 | 0.014 | 0.023 | 0.027 | 0.032 | 0.039 | 0.046 |
| **Heart** | 0.345 | 0.467 | 0.608 | 0.699 | 0.798 | 0.896 | 0.958 |
| **Kidneys** | 0.007 | 0.011 | 0.017 | 0.020 | 0.024 | 0.029 | 0.032 |
| **Liver** | 0.019 | 0.030 | 0.045 | 0.054 | 0.064 | 0.076 | 0.086 |
| **Lungs** | 0.137 | 0.179 | 0.227 | 0.258 | 0.291 | 0.323 | 0.344 |
| **Lymph nodes** | 0.125 | 0.148 | 0.172 | 0.188 | 0.205 | 0.220 | 0.229 |
| **Muscle** | 0.125 | 0.148 | 0.172 | 0.188 | 0.205 | 0.220 | 0.229 |
| **Oesophagus** | 0.548 | 0.740 | 0.959 | 1.099 | 1.254 | 1.403 | 1.504 |
| **Oral mucosa** | 0.011 | 0.018 | 0.028 | 0.033 | 0.041 | 0.049 | 0.056 |
| **Female gonads** | * | * | * | * | * | * | * |
| **Pancreas** | 0.005 | 0.009 | 0.014 | 0.017 | 0.021 | 0.025 | 0.029 |
| **Salivary glands** | 0.012 | 0.021 | 0.029 | 0.035 | 0.042 | 0.050 | 0.056 |
| **Bone** | 0.522 | 0.655 | 0.789 | 0.883 | 0.979 | 1.066 | 1.093 |
| **Skin** | 0.098 | 0.107 | 0.116 | 0.122 | 0.129 | 0.135 | 0.140 |
| **Small intestine** | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.008 | 0.009 |
| **Spleen** | 0.046 | 0.068 | 0.094 | 0.110 | 0.130 | 0.149 | 0.160 |
| **Stomach** | 0.027 | 0.040 | 0.057 | 0.067 | 0.078 | 0.091 | 0.100 |
| **Thymus** | 0.483 | 0.682 | 0.913 | 1.061 | 1.226 | 1.390 | 1.503 |
| **Thyroid** | 0.200 | 0.292 | 0.405 | 0.470 | 0.544 | 0.630 | 0.689 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.074 | 0.102 | 0.133 | 0.153 | 0.175 | 0.198 | 0.213 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.079 | 0.108 | 0.143 | 0.164 | 0.188 | 0.213 | 0.230 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Thorax RAO 45° male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.017 | 0.026 | 0.031 | 0.037 | 0.043 | 0.051 | 0.056 |
| **Adrenals** | 0.010 | 0.019 | 0.022 | 0.028 | 0.036 | 0.048 | 0.053 |
| **Brain** | 0.003 | 0.006 | 0.006 | 0.008 | 0.010 | 0.013 | 0.014 |
| **Colon** | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.009 | 0.011 |
| **Extrathoracic airways** | 0.001 | 0.004 | 0.004 | 0.005 | 0.006 | 0.009 | 0.009 |
| **Gall bladder** | 0.005 | 0.010 | 0.014 | 0.015 | 0.018 | 0.023 | 0.026 |
| **Heart** | 0.118 | 0.196 | 0.231 | 0.285 | 0.338 | 0.412 | 0.454 |
| **Kidneys** | 0.004 | 0.009 | 0.010 | 0.012 | 0.015 | 0.021 | 0.023 |
| **Liver** | 0.024 | 0.043 | 0.051 | 0.063 | 0.076 | 0.095 | 0.106 |
| **Lungs** | 0.068 | 0.102 | 0.121 | 0.146 | 0.169 | 0.197 | 0.214 |
| **Lymph nodes** | 0.120 | 0.147 | 0.168 | 0.189 | 0.206 | 0.223 | 0.236 |
| **Muscle** | 0.120 | 0.147 | 0.168 | 0.189 | 0.206 | 0.223 | 0.236 |
| **Oesophagus** | 0.140 | 0.250 | 0.291 | 0.362 | 0.436 | 0.545 | 0.603 |
| **Oral mucosa** | 0.001 | 0.003 | 0.003 | 0.004 | 0.005 | 0.007 | 0.008 |
| **Pancreas** | 0.006 | 0.013 | 0.015 | 0.019 | 0.023 | 0.032 | 0.037 |
| **Prostate** | * | * | * | * | * | * | * |
| **Salivary glands** | 0.011 | 0.019 | 0.022 | 0.028 | 0.033 | 0.042 | 0.047 |
| **Bone** | 0.429 | 0.553 | 0.658 | 0.760 | 0.845 | 0.892 | 0.946 |
| **Skin** | 0.050 | 0.056 | 0.059 | 0.063 | 0.067 | 0.071 | 0.074 |
| **Small intestine** | 0.001 | 0.003 | 0.004 | 0.005 | 0.006 | 0.009 | 0.010 |
| **Spleen** | 0.016 | 0.029 | 0.034 | 0.042 | 0.052 | 0.068 | 0.076 |
| **Stomach** | 0.011 | 0.023 | 0.026 | 0.033 | 0.040 | 0.053 | 0.060 |
| **Male gonads** | * | * | * | * | * | * | * |
| **Thymus** | 0.266 | 0.439 | 0.517 | 0.638 | 0.750 | 0.907 | 0.998 |
| **Thyroid** | 0.135 | 0.232 | 0.270 | 0.335 | 0.403 | 0.504 | 0.560 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.034 | 0.055 | 0.064 | 0.078 | 0.092 | 0.111 | 0.123 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.035 | 0.055 | 0.065 | 0.079 | 0.092 | 0.112 | 0.122 |

(*) values <0.001 mGy/Gycm²

($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication

(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Thorax RAO 45° female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.024 | 0.035 | 0.040 | 0.048 | 0.055 | 0.064 | 0.070 |
| **Adrenals** | 0.012 | 0.022 | 0.024 | 0.032 | 0.037 | 0.051 | 0.059 |
| **Brain** | 0.001 | 0.003 | 0.003 | 0.004 | 0.005 | 0.007 | 0.008 |
| **Breasts** | 0.063 | 0.104 | 0.122 | 0.151 | 0.177 | 0.216 | 0.239 |
| **Colon** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Extrathoracic airways** | 0.010 | 0.019 | 0.021 | 0.027 | 0.034 | 0.044 | 0.048 |
| **Gall bladder** | 0.012 | 0.023 | 0.026 | 0.033 | 0.041 | 0.053 | 0.058 |
| **Heart** | 0.199 | 0.303 | 0.360 | 0.435 | 0.504 | 0.593 | 0.648 |
| **Kidneys** | 0.004 | 0.008 | 0.009 | 0.012 | 0.014 | 0.020 | 0.023 |
| **Liver** | 0.038 | 0.062 | 0.073 | 0.089 | 0.105 | 0.127 | 0.140 |
| **Lungs** | 0.131 | 0.179 | 0.212 | 0.248 | 0.280 | 0.313 | 0.336 |
| **Lymph nodes** | 0.127 | 0.153 | 0.174 | 0.193 | 0.209 | 0.224 | 0.235 |
| **Muscle** | 0.127 | 0.153 | 0.174 | 0.193 | 0.209 | 0.224 | 0.235 |
| **Oesophagus** | 0.216 | 0.357 | 0.422 | 0.520 | 0.617 | 0.753 | 0.827 |
| **Oral mucosa** | 0.011 | 0.021 | 0.024 | 0.031 | 0.037 | 0.050 | 0.056 |
| **Female gonads** | * | * | * | * | * | * | * |
| **Pancreas** | 0.004 | 0.009 | 0.009 | 0.012 | 0.015 | 0.022 | 0.024 |
| **Salivary glands** | 0.013 | 0.024 | 0.027 | 0.034 | 0.041 | 0.051 | 0.058 |
| **Bone** | 0.566 | 0.712 | 0.844 | 0.966 | 1.066 | 1.109 | 1.171 |
| **Skin** | 0.092 | 0.101 | 0.108 | 0.115 | 0.121 | 0.128 | 0.132 |
| **Small intestine** | 0.001 | 0.002 | 0.003 | 0.003 | 0.004 | 0.006 | 0.006 |
| **Spleen** | 0.012 | 0.024 | 0.028 | 0.035 | 0.043 | 0.057 | 0.064 |
| **Stomach** | 0.010 | 0.019 | 0.022 | 0.029 | 0.035 | 0.046 | 0.052 |
| **Thymus** | 0.531 | 0.783 | 0.930 | 1.117 | 1.286 | 1.485 | 1.610 |
| **Thyroid** | 0.181 | 0.288 | 0.343 | 0.423 | 0.498 | 0.594 | 0.651 |
| **Urinary bladder** | * | * | * | * | * | * | * |
| **Uterus** | * | * | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.055 | 0.082 | 0.097 | 0.117 | 0.135 | 0.158 | 0.172 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.061 | 0.091 | 0.108 | 0.129 | 0.149 | 0.175 | 0.191 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

### 4.3.6 Organ dose conversion coefficients for vascular and interventional radiology - abdomen

| Projection | Field size at image Intensifier (cm) |
|---|---|
| PA | 40 |
| RAO 45° | 40 |
| LAO 45° | 40 |
| LLAT | 40 |
| RLAT | 40 |

| Abdomen PA male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.010 | 0.015 | 0.019 | 0.023 | 0.025 | 0.030 | 0.034 |
| **Adrenals** | 1.128 | 1.504 | 1.790 | 2.039 | 2.218 | 2.433 | 2.570 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.148 | 0.241 | 0.304 | 0.364 | 0.411 | 0.482 | 0.532 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.139 | 0.252 | 0.323 | 0.390 | 0.449 | 0.535 | 0.598 |
| **Heart** | 0.024 | 0.049 | 0.064 | 0.081 | 0.094 | 0.118 | 0.135 |
| **Kidneys** | 1.010 | 1.362 | 1.629 | 1.867 | 2.033 | 2.238 | 2.369 |
| **Liver** | 0.162 | 0.264 | 0.333 | 0.400 | 0.451 | 0.531 | 0.586 |
| **Lungs** | 0.005 | 0.010 | 0.013 | 0.016 | 0.018 | 0.023 | 0.025 |
| **Lymph nodes** | 0.121 | 0.150 | 0.172 | 0.191 | 0.204 | 0.222 | 0.234 |
| **Muscle** | 0.121 | 0.150 | 0.172 | 0.191 | 0.204 | 0.222 | 0.234 |
| **Oesophagus** | 0.027 | 0.053 | 0.069 | 0.085 | 0.098 | 0.121 | 0.141 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.230 | 0.408 | 0.526 | 0.642 | 0.730 | 0.881 | 0.981 |
| **Prostate** | 0.001 | 0.003 | 0.004 | 0.005 | 0.006 | 0.008 | 0.010 |
| **Salivary glands** | * | * | * | * | * | * | 0.001 |
| **Bone** | 0.145 | 0.206 | 0.251 | 0.292 | 0.322 | 0.358 | 0.379 |
| **Skin** | 0.038 | 0.043 | 0.048 | 0.051 | 0.054 | 0.058 | 0.061 |
| **Small intestine** | 0.233 | 0.366 | 0.458 | 0.546 | 0.613 | 0.713 | 0.781 |
| **Spleen** | 0.374 | 0.523 | 0.635 | 0.734 | 0.807 | 0.904 | 0.962 |
| **Stomach** | 0.144 | 0.246 | 0.314 | 0.380 | 0.431 | 0.516 | 0.573 |
| **Male gonads** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Thymus** | 0.003 | 0.007 | 0.008 | 0.010 | 0.012 | 0.016 | 0.020 |
| **Thyroid** | 0.001 | 0.003 | 0.003 | 0.004 | 0.005 | 0.007 | 0.009 |
| **Urinary bladder** | 0.005 | 0.011 | 0.015 | 0.019 | 0.022 | 0.030 | 0.036 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.066 | 0.105 | 0.131 | 0.157 | 0.176 | 0.206 | 0.227 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.078 | 0.121 | 0.151 | 0.180 | 0.201 | 0.234 | 0.257 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen PA female | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.009 | 0.014 | 0.017 | 0.020 | 0.023 | 0.027 | 0.030 |
| **Adrenals** | 0.812 | 1.147 | 1.397 | 1.613 | 1.772 | 1.983 | 2.130 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | 0.006 | 0.012 | 0.017 | 0.021 | 0.024 | 0.032 | 0.036 |
| **Colon** | 0.152 | 0.233 | 0.289 | 0.342 | 0.382 | 0.441 | 0.482 |
| **Extrathoracic airways** | * | * | * | * | 0.001 | 0.001 | 0.002 |
| **Gall bladder** | 0.273 | 0.467 | 0.592 | 0.719 | 0.813 | 0.968 | 1.075 |
| **Heart** | 0.025 | 0.049 | 0.064 | 0.079 | 0.091 | 0.114 | 0.128 |
| **Kidneys** | 1.154 | 1.516 | 1.796 | 2.042 | 2.212 | 2.412 | 2.543 |
| **Liver** | 0.329 | 0.479 | 0.585 | 0.684 | 0.756 | 0.859 | 0.929 |
| **Lungs** | 0.006 | 0.011 | 0.014 | 0.017 | 0.019 | 0.023 | 0.025 |
| **Lymph nodes** | 0.128 | 0.156 | 0.177 | 0.196 | 0.208 | 0.224 | 0.235 |
| **Muscle** | 0.128 | 0.156 | 0.177 | 0.196 | 0.208 | 0.224 | 0.235 |
| **Oesophagus** | 0.025 | 0.047 | 0.062 | 0.076 | 0.086 | 0.106 | 0.119 |
| **Oral mucosa** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Female gonads** | 0.003 | 0.008 | 0.012 | 0.015 | 0.018 | 0.024 | 0.026 |
| **Pancreas** | 0.310 | 0.501 | 0.634 | 0.760 | 0.858 | 1.007 | 1.110 |
| **Salivary glands** | * | * | * | * | 0.001 | 0.002 | 0.002 |
| **Bone** | 0.160 | 0.227 | 0.275 | 0.320 | 0.352 | 0.391 | 0.413 |
| **Skin** | 0.074 | 0.084 | 0.091 | 0.097 | 0.101 | 0.107 | 0.112 |
| **Small intestine** | 0.185 | 0.286 | 0.356 | 0.423 | 0.473 | 0.548 | 0.600 |
| **Spleen** | 0.555 | 0.732 | 0.866 | 0.985 | 1.065 | 1.165 | 1.228 |
| **Stomach** | 0.247 | 0.385 | 0.482 | 0.574 | 0.646 | 0.745 | 0.816 |
| **Thymus** | 0.003 | 0.007 | 0.008 | 0.011 | 0.012 | 0.017 | 0.020 |
| **Thyroid** | 0.001 | 0.002 | 0.004 | 0.004 | 0.005 | 0.008 | 0.009 |
| **Urinary bladder** | 0.003 | 0.008 | 0.012 | 0.014 | 0.017 | 0.022 | 0.026 |
| **Uterus** | 0.003 | 0.009 | 0.012 | 0.015 | 0.020 | 0.023 | 0.028 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.088 | 0.134 | 0.165 | 0.195 | 0.218 | 0.250 | 0.273 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.100 | 0.150 | 0.186 | 0.218 | 0.243 | 0.279 | 0.304 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen LAO 45° male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.009 | 0.012 | 0.016 | 0.019 | 0.022 | 0.025 | 0.027 |
| **Adrenals** | 0.843 | 1.087 | 1.353 | 1.531 | 1.713 | 1.890 | 1.995 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.123 | 0.176 | 0.240 | 0.280 | 0.325 | 0.372 | 0.403 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.052 | 0.086 | 0.129 | 0.157 | 0.187 | 0.221 | 0.251 |
| **Heart** | 0.029 | 0.045 | 0.066 | 0.078 | 0.093 | 0.110 | 0.123 |
| **Kidneys** | 0.929 | 1.186 | 1.467 | 1.650 | 1.841 | 2.021 | 2.120 |
| **Liver** | 0.097 | 0.145 | 0.204 | 0.240 | 0.282 | 0.327 | 0.364 |
| **Lungs** | 0.006 | 0.009 | 0.013 | 0.015 | 0.018 | 0.021 | 0.023 |
| **Lymph nodes** | 0.112 | 0.135 | 0.160 | 0.175 | 0.192 | 0.208 | 0.217 |
| **Muscle** | 0.112 | 0.135 | 0.160 | 0.175 | 0.192 | 0.208 | 0.217 |
| **Oesophagus** | 0.031 | 0.047 | 0.066 | 0.079 | 0.093 | 0.109 | 0.119 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.203 | 0.297 | 0.420 | 0.493 | 0.576 | 0.668 | 0.735 |
| **Prostate** | 0.002 | 0.002 | 0.004 | 0.005 | 0.006 | 0.008 | 0.010 |
| **Salivary glands** | * | * | * | * | * | * | 0.001 |
| **Bone** | 0.139 | 0.182 | 0.228 | 0.259 | 0.292 | 0.323 | 0.338 |
| **Skin** | 0.096 | 0.105 | 0.114 | 0.119 | 0.125 | 0.131 | 0.134 |
| **Small intestine** | 0.258 | 0.352 | 0.461 | 0.530 | 0.608 | 0.683 | 0.734 |
| **Spleen** | 0.686 | 0.871 | 1.068 | 1.198 | 1.335 | 1.464 | 1.530 |
| **Stomach** | 0.155 | 0.223 | 0.303 | 0.354 | 0.412 | 0.472 | 0.513 |
| **Male gonads** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Thymus** | 0.003 | 0.005 | 0.008 | 0.010 | 0.013 | 0.017 | 0.018 |
| **Thyroid** | 0.002 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.009 |
| **Urinary bladder** | 0.005 | 0.009 | 0.015 | 0.018 | 0.022 | 0.027 | 0.030 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.061 | 0.085 | 0.114 | 0.132 | 0.153 | 0.174 | 0.188 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.073 | 0.100 | 0.133 | 0.153 | 0.176 | 0.200 | 0.215 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen LAO 45° female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.008 | 0.010 | 0.014 | 0.016 | 0.019 | 0.021 | 0.024 |
| **Adrenals** | 0.502 | 0.677 | 0.889 | 1.023 | 1.162 | 1.305 | 1.403 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | 0.006 | 0.010 | 0.014 | 0.018 | 0.021 | 0.025 | 0.029 |
| **Colon** | 0.075 | 0.109 | 0.151 | 0.176 | 0.206 | 0.238 | 0.260 |
| **Extrathoracic airways** | * | * | * | * | * | 0.001 | 0.002 |
| **Gall bladder** | 0.158 | 0.239 | 0.340 | 0.403 | 0.473 | 0.550 | 0.611 |
| **Heart** | 0.028 | 0.043 | 0.062 | 0.073 | 0.086 | 0.100 | 0.112 |
| **Kidneys** | 0.968 | 1.224 | 1.498 | 1.678 | 1.864 | 2.042 | 2.139 |
| **Liver** | 0.176 | 0.245 | 0.328 | 0.378 | 0.435 | 0.495 | 0.538 |
| **Lungs** | 0.007 | 0.010 | 0.013 | 0.015 | 0.018 | 0.021 | 0.023 |
| **Lymph nodes** | 0.127 | 0.150 | 0.174 | 0.190 | 0.206 | 0.221 | 0.230 |
| **Muscle** | 0.127 | 0.150 | 0.174 | 0.190 | 0.206 | 0.221 | 0.230 |
| **Oesophagus** | 0.028 | 0.042 | 0.059 | 0.068 | 0.081 | 0.093 | 0.105 |
| **Oral mucosa** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Female gonads** | 0.004 | 0.007 | 0.012 | 0.015 | 0.016 | 0.021 | 0.025 |
| **Pancreas** | 0.225 | 0.324 | 0.442 | 0.516 | 0.601 | 0.691 | 0.754 |
| **Salivary glands** | * | * | * | 0.001 | 0.001 | 0.001 | 0.002 |
| **Bone** | 0.209 | 0.265 | 0.324 | 0.363 | 0.405 | 0.444 | 0.458 |
| **Skin** | 0.143 | 0.156 | 0.169 | 0.178 | 0.186 | 0.195 | 0.200 |
| **Small intestine** | 0.150 | 0.209 | 0.278 | 0.322 | 0.371 | 0.421 | 0.456 |
| **Spleen** | 0.701 | 0.876 | 1.061 | 1.181 | 1.311 | 1.428 | 1.495 |
| **Stomach** | 0.198 | 0.279 | 0.372 | 0.431 | 0.499 | 0.568 | 0.614 |
| **Thymus** | 0.004 | 0.005 | 0.009 | 0.011 | 0.013 | 0.016 | 0.018 |
| **Thyroid** | 0.001 | 0.002 | 0.004 | 0.004 | 0.005 | 0.007 | 0.008 |
| **Urinary bladder** | 0.003 | 0.006 | 0.010 | 0.013 | 0.015 | 0.018 | 0.021 |
| **Uterus** | 0.004 | 0.007 | 0.010 | 0.013 | 0.017 | 0.021 | 0.025 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.064 | 0.089 | 0.118 | 0.137 | 0.157 | 0.178 | 0.193 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.075 | 0.103 | 0.135 | 0.156 | 0.179 | 0.202 | 0.218 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen RAO 45° male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.009 | 0.014 | 0.016 | 0.019 | 0.022 | 0.026 | 0.029 |
| **Adrenals** | 0.773 | 1.042 | 1.237 | 1.444 | 1.612 | 1.770 | 1.902 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.169 | 0.244 | 0.288 | 0.344 | 0.395 | 0.452 | 0.492 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.182 | 0.280 | 0.336 | 0.406 | 0.472 | 0.550 | 0.595 |
| **Heart** | 0.021 | 0.040 | 0.045 | 0.057 | 0.069 | 0.089 | 0.100 |
| **Kidneys** | 0.967 | 1.259 | 1.492 | 1.720 | 1.912 | 2.075 | 2.214 |
| **Liver** | 0.279 | 0.393 | 0.466 | 0.551 | 0.627 | 0.702 | 0.762 |
| **Lungs** | 0.006 | 0.010 | 0.011 | 0.014 | 0.017 | 0.020 | 0.023 |
| **Lymph nodes** | 0.116 | 0.142 | 0.162 | 0.181 | 0.197 | 0.212 | 0.224 |
| **Muscle** | 0.116 | 0.142 | 0.162 | 0.181 | 0.197 | 0.212 | 0.224 |
| **Oesophagus** | 0.025 | 0.044 | 0.050 | 0.063 | 0.076 | 0.096 | 0.107 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.239 | 0.377 | 0.450 | 0.548 | 0.646 | 0.757 | 0.838 |
| **Prostate** | 0.002 | 0.003 | 0.003 | 0.005 | 0.006 | 0.009 | 0.010 |
| **Salivary glands** | * | * | * | * | * | 0.001 | 0.001 |
| **Bone** | 0.140 | 0.189 | 0.225 | 0.263 | 0.297 | 0.321 | 0.344 |
| **Skin** | 0.072 | 0.080 | 0.086 | 0.091 | 0.096 | 0.100 | 0.104 |
| **Small intestine** | 0.146 | 0.227 | 0.270 | 0.329 | 0.383 | 0.451 | 0.498 |
| **Spleen** | 0.246 | 0.353 | 0.419 | 0.498 | 0.569 | 0.643 | 0.696 |
| **Stomach** | 0.072 | 0.127 | 0.149 | 0.185 | 0.223 | 0.276 | 0.309 |
| **Male gonads** | * | * | * | * | 0.001 | 0.002 | 0.002 |
| **Thymus** | 0.003 | 0.007 | 0.007 | 0.010 | 0.012 | 0.016 | 0.019 |
| **Thyroid** | 0.001 | 0.003 | 0.003 | 0.004 | 0.005 | 0.007 | 0.009 |
| **Urinary bladder** | 0.006 | 0.011 | 0.013 | 0.017 | 0.020 | 0.026 | 0.031 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.062 | 0.092 | 0.108 | 0.129 | 0.149 | 0.172 | 0.188 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.071 | 0.104 | 0.123 | 0.146 | 0.168 | 0.193 | 0.211 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen RAO 45° female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.007 | 0.011 | 0.013 | 0.016 | 0.018 | 0.022 | 0.024 |
| **Adrenals** | 0.590 | 0.809 | 0.959 | 1.132 | 1.269 | 1.427 | 1.529 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | 0.006 | 0.011 | 0.013 | 0.016 | 0.020 | 0.026 | 0.029 |
| **Colon** | 0.078 | 0.122 | 0.144 | 0.176 | 0.206 | 0.247 | 0.269 |
| **Extrathoracic airways** | * | * | * | * | * | 0.001 | 0.002 |
| **Gall bladder** | 0.257 | 0.394 | 0.472 | 0.569 | 0.657 | 0.772 | 0.844 |
| **Heart** | 0.021 | 0.036 | 0.043 | 0.054 | 0.064 | 0.082 | 0.091 |
| **Kidneys** | 0.693 | 0.924 | 1.094 | 1.273 | 1.424 | 1.569 | 1.676 |
| **Liver** | 0.310 | 0.427 | 0.503 | 0.588 | 0.664 | 0.746 | 0.802 |
| **Lungs** | 0.006 | 0.010 | 0.012 | 0.014 | 0.017 | 0.020 | 0.022 |
| **Lymph nodes** | 0.124 | 0.149 | 0.170 | 0.188 | 0.204 | 0.218 | 0.229 |
| **Muscle** | 0.124 | 0.149 | 0.170 | 0.188 | 0.204 | 0.218 | 0.229 |
| **Oesophagus** | 0.020 | 0.035 | 0.042 | 0.052 | 0.062 | 0.076 | 0.085 |
| **Oral mucosa** | * | * | * | * | * | 0.002 | 0.002 |
| **Female gonads** | 0.004 | 0.008 | 0.009 | 0.013 | 0.016 | 0.021 | 0.023 |
| **Pancreas** | 0.169 | 0.273 | 0.324 | 0.396 | 0.466 | 0.562 | 0.619 |
| **Salivary glands** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Bone** | 0.259 | 0.325 | 0.384 | 0.438 | 0.485 | 0.507 | 0.535 |
| **Skin** | 0.144 | 0.158 | 0.169 | 0.180 | 0.188 | 0.197 | 0.203 |
| **Small intestine** | 0.099 | 0.156 | 0.184 | 0.223 | 0.262 | 0.313 | 0.343 |
| **Spleen** | 0.342 | 0.466 | 0.552 | 0.643 | 0.725 | 0.809 | 0.867 |
| **Stomach** | 0.100 | 0.165 | 0.196 | 0.239 | 0.284 | 0.347 | 0.383 |
| **Thymus** | 0.004 | 0.008 | 0.008 | 0.010 | 0.012 | 0.017 | 0.019 |
| **Thyroid** | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.008 | 0.008 |
| **Urinary bladder** | 0.004 | 0.007 | 0.008 | 0.010 | 0.013 | 0.019 | 0.021 |
| **Uterus** | 0.004 | 0.008 | 0.010 | 0.013 | 0.017 | 0.021 | 0.025 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.056 | 0.083 | 0.098 | 0.117 | 0.135 | 0.159 | 0.173 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.064 | 0.094 | 0.111 | 0.132 | 0.152 | 0.177 | 0.193 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen LLAT male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.007 | 0.009 | 0.012 | 0.014 | 0.015 | 0.017 | 0.019 |
| **Adrenals** | 0.213 | 0.299 | 0.417 | 0.485 | 0.524 | 0.614 | 0.669 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.813 | 0.999 | 1.195 | 1.330 | 1.395 | 1.550 | 1.642 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.051 | 0.080 | 0.123 | 0.150 | 0.165 | 0.205 | 0.230 |
| **Heart** | 0.038 | 0.058 | 0.087 | 0.102 | 0.111 | 0.134 | 0.148 |
| **Kidneys** | 0.495 | 0.645 | 0.820 | 0.933 | 0.990 | 1.129 | 1.210 |
| **Liver** | 0.066 | 0.099 | 0.148 | 0.174 | 0.190 | 0.229 | 0.252 |
| **Lungs** | 0.006 | 0.009 | 0.013 | 0.015 | 0.016 | 0.020 | 0.022 |
| **Lymph nodes** | 0.091 | 0.110 | 0.131 | 0.144 | 0.151 | 0.167 | 0.177 |
| **Muscle** | 0.091 | 0.110 | 0.131 | 0.144 | 0.151 | 0.167 | 0.177 |
| **Oesophagus** | 0.023 | 0.035 | 0.057 | 0.066 | 0.073 | 0.085 | 0.095 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.273 | 0.390 | 0.547 | 0.634 | 0.687 | 0.808 | 0.883 |
| **Prostate** | 0.001 | 0.002 | 0.005 | 0.005 | 0.006 | 0.008 | 0.009 |
| **Salivary glands** | * | * | * | * | * | * | 0.001 |
| **Bone** | 0.146 | 0.182 | 0.220 | 0.246 | 0.258 | 0.289 | 0.306 |
| **Skin** | 0.129 | 0.141 | 0.153 | 0.162 | 0.166 | 0.175 | 0.181 |
| **Small intestine** | 0.553 | 0.714 | 0.898 | 1.017 | 1.077 | 1.224 | 1.309 |
| **Spleen** | 0.462 | 0.603 | 0.766 | 0.870 | 0.925 | 1.055 | 1.131 |
| **Stomach** | 0.578 | 0.760 | 0.968 | 1.103 | 1.171 | 1.339 | 1.438 |
| **Male gonads** | * | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.002 |
| **Thymus** | 0.003 | 0.005 | 0.009 | 0.011 | 0.012 | 0.016 | 0.018 |
| **Thyroid** | 0.001 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 |
| **Urinary bladder** | 0.007 | 0.012 | 0.019 | 0.022 | 0.025 | 0.030 | 0.034 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.188 | 0.239 | 0.298 | 0.336 | 0.355 | 0.402 | 0.429 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.196 | 0.250 | 0.312 | 0.352 | 0.372 | 0.421 | 0.451 |

(*) values <0.001 mGy/Gycm²

($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication

(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen LLAT female | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.006 | 0.008 | 0.010 | 0.012 | 0.013 | 0.015 | 0.016 |
| **Adrenals** | 0.235 | 0.334 | 0.459 | 0.532 | 0.582 | 0.679 | 0.746 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | 0.010 | 0.015 | 0.024 | 0.028 | 0.030 | 0.036 | 0.040 |
| **Colon** | 0.321 | 0.399 | 0.484 | 0.541 | 0.569 | 0.636 | 0.675 |
| **Extrathoracic airways** | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Gall bladder** | 0.187 | 0.268 | 0.382 | 0.448 | 0.484 | 0.573 | 0.628 |
| **Heart** | 0.042 | 0.063 | 0.090 | 0.106 | 0.115 | 0.136 | 0.151 |
| **Kidneys** | 0.662 | 0.860 | 1.084 | 1.229 | 1.301 | 1.482 | 1.588 |
| **Liver** | 0.147 | 0.201 | 0.271 | 0.312 | 0.334 | 0.389 | 0.422 |
| **Lungs** | 0.005 | 0.008 | 0.011 | 0.013 | 0.014 | 0.017 | 0.019 |
| **Lymph nodes** | 0.094 | 0.112 | 0.131 | 0.144 | 0.150 | 0.165 | 0.174 |
| **Muscle** | 0.094 | 0.112 | 0.131 | 0.144 | 0.150 | 0.165 | 0.174 |
| **Oesophagus** | 0.027 | 0.039 | 0.059 | 0.071 | 0.074 | 0.090 | 0.098 |
| **Oral mucosa** | 0.001 | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Female gonads** | 0.003 | 0.005 | 0.009 | 0.012 | 0.013 | 0.016 | 0.017 |
| **Pancreas** | 0.539 | 0.724 | 0.939 | 1.076 | 1.147 | 1.321 | 1.424 |
| **Salivary glands** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Bone** | 0.192 | 0.238 | 0.284 | 0.317 | 0.332 | 0.370 | 0.391 |
| **Skin** | 0.135 | 0.148 | 0.162 | 0.172 | 0.176 | 0.187 | 0.194 |
| **Small intestine** | 0.514 | 0.644 | 0.782 | 0.876 | 0.922 | 1.032 | 1.096 |
| **Spleen** | 1.121 | 1.359 | 1.609 | 1.781 | 1.863 | 2.056 | 2.168 |
| **Stomach** | 1.068 | 1.321 | 1.587 | 1.770 | 1.856 | 2.068 | 2.193 |
| **Thymus** | 0.003 | 0.005 | 0.008 | 0.009 | 0.010 | 0.013 | 0.016 |
| **Thyroid** | 0.001 | 0.002 | 0.003 | 0.004 | 0.004 | 0.005 | 0.006 |
| **Urinary bladder** | 0.004 | 0.008 | 0.013 | 0.016 | 0.018 | 0.021 | 0.023 |
| **Uterus** | 0.015 | 0.004 | 0.009 | 0.013 | 0.014 | 0.017 | 0.021 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.199 | 0.249 | 0.304 | 0.342 | 0.358 | 0.402 | 0.427 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.212 | 0.266 | 0.325 | 0.365 | 0.383 | 0.430 | 0.458 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen RLAT male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.006 | 0.009 | 0.012 | 0.013 | 0.015 | 0.017 | 0.018 |
| **Adrenals** | 0.188 | 0.284 | 0.372 | 0.421 | 0.486 | 0.544 | 0.605 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.502 | 0.642 | 0.774 | 0.862 | 0.956 | 1.033 | 1.094 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 1.259 | 1.648 | 2.027 | 2.264 | 2.537 | 2.758 | 2.907 |
| **Heart** | 0.014 | 0.027 | 0.038 | 0.042 | 0.051 | 0.059 | 0.069 |
| **Kidneys** | 0.533 | 0.712 | 0.878 | 0.983 | 1.103 | 1.204 | 1.292 |
| **Liver** | 0.568 | 0.752 | 0.923 | 1.030 | 1.156 | 1.259 | 1.346 |
| **Lungs** | 0.004 | 0.007 | 0.010 | 0.011 | 0.013 | 0.015 | 0.017 |
| **Lymph nodes** | 0.092 | 0.113 | 0.132 | 0.144 | 0.158 | 0.169 | 0.179 |
| **Muscle** | 0.092 | 0.113 | 0.132 | 0.144 | 0.158 | 0.169 | 0.179 |
| **Oesophagus** | 0.015 | 0.027 | 0.037 | 0.042 | 0.049 | 0.058 | 0.067 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.302 | 0.459 | 0.598 | 0.675 | 0.783 | 0.880 | 0.973 |
| **Prostate** | 0.001 | 0.003 | 0.004 | 0.004 | 0.005 | 0.007 | 0.008 |
| **Salivary glands** | * | * | * | * | * | * | * |
| **Bone** | 0.201 | 0.249 | 0.294 | 0.328 | 0.361 | 0.388 | 0.402 |
| **Skin** | 0.140 | 0.154 | 0.168 | 0.176 | 0.185 | 0.193 | 0.199 |
| **Small intestine** | 0.191 | 0.272 | 0.347 | 0.391 | 0.445 | 0.495 | 0.540 |
| **Spleen** | 0.011 | 0.024 | 0.035 | 0.038 | 0.047 | 0.054 | 0.066 |
| **Stomach** | 0.060 | 0.101 | 0.140 | 0.157 | 0.185 | 0.211 | 0.240 |
| **Male gonads** | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Thymus** | 0.004 | 0.008 | 0.012 | 0.013 | 0.015 | 0.017 | 0.019 |
| **Thyroid** | 0.001 | 0.003 | 0.004 | 0.004 | 0.005 | 0.007 | 0.008 |
| **Urinary bladder** | 0.006 | 0.012 | 0.017 | 0.018 | 0.023 | 0.026 | 0.030 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.109 | 0.145 | 0.179 | 0.200 | 0.225 | 0.245 | 0.264 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.121 | 0.161 | 0.198 | 0.221 | 0.249 | 0.272 | 0.292 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Abdomen RLAT female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 | 7.5 | 8.5 |
|---|---|---|---|---|---|---|---|
| **RBM** | 0.007 | 0.009 | 0.012 | 0.013 | 0.015 | 0.017 | 0.019 |
| **Adrenals** | 0.340 | 0.492 | 0.636 | 0.712 | 0.812 | 0.899 | 0.992 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | 0.013 | 0.020 | 0.027 | 0.030 | 0.036 | 0.040 | 0.045 |
| **Colon** | 0.362 | 0.455 | 0.543 | 0.602 | 0.664 | 0.715 | 0.753 |
| **Extrathoracic airways** | * | * | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| **Gall bladder** | 0.593 | 0.833 | 1.044 | 1.178 | 1.340 | 1.480 | 1.594 |
| **Heart** | 0.018 | 0.032 | 0.045 | 0.050 | 0.060 | 0.069 | 0.079 |
| **Kidneys** | 0.564 | 0.736 | 0.898 | 1.001 | 1.117 | 1.217 | 1.296 |
| **Liver** | 0.708 | 0.906 | 1.094 | 1.216 | 1.350 | 1.458 | 1.545 |
| **Lungs** | 0.005 | 0.008 | 0.011 | 0.012 | 0.015 | 0.017 | 0.019 |
| **Lymph nodes** | 0.094 | 0.113 | 0.132 | 0.144 | 0.157 | 0.167 | 0.176 |
| **Muscle** | 0.094 | 0.113 | 0.132 | 0.144 | 0.157 | 0.167 | 0.176 |
| **Oesophagus** | 0.016 | 0.029 | 0.040 | 0.046 | 0.055 | 0.062 | 0.072 |
| **Oral mucosa** | * | * | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 |
| **Female gonads** | 0.004 | 0.007 | 0.011 | 0.012 | 0.016 | 0.017 | 0.022 |
| **Pancreas** | 0.448 | 0.627 | 0.791 | 0.889 | 1.008 | 1.111 | 1.199 |
| **Salivary glands** | * | * | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 |
| **Bone** | 0.220 | 0.273 | 0.322 | 0.359 | 0.395 | 0.424 | 0.439 |
| **Skin** | 0.140 | 0.154 | 0.168 | 0.176 | 0.186 | 0.193 | 0.200 |
| **Small intestine** | 0.210 | 0.286 | 0.357 | 0.398 | 0.450 | 0.494 | 0.533 |
| **Spleen** | 0.021 | 0.042 | 0.062 | 0.068 | 0.083 | 0.096 | 0.114 |
| **Stomach** | 0.106 | 0.164 | 0.218 | 0.245 | 0.285 | 0.322 | 0.361 |
| **Thymus** | 0.005 | 0.009 | 0.013 | 0.015 | 0.017 | 0.020 | 0.023 |
| **Thyroid** | 0.002 | 0.003 | 0.005 | 0.005 | 0.006 | 0.008 | 0.009 |
| **Urinary bladder** | 0.005 | 0.009 | 0.014 | 0.015 | 0.018 | 0.021 | 0.024 |
| **Uterus** | 0.004 | 0.006 | 0.008 | 0.011 | 0.014 | 0.017 | 0.020 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.108 | 0.144 | 0.176 | 0.196 | 0.220 | 0.240 | 0.258 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.114 | 0.152 | 0.187 | 0.209 | 0.234 | 0.256 | 0.275 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

### 4.3.7 Organ dose conversion coefficients for vascular and interventional radiology - pelvis

| Projection | Field size at image Intensifier (cm) |
|---|---|
| LAO 45° | 40 |
| RAO 45° | 40 |
| PA | 40 |

| Pelvis PA male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.030 | 0.044 | 0.054 | 0.063 | 0.070 | 0.081 | 0.089 |
| **Adrenals** | 0.002 | 0.005 | 0.006 | 0.008 | 0.010 | 0.013 | 0.016 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.145 | 0.209 | 0.255 | 0.297 | 0.327 | 0.370 | 0.399 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.003 | 0.006 | 0.007 | 0.010 | 0.012 | 0.015 | 0.019 |
| **Heart** | * | * | * | * | 0.001 | 0.002 | 0.002 |
| **Kidneys** | 0.008 | 0.016 | 0.021 | 0.027 | 0.031 | 0.039 | 0.046 |
| **Liver** | 0.001 | 0.003 | 0.004 | 0.005 | 0.006 | 0.008 | 0.009 |
| **Lungs** | * | * | * | * | * | * | * |
| **Lymph nodes** | 0.094 | 0.122 | 0.144 | 0.163 | 0.177 | 0.196 | 0.209 |
| **Muscle** | 0.094 | 0.122 | 0.144 | 0.163 | 0.177 | 0.196 | 0.209 |
| **Oesophagus** | * | * | * | * | 0.001 | 0.002 | 0.002 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.003 | 0.008 | 0.011 | 0.013 | 0.016 | 0.022 | 0.026 |
| **Prostate** | 0.509 | 0.729 | 0.888 | 1.037 | 1.144 | 1.286 | 1.375 |
| **Salivary glands** | * | * | * | * | * | * | * |
| **Bone** | 0.339 | 0.460 | 0.552 | 0.635 | 0.692 | 0.755 | 0.788 |
| **Skin** | 0.038 | 0.043 | 0.046 | 0.050 | 0.052 | 0.055 | 0.058 |
| **Small intestine** | 0.095 | 0.162 | 0.206 | 0.249 | 0.284 | 0.339 | 0.378 |
| **Spleen** | 0.001 | 0.003 | 0.004 | 0.004 | 0.005 | 0.007 | 0.008 |
| **Stomach** | 0.001 | 0.003 | 0.004 | 0.006 | 0.007 | 0.010 | 0.011 |
| **Male gonads** | 0.036 | 0.068 | 0.087 | 0.107 | 0.123 | 0.151 | 0.171 |
| **Thymus** | * | * | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * | * | * |
| **Urinary bladder** | 0.361 | 0.566 | 0.704 | 0.840 | 0.941 | 1.092 | 1.193 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.054 | 0.084 | 0.104 | 0.123 | 0.137 | 0.159 | 0.174 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.050 | 0.075 | 0.092 | 0.109 | 0.121 | 0.139 | 0.151 |

(*) values <0.001 mGy/Gycm²

($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication

(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Pelvis PA female | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.029 | 0.041 | 0.050 | 0.058 | 0.064 | 0.074 | 0.081 |
| **Adrenals** | 0.002 | 0.005 | 0.007 | 0.008 | 0.009 | 0.012 | 0.015 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | * | * | * | * | * | * | * |
| **Colon** | 0.314 | 0.435 | 0.523 | 0.603 | 0.661 | 0.743 | 0.799 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.002 | 0.005 | 0.006 | 0.007 | 0.009 | 0.012 | 0.013 |
| **Heart** | * | * | * | * | 0.001 | 0.001 | 0.002 |
| **Kidneys** | 0.008 | 0.017 | 0.022 | 0.027 | 0.031 | 0.039 | 0.046 |
| **Liver** | 0.001 | 0.003 | 0.004 | 0.005 | 0.006 | 0.008 | 0.010 |
| **Lungs** | * | * | * | * | * | * | * |
| **Lymph nodes** | 0.097 | 0.130 | 0.153 | 0.175 | 0.191 | 0.212 | 0.227 |
| **Muscle** | 0.097 | 0.130 | 0.153 | 0.175 | 0.191 | 0.212 | 0.227 |
| **Oesophagus** | * | * | * | * | * | 0.001 | 0.001 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Female gonads** | 0.920 | 1.254 | 1.510 | 1.737 | 1.898 | 2.082 | 2.210 |
| **Pancreas** | 0.003 | 0.009 | 0.011 | 0.015 | 0.017 | 0.023 | 0.028 |
| **Salivary glands** | * | * | * | * | * | * | * |
| **Bone** | 0.363 | 0.480 | 0.571 | 0.651 | 0.707 | 0.765 | 0.797 |
| **Skin** | 0.094 | 0.106 | 0.115 | 0.122 | 0.128 | 0.135 | 0.140 |
| **Small intestine** | 0.212 | 0.323 | 0.400 | 0.473 | 0.528 | 0.608 | 0.663 |
| **Spleen** | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.009 | 0.010 |
| **Stomach** | 0.001 | 0.004 | 0.005 | 0.007 | 0.008 | 0.011 | 0.013 |
| **Thymus** | * | * | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * | * | * |
| **Urinary bladder** | 0.243 | 0.397 | 0.501 | 0.600 | 0.679 | 0.790 | 0.870 |
| **Uterus** | 0.688 | 0.908 | 1.168 | 1.398 | 1.551 | 1.737 | 1.845 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.248 | 0.342 | 0.413 | 0.477 | 0.523 | 0.580 | 0.619 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.140 | 0.194 | 0.235 | 0.272 | 0.299 | 0.333 | 0.357 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Pelvis LAO 45° male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.019 | 0.027 | 0.035 | 0.041 | 0.048 | 0.054 | 0.059 |
| **Adrenals** | 0.003 | 0.005 | 0.008 | 0.009 | 0.011 | 0.014 | 0.016 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.110 | 0.149 | 0.190 | 0.221 | 0.253 | 0.284 | 0.305 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.003 | 0.004 | 0.006 | 0.009 | 0.009 | 0.012 | 0.016 |
| **Heart** | * | * | * | 0.001 | 0.002 | 0.002 | 0.002 |
| **Kidneys** | 0.010 | 0.016 | 0.023 | 0.028 | 0.033 | 0.039 | 0.045 |
| **Liver** | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.008 |
| **Lungs** | * | * | * | * | * | * | * |
| **Lymph nodes** | 0.102 | 0.126 | 0.151 | 0.170 | 0.188 | 0.205 | 0.216 |
| **Muscle** | 0.102 | 0.126 | 0.151 | 0.170 | 0.188 | 0.205 | 0.216 |
| **Oesophagus** | * | * | * | * | 0.001 | 0.001 | 0.002 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.004 | 0.006 | 0.011 | 0.013 | 0.016 | 0.019 | 0.023 |
| **Prostate** | 0.267 | 0.373 | 0.485 | 0.570 | 0.657 | 0.746 | 0.808 |
| **Salivary glands** | * | * | * | * | * | * | * |
| **Bone** | 0.233 | 0.306 | 0.379 | 0.438 | 0.495 | 0.550 | 0.574 |
| **Skin** | 0.061 | 0.066 | 0.072 | 0.077 | 0.081 | 0.084 | 0.087 |
| **Small intestine** | 0.079 | 0.116 | 0.157 | 0.188 | 0.220 | 0.253 | 0.279 |
| **Spleen** | 0.002 | 0.004 | 0.005 | 0.007 | 0.008 | 0.009 | 0.011 |
| **Stomach** | 0.002 | 0.003 | 0.005 | 0.007 | 0.008 | 0.010 | 0.012 |
| **Male gonads** | 0.026 | 0.040 | 0.056 | 0.070 | 0.084 | 0.097 | 0.111 |
| **Thymus** | * | * | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * | * | * |
| **Urinary bladder** | 0.226 | 0.323 | 0.432 | 0.513 | 0.597 | 0.681 | 0.745 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.038 | 0.053 | 0.070 | 0.083 | 0.096 | 0.109 | 0.119 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.035 | 0.049 | 0.063 | 0.075 | 0.086 | 0.097 | 0.106 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Pelvis LAO 45° female | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.020 | 0.026 | 0.034 | 0.039 | 0.045 | 0.051 | 0.055 |
| **Adrenals** | 0.002 | 0.004 | 0.006 | 0.007 | 0.009 | 0.011 | 0.012 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | * | * | * | * | * | * | * |
| **Colon** | 0.198 | 0.262 | 0.337 | 0.383 | 0.435 | 0.485 | 0.520 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.002 | 0.003 | 0.005 | 0.006 | 0.007 | 0.008 | 0.010 |
| **Heart** | * | * | * | 0.001 | 0.001 | 0.002 | 0.002 |
| **Kidneys** | 0.010 | 0.016 | 0.023 | 0.027 | 0.032 | 0.038 | 0.041 |
| **Liver** | 0.001 | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.007 |
| **Lungs** | * | * | * | * | * | * | * |
| **Lymph nodes** | 0.107 | 0.133 | 0.162 | 0.180 | 0.200 | 0.219 | 0.232 |
| **Muscle** | 0.107 | 0.133 | 0.162 | 0.180 | 0.200 | 0.219 | 0.232 |
| **Oesophagus** | * | * | * | * | 0.001 | 0.001 | 0.001 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Female gonads** | 0.442 | 0.602 | 0.784 | 0.897 | 1.023 | 1.148 | 1.222 |
| **Pancreas** | 0.004 | 0.007 | 0.011 | 0.014 | 0.016 | 0.019 | 0.023 |
| **Salivary glands** | * | * | * | * | * | * | * |
| **Bone** | 0.401 | 0.496 | 0.591 | 0.658 | 0.725 | 0.785 | 0.805 |
| **Skin** | 0.162 | 0.179 | 0.196 | 0.207 | 0.218 | 0.229 | 0.236 |
| **Small intestine** | 0.129 | 0.181 | 0.244 | 0.283 | 0.326 | 0.372 | 0.405 |
| **Spleen** | 0.003 | 0.004 | 0.007 | 0.008 | 0.010 | 0.011 | 0.013 |
| **Stomach** | 0.002 | 0.004 | 0.006 | 0.008 | 0.009 | 0.011 | 0.013 |
| **Thymus** | * | * | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * | * | * |
| **Urinary bladder** | 0.115 | 0.173 | 0.248 | 0.292 | 0.343 | 0.398 | 0.442 |
| **Uterus** | 0.340 | 0.444 | 0.615 | 0.784 | 0.876 | 1.017 | 1.091 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.130 | 0.175 | 0.229 | 0.262 | 0.298 | 0.335 | 0.358 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.079 | 0.106 | 0.137 | 0.158 | 0.179 | 0.202 | 0.216 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Pelvis RAO 45° male | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.023 | 0.034 | 0.039 | 0.047 | 0.053 | 0.062 | 0.068 |
| **Adrenals** | 0.003 | 0.006 | 0.006 | 0.008 | 0.010 | 0.012 | 0.015 |
| **Brain** | * | * | * | * | * | * | * |
| **Colon** | 0.114 | 0.157 | 0.186 | 0.218 | 0.247 | 0.278 | 0.300 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.004 | 0.008 | 0.009 | 0.011 | 0.013 | 0.018 | 0.023 |
| **Heart** | * | * | * | * | 0.001 | 0.002 | 0.002 |
| **Kidneys** | 0.011 | 0.019 | 0.022 | 0.027 | 0.032 | 0.041 | 0.045 |
| **Liver** | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.009 | 0.010 |
| **Lungs** | * | * | * | * | * | * | * |
| **Lymph nodes** | 0.098 | 0.125 | 0.145 | 0.164 | 0.181 | 0.198 | 0.212 |
| **Muscle** | 0.098 | 0.125 | 0.145 | 0.164 | 0.181 | 0.198 | 0.212 |
| **Oesophagus** | * | * | * | * | 0.001 | 0.001 | 0.001 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Pancreas** | 0.004 | 0.008 | 0.009 | 0.012 | 0.015 | 0.021 | 0.023 |
| **Prostate** | 0.321 | 0.468 | 0.557 | 0.659 | 0.754 | 0.860 | 0.933 |
| **Salivary glands** | * | * | * | * | * | * | * |
| **Bone** | 0.263 | 0.349 | 0.417 | 0.486 | 0.545 | 0.584 | 0.624 |
| **Skin** | 0.053 | 0.059 | 0.064 | 0.068 | 0.071 | 0.075 | 0.077 |
| **Small intestine** | 0.082 | 0.129 | 0.152 | 0.185 | 0.217 | 0.259 | 0.286 |
| **Spleen** | 0.001 | 0.003 | 0.003 | 0.003 | 0.004 | 0.006 | 0.007 |
| **Stomach** | 0.001 | 0.003 | 0.003 | 0.004 | 0.005 | 0.008 | 0.009 |
| **Male gonads** | 0.028 | 0.048 | 0.056 | 0.070 | 0.083 | 0.105 | 0.118 |
| **Thymus** | * | * | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * | * | * |
| **Urinary bladder** | 0.267 | 0.401 | 0.477 | 0.574 | 0.662 | 0.773 | 0.845 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.042 | 0.062 | 0.073 | 0.087 | 0.100 | 0.116 | 0.127 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.038 | 0.056 | 0.066 | 0.078 | 0.089 | 0.103 | 0.112 |

(*) values <0.001 mGy/Gycm²

($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication

(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Pelvis RAO 45° female | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| **RBM** | 0.020 | 0.028 | 0.033 | 0.038 | 0.044 | 0.051 | 0.056 |
| **Adrenals** | 0.003 | 0.006 | 0.006 | 0.007 | 0.008 | 0.012 | 0.013 |
| **Brain** | * | * | * | * | * | * | * |
| **Breasts** | * | * | * | * | * | * | * |
| **Colon** | 0.187 | 0.261 | 0.306 | 0.360 | 0.407 | 0.464 | 0.500 |
| **Extrathoracic airways** | * | * | * | * | * | * | * |
| **Gall bladder** | 0.003 | 0.005 | 0.005 | 0.007 | 0.008 | 0.012 | 0.013 |
| **Heart** | * | * | * | * | * | 0.001 | 0.002 |
| **Kidneys** | 0.009 | 0.016 | 0.019 | 0.023 | 0.028 | 0.036 | 0.040 |
| **Liver** | 0.002 | 0.004 | 0.004 | 0.005 | 0.006 | 0.009 | 0.010 |
| **Lungs** | * | * | * | * | * | * | * |
| **Lymph nodes** | 0.111 | 0.141 | 0.162 | 0.184 | 0.203 | 0.224 | 0.238 |
| **Muscle** | 0.111 | 0.141 | 0.162 | 0.184 | 0.203 | 0.224 | 0.238 |
| **Oesophagus** | * | * | * | * | * | 0.001 | 0.001 |
| **Oral mucosa** | * | * | * | * | * | * | * |
| **Female gonads** | 0.476 | 0.673 | 0.798 | 0.949 | 1.081 | 1.223 | 1.316 |
| **Pancreas** | 0.004 | 0.008 | 0.009 | 0.011 | 0.014 | 0.020 | 0.022 |
| **Salivary glands** | * | * | * | * | * | * | * |
| **Bone** | 0.398 | 0.495 | 0.584 | 0.664 | 0.729 | 0.760 | 0.799 |
| **Skin** | 0.162 | 0.179 | 0.193 | 0.206 | 0.217 | 0.227 | 0.235 |
| **Small intestine** | 0.146 | 0.214 | 0.252 | 0.302 | 0.346 | 0.404 | 0.439 |
| **Spleen** | 0.002 | 0.003 | 0.003 | 0.004 | 0.005 | 0.007 | 0.007 |
| **Stomach** | 0.001 | 0.003 | 0.003 | 0.004 | 0.006 | 0.008 | 0.009 |
| **Thymus** | * | * | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * | * | * |
| **Urinary bladder** | 0.121 | 0.195 | 0.232 | 0.284 | 0.336 | 0.411 | 0.453 |
| **Uterus** | 0.325 | 0.426 | 0.585 | 0.734 | 0.840 | 0.944 | 1.039 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.135 | 0.191 | 0.226 | 0.268 | 0.306 | 0.348 | 0.375 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.080 | 0.112 | 0.133 | 0.158 | 0.180 | 0.205 | 0.221 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

### 4.3.8 Organ dose conversion coefficients for vascular and interventional radiology - legs

| Region | Projection | Field size at image Intensifier (cm) |
|---|---|---|
| Upper legs | PA | 40 |
| Upper legs –knees | PA | 40 |
| Knees – lower legs | PA | 40 |

| Upper legs PA male | HVL (mm Al) | | | | |
|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** |
| **RBM** | * | 0.001 | 0.002 | 0.002 | 0.003 |
| **Adrenals** | * | * | * | * | * |
| **Brain** | * | * | * | * | * |
| **Colon** | 0.005 | 0.007 | 0.011 | 0.014 | 0.016 |
| **Extrathoracic airways** | * | * | * | * | * |
| **Gall bladder** | * | * | * | * | * |
| **Heart** | * | * | * | * | * |
| **Kidneys** | * | * | * | * | * |
| **Liver** | * | * | * | * | * |
| **Lungs** | * | * | * | * | * |
| **Lymph nodes** | 0.125 | 0.150 | 0.190 | 0.223 | 0.244 |
| **Muscle** | 0.125 | 0.150 | 0.190 | 0.223 | 0.244 |
| **Oesophagus** | * | * | * | * | * |
| **Oral mucosa** | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * |
| **Prostate** | 0.197 | 0.250 | 0.351 | 0.434 | 0.497 |
| **Salivary glands** | * | * | * | * | * |
| **Bone** | 0.027 | 0.035 | 0.053 | 0.067 | 0.078 |
| **Skin** | 0.103 | 0.112 | 0.126 | 0.136 | 0.143 |
| **Small intestine** | 0.002 | 0.003 | 0.004 | 0.006 | 0.008 |
| **Spleen** | * | * | * | * | * |
| **Stomach** | * | * | * | * | * |
| **Male gonads** | 0.303 | 0.384 | 0.530 | 0.652 | 0.741 |
| **Thymus** | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * |
| **Urinary bladder** | 0.027 | 0.036 | 0.057 | 0.075 | 0.094 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.066 | 0.083 | 0.155 | 0.142 | 0.162 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.031 | 0.040 | 0.055 | 0.067 | 0.077 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Upper legs PA female | HVL (mm Al) | | | | |
|---|---|---|---|---|---|
| **Organ doses (mGy/Gycm²)** | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** |
| **RBM** | * | 0.001 | 0.002 | 0.003 | 0.003 |
| **Adrenals** | * | * | * | * | * |
| **Brain** | * | * | * | * | * |
| **Breasts** | * | * | * | * | * |
| **Colon** | 0.014 | 0.018 | 0.026 | 0.032 | 0.038 |
| **Extrathoracic airways** | * | * | * | * | * |
| **Gall bladder** | * | * | * | * | * |
| **Heart** | * | * | * | * | * |
| **Kidneys** | * | * | * | * | * |
| **Liver** | * | * | * | * | * |
| **Lungs** | * | * | * | * | * |
| **Lymph nodes** | 0.162 | 0.195 | 0.245 | 0.287 | 0.311 |
| **Muscle** | 0.162 | 0.195 | 0.245 | 0.287 | 0.311 |
| **Oesophagus** | * | * | * | * | * |
| **Oral mucosa** | * | * | * | * | * |
| **Female gonads** | 0.069 | 0.088 | 0.125 | 0.163 | 0.190 |
| **Pancreas** | * | * | * | * | * |
| **Salivary glands** | * | * | * | * | * |
| **Bone** | 0.030 | 0.038 | 0.056 | 0.070 | 0.082 |
| **Skin** | 0.112 | 0.121 | 0.133 | 0.144 | 0.149 |
| **Small intestine** | 0.004 | 0.006 | 0.010 | 0.013 | 0.016 |
| **Spleen** | * | * | * | * | * |
| **Stomach** | * | * | * | * | * |
| **Thymus** | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * |
| **Urinary bladder** | 0.026 | 0.034 | 0.054 | 0.072 | 0.089 |
| **Uterus** | 0.061 | 0.079 | 0.119 | 0.149 | 0.177 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.020 | 0.025 | 0.035 | 0.045 | 0.053 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.013 | 0.017 | 0.023 | 0.029 | 0.034 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Upper legs-knees PA male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 |
|---|---|---|---|---|---|
| **RBM** | * | * | 0.001 | 0.002 | 0.002 |
| **Adrenals** | * | * | * | * | * |
| **Brain** | * | * | * | * | * |
| **Colon** | * | * | * | * | * |
| **Extrathoracic airways** | * | * | * | * | * |
| **Gall bladder** | * | * | * | * | * |
| **Heart** | * | * | * | * | * |
| **Kidneys** | * | * | * | * | * |
| **Liver** | * | * | * | * | * |
| **Lungs** | * | * | * | * | * |
| **Lymph nodes** | 0.119 | 0.138 | 0.163 | 0.185 | 0.198 |
| **Muscle** | 0.119 | 0.138 | 0.163 | 0.185 | 0.198 |
| **Oesophagus** | * | * | * | * | * |
| **Oral mucosa** | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * |
| **Prostate** | 0.001 | 0.001 | 0.003 | 0.004 | 0.005 |
| **Salivary glands** | * | * | * | * | * |
| **Bone** | 0.063 | 0.080 | 0.110 | 0.135 | 0.151 |
| **Skin** | 0.119 | 0.128 | 0.141 | 0.151 | 0.157 |
| **Small intestine** | * | * | * | * | * |
| **Spleen** | * | * | * | * | * |
| **Stomach** | * | * | * | * | * |
| **Male gonads** | 0.007 | 0.009 | 0.014 | 0.018 | 0.021 |
| **Thymus** | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * |
| **Urinary bladder** | * | * | * | * | 0.001 |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.0040 | 0.0048 | 0.0064 | 0.0078 | 0.0087 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.0047 | 0.0055 | 0.0069 | 0.0080 | 0.0088 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Upper legs-knees PA female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 |
|---|---|---|---|---|---|
| **RBM** | 0.001 | 0.002 | 0.003 | 0.004 | 0.004 |
| **Adrenals** | * | * | * | * | * |
| **Brain** | * | * | * | * | * |
| **Breasts** | * | * | * | * | * |
| **Colon** | * | * | * | * | * |
| **Extrathoracic airways** | * | * | * | * | * |
| **Gall bladder** | * | * | * | * | * |
| **Heart** | * | * | * | * | * |
| **Kidneys** | * | * | * | * | * |
| **Liver** | * | * | * | * | * |
| **Lungs** | * | * | * | * | * |
| **Lymph nodes** | 0.104 | 0.120 | 0.141 | 0.159 | 0.169 |
| **Muscle** | 0.104 | 0.120 | 0.141 | 0.159 | 0.169 |
| **Oesophagus** | * | * | * | * | * |
| **Oral mucosa** | * | * | * | * | * |
| **Female gonads** | * | * | 0.002 | 0.003 | 0.003 |
| **Pancreas** | * | * | * | * | * |
| **Salivary glands** | * | * | * | * | * |
| **Bone** | 0.075 | 0.095 | 0.127 | 0.155 | 0.171 |
| **Skin** | 0.077 | 0.082 | 0.090 | 0.096 | 0.099 |
| **Small intestine** | * | * | * | * | * |
| **Spleen** | * | * | * | * | * |
| **Stomach** | * | * | * | * | * |
| **Thymus** | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * |
| **Urinary bladder** | * | * | * | 0.001 | 0.002 |
| **Uterus** | * | * | 0.002 | 0.002 | 0.003 |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.0025 | 0.0029 | 0.0037 | 0.0045 | 0.0049 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.0037 | 0.0043 | 0.0053 | 0.0062 | 0.0067 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

| Knees-lower legs PA male<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 |
|---|---|---|---|---|---|
| **RBM** | * | * | * | * | * |
| **Adrenals** | * | * | * | * | * |
| **Brain** | * | * | * | * | * |
| **Colon** | * | * | * | * | * |
| **Extrathoracic airways** | * | * | * | * | * |
| **Gall bladder** | * | * | * | * | * |
| **Heart** | * | * | * | * | * |
| **Kidneys** | * | * | * | * | * |
| **Liver** | * | * | * | * | * |
| **Lungs** | * | * | * | * | * |
| **Lymph nodes** | 0.115 | 0.131 | 0.150 | 0.167 | 0.175 |
| **Muscle** | 0.115 | 0.131 | 0.150 | 0.167 | 0.175 |
| **Oesophagus** | * | * | * | * | * |
| **Oral mucosa** | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * |
| **Prostate** | * | * | * | * | * |
| **Salivary glands** | * | * | * | * | * |
| **Bone** | 0.049 | 0.061 | 0.079 | 0.095 | 0.102 |
| **Skin** | 0.101 | 0.109 | 0.121 | 0.130 | 0.135 |
| **Small intestine** | * | * | * | * | * |
| **Spleen** | * | * | * | * | * |
| **Stomach** | * | * | * | * | * |
| **Male gonads** | * | * | * | * | * |
| **Thymus** | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * |
| **Urinary bladder** | * | * | * | * | * |
| *Pseudo* effective dose male ICRP60 (mSv/Gycm²) ($) | 0.0022 | 0.0025 | 0.0030 | 0.0034 | 0.0036 |
| *Pseudo* effective dose male ICRP103 (mSv/Gycm²) (#) | 0.0037 | 0.0042 | 0.0048 | 0.0054 | 0.0057 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference male organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference male organ doses according to the weighting factors of the ICRP 103 publication

| Knees-lower legs PA female<br>Organ doses (mGy/Gycm²) | HVL (mm Al)<br>2.5 | 3.5 | 4.5 | 5.5 | 6.5 |
|---|---|---|---|---|---|
| **RBM** | * | * | * | * | * |
| **Adrenals** | * | * | * | * | * |
| **Brain** | * | * | * | * | * |
| **Breasts** | * | * | * | * | * |
| **Colon** | * | * | * | * | * |
| **Extrathoracic airways** | * | * | * | * | * |
| **Gall bladder** | * | * | * | * | * |
| **Heart** | * | * | * | * | * |
| **Kidneys** | * | * | * | * | * |
| **Liver** | * | * | * | * | * |
| **Lungs** | * | * | * | * | * |
| **Lymph nodes** | 0.156 | 0.178 | 0.206 | 0.230 | 0.241 |
| **Muscle** | 0.156 | 0.178 | 0.206 | 0.230 | 0.241 |
| **Oesophagus** | * | * | * | * | * |
| **Oral mucosa** | * | * | * | * | * |
| **Female gonads** | * | * | * | * | * |
| **Pancreas** | * | * | * | * | * |
| **Salivary glands** | * | * | * | * | * |
| **Bone** | 0.032 | 0.040 | 0.053 | 0.064 | 0.070 |
| **Skin** | 0.082 | 0.087 | 0.096 | 0.102 | 0.106 |
| **Small intestine** | * | * | * | * | * |
| **Spleen** | * | * | * | * | * |
| **Stomach** | * | * | * | * | * |
| **Thymus** | * | * | * | * | * |
| **Thyroid** | * | * | * | * | * |
| **Urinary bladder** | * | * | * | * | * |
| **Uterus** | * | * | * | * | * |
| *Pseudo* effective dose female ICRP60 (mSv/Gycm²) ($) | 0.0021 | 0.0023 | 0.0027 | 0.0031 | 0.0033 |
| *Pseudo* effective dose female ICRP103 (mSv/Gycm²) (#) | 0.0040 | 0.0046 | 0.0053 | 0.0060 | 0.0063 |

(*) values <0.001 mGy/Gycm²
($) only takes into account reference female organ doses according to the weighting factors of the ICRP 60 publication
(#) only takes into account reference female organ doses according to the weighting factors of the ICRP 103 publication

# 4.4 Effective dose conversion coefficients

## 4.4.1 Effective dose conversion coefficients for interventional cardiology

| | HVL (mm Al) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Effective dose (mSv/Gycm²)** (*) | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** | **9.5** | **10.5** | **11.5** |
| LAO 0° CAUD 0° (20cm) | 0.117 | 0.185 | 0.245 | 0.285 | 0.313 | 0.360 | 0.394 | 0.425 | 0.453 | 0.466 |
| LAO 0° CAUD 25° (17cm) | 0.102 | 0.168 | 0.228 | 0.269 | 0.293 | 0.343 | 0.379 | 0.411 | 0.441 | 0.457 |
| LAO 15° CAUD 0° (17cm) | 0.123 | 0.196 | 0.261 | 0.305 | 0.334 | 0.386 | 0.424 | 0.458 | 0.490 | 0.505 |
| LAO 30° CAUD 0° (17cm) | 0.135 | 0.199 | 0.255 | 0.294 | 0.321 | 0.364 | 0.396 | 0.399 | 0.451 | 0.464 |
| LAO 45° CAUD 0° (20cm) | 0.172 | 0.245 | 0.307 | 0.350 | 0.387 | 0.429 | 0.462 | 0.493 | 0.519 | 0.531 |
| LAO 45° CAUD 25° (17cm) | 0.105 | 0.169 | 0.218 | 0.252 | 0.278 | 0.314 | 0.342 | 0.367 | 0.389 | 0.400 |
| LAO 45° CRAN 25° (17cm) | 0.134 | 0.206 | 0.262 | 0.301 | 0.331 | 0.372 | 0.403 | 0.431 | 0.455 | 0.468 |
| LAO 90° CAUD 0° (17cm) | 0.118 | 0.183 | 0.241 | 0.280 | 0.309 | 0.352 | 0.385 | 0.414 | 0.440 | 0.453 |
| RAO 30° CAUD 0° (17cm) | 0.176 | 0.254 | 0.320 | 0.365 | 0.404 | 0.448 | 0.484 | 0.517 | 0.545 | 0.555 |
| RAO 30° CAUD 0° (20cm) | 0.173 | 0.250 | 0.316 | 0.361 | 0.399 | 0.444 | 0.480 | 0.513 | 0.540 | 0.551 |
| RAO 30° CAUD 25° (17cm) | 0.110 | 0.167 | 0.216 | 0.250 | 0.276 | 0.312 | 0.341 | 0.366 | 0.388 | 0.399 |
| RAO 30° CRAN 25° (17cm) | 0.140 | 0.210 | 0.271 | 0.312 | 0.345 | 0.389 | 0.423 | 0.454 | 0.481 | 0.492 |

(*) Effective dose according to the ICRP 103 publication

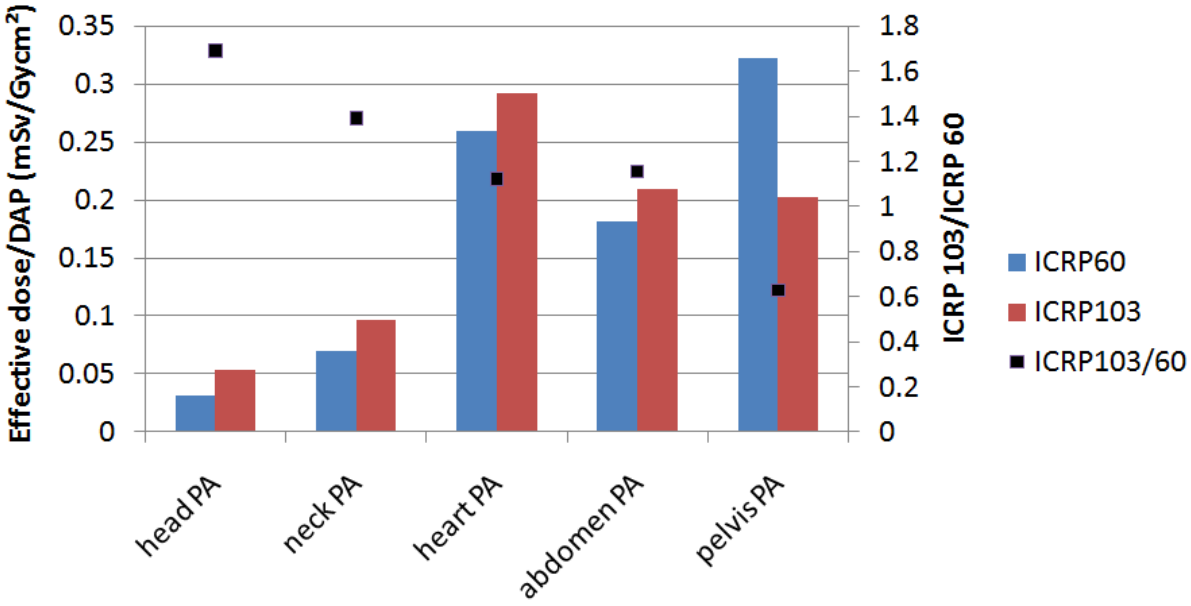
## 4.4.2 Effective dose conversion coefficients for vascular and interventional radiology

| | HVL (mm Al) | | | | | | |
|---|---|---|---|---|---|---|---|
| **Effective dose (mSv/Gycm²)** (*) | **2.5** | **3.5** | **4.5** | **5.5** | **6.5** | **7.5** | **8.5** |
| Head PA | - | 0.036 | 0.043 | 0.050 | 0.055 | 0.063 | 0.068 |
| Head LAO 45° | - | 0.036 | 0.045 | 0.052 | 0.059 | 0.065 | 0.070 |
| Head RAO 45° | - | 0.039 | 0.046 | 0.053 | 0.060 | 0.067 | 0.073 |
| Head LLAT | - | 0.045 | 0.056 | 0.063 | 0.066 | 0.075 | 0.081 |
| Head RLAT | - | 0.049 | 0.060 | 0.066 | 0.074 | 0.081 | 0.086 |
| Neck PA | 0.044 | 0.065 | 0.079 | 0.093 | 0.103 | 0.118 | 0.129 |
| Neck LAO 45° | 0.056 | 0.071 | 0.088 | 0.099 | 0.111 | 0.123 | 0.131 |
| Neck RAO 45° | 0.061 | 0.079 | 0.092 | 0.105 | 0.118 | 0.130 | 0.139 |
| Thorax LAO 45° | 0.065 | 0.091 | 0.122 | 0.141 | 0.163 | 0.186 | 0.202 |
| Thorax RAO 45° | 0.052 | 0.079 | 0.093 | 0.113 | 0.131 | 0.156 | 0.171 |
| Abdomen PA | 0.089 | 0.136 | 0.169 | 0.200 | 0.224 | 0.259 | 0.283 |
| Abdomen LAO 45° | 0.074 | 0.102 | 0.135 | 0.155 | 0.179 | 0.202 | 0.219 |
| Abdomen RAO 45° | 0.068 | 0.100 | 0.117 | 0.140 | 0.161 | 0.187 | 0.204 |
| Abdomen LLAT | 0.205 | 0.259 | 0.320 | 0.360 | 0.380 | 0.428 | 0.456 |
| Abdomen RLAT | 0.118 | 0.158 | 0.195 | 0.217 | 0.244 | 0.266 | 0.286 |
| Pelvis PA | 0.095 | 0.134 | 0.164 | 0.190 | 0.210 | 0.236 | 0.254 |
| Pelvis LAO 45° | 0.057 | 0.077 | 0.100 | 0.116 | 0.133 | 0.149 | 0.161 |
| Pelvis RAO 45° | 0.059 | 0.084 | 0.099 | 0.118 | 0.134 | 0.154 | 0.167 |
| Upper legs PA | 0.022 | 0.028 | 0.039 | 0.048 | 0.055 | - | - |
| Upper legs-knees PA | 0.004 | 0.005 | 0.006 | 0.007 | 0.008 | - | - |
| Knees-lower legs PA | 0.004 | 0.004 | 0.005 | 0.006 | 0.006 | - | - |

(*) Effective dose according to the ICRP 103 publication

## 4.5 Comparison of ICRP 60 and ICRP 103 effective doses

For illustration, a comparison between effective dose conversion factors based on both ICRP 60[21] and ICRP 103 publications is given in the figure below. Differences can be attributed to the difference in organs that are included in the effective dose according to ICRP 60 and ICRP 103. In addition, the changes in weighting factors will have significant influence.

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