ICRP Task Group 113 Workshop: Reference Organ Absorbed and Effective Dose Coefficients for Common Radiographic Examinations

Q&A Report | 22 July 2024

#	Question	Answer	Answered By	Contact
1	Thanks for the interesting introduction. I wonder if the calculations have been done for reference male and female at various ages above 18 as well, or only for various ages of male and female children. Thank you!	The ICRP reference ages are newborn, 1, 5, 10, 15 year-old and adult. Therefore, the calculations covered these ages. Characteristics for the Reference Person are to be found at ICRP Publication 89 (2002)	Nina Petoussi-Henss	npetoussi-henss@bfs.de
2	Where or how shall we get the supplementary documents?	Supplementary files are part of the Publication. They can then be downloaded from the SAGE or ICRP web site when the report is published.	Nina Petoussi-Henss	npetoussi-henss@bfs.de
3	the skeletal response function (fluence to skeletal dose conversion) is available for adult in icrp publication as a separate table D1 in icrp 116 but for paediatric phantoms these have still not be made available in the recent publications. Will these be available in this publication?	The skeletal fluence to dose response functions for paediatric ages will be available at the forthcoming Publication 155. The present publications provides practical instructions on how to implement these in Monte Carlo codes.	Nina Petoussi-Henss	npetoussi-henss@bfs.de
4	Please is there any simple formula that employ the use of KV and mAs for diagnostic Radiographer to calculate the icrp's recommended absorbed dose for all conventional x ray examinations?	You can use thoretical output factors - and then use proportionality rules. I.E., output is proportional to kV^2 and mAs. Or if you have just one output value, you can apply the same proportionality rules.	David Sutton	d.g.sutton@icloud.com
5	the excel example is very intriguing. I have one query regarding the simulation. when we are doing abdominal scan, the radiation field size covers the abdominal region. it may happen that the extreme parts of the body for e.g. feet or other portions will receive very less radiation and hence will result very less absorbed dose and hence large mc uncertainties. in this situation how has the effective dose been calculated? do we need to discard the regions with large mc uncertainty while calculating effective dose in such cases?	Thank you for your question. Yes, absorbed doses to organs/tissues outside beam field could have larger uncertainties but the values of dose coefficients are very very small, compared to those for organs inside the beam field. So, the effective doses are numerically mostly determined by the organ doses inside the beam field. The contribution of the organ doses outside the beam field to effective dose is indeed neglisible.	Yeon Soo Yeom	ysyeom@yonsei.ac.kr
6	How do the estimated doses from this new methodology compare to those from the older models?	We have performed some comparisons, mainly with NRPB-SR-262 Report (Hart et al, 1994) and there do not seem to be significant discrepancies.	David Sutton	d.g.sutton@icloud.com
7	Question to Yeon Soo: Why was there a discrepancy in the calculation of the eye lens dose between the convolution method and the MC method?	As mentioned before, when the eye lens is far from the beam field, as for the example shown (abdominal AP examination), the lens dose coefficient has a large uncertatity in MC method.	Yeon Soo Yeom	ysyeom@yonsei.ac.kr
8	does the dose viewer have functionality for radiotherapy CBCT dose estimates?	not at this time.	Kimberly Applegate	keapple5123@gmail.com
9	When Cone Beam CT be considered - it is widely used in dental and radiotherapy pre-treatment examinations	There is a dedicated task group (TG 116) for CBCT in radiotherapy. For the present work., we are not reviewing dental imaging for the present work.	Kimberly Applegate	keapple5123@gmail.com
14	One important radiation protection issue is the exposure of the fetus. What are the plans for incorporating the dose conversion factors to extend the current work?	Task Group 113 is also considering fetal dosimetry for radiography and CT. Work is in progress which would result in a separate publication	Nina Petoussi-Henss	npetoussi-henss@bfs.de
15	What about adipose patients? There are voxel phantoms for adipose physiognomy on the market, although not from ICRP. Are there any plans to consider this patient population, too? Or how can we convert from the results for the reference phantoms?	Yes, we will address obese phantom size when we complete the program of work to demonstrate the variabilty of dose coefficients.	Kimberly Applegate	keapple5123@gmail.com
16	because we mostly don't use air kerm index when exposing. we only have these mAs and KV. Yes we refer to the body density or habitus	If you only have kV and mAs then you should scale the output (measured during QA in terms of mGy/mAs at a specific kV, and at 1m)	David Sutton	d.g.sutton@icloud.com

ICRP Task Group 113 Workshop: Reference Organ Absorbed and Effective Dose Coefficients for Common Radiographic Examinations

Q&A Report | 22 July 2024

#	Question	Answer	Answered By	Contact
17	Considering the sizable patient dose that may potentially be received from cone beam CT (CBCT), is there any way these methods can be extended for CBCT?	At this time, it is not included but I agree that it is an important area for the future.	Kimberly Applegate	keapple5123@gmail.com
18	I would like to express my gratitude for the enlightening presentation. could you kindly provide insights on the calculation of x ray tube output pertaining to this study?	Ideally you should measure output at 1 m in terms of mGy/mAs at a particular kV and scale appropriately. You use a theoretical value obtained froma spectrum program, but that would increase uncertainty.	David Sutton	d.g.sutton@icloud.com
19	Are these simulations similar to the one adopted in PCXMC monte carlo ?		Nina Petoissi-Henss	npetoussi-henss@bfs.de
20	as some NRD reference for CT en radiotherapy	Out of scope	David Sutton	d.g.sutton@icloud.com
21	TG116 is not producing dose coefficients for CBCT though. Is there a plan to address this as it is really needed?	This is true and I agree that this is important for a future group. There are no current plans.	Kimberly Applegate	keapple5123@gmail.com
22	kindly recommend software free downloaded fro claculating organ dose for CT and radiography	Radiography: once the Report is published, the ICRP Dose viewer (already available) will be extended to include dose coefficients for selected bemsstrahlung spectra. Moreover, another viewer (excel-based) will be part of the electronic supplement. CT: once the Report for CT will be published, a web-based software will be available	Kimberly Applegate; Nina Petoussi-Henss	keapple5123@gmail.com; npetoussi-henss@bfs.de
23	whats the name of the app?	ICRP Dose Viewer	Kelsey Cloutier	kelsey.cloutier@icrp.org
24	Would your report will have some reference to fluroscopy modality/images?	No, this will be a separate report.	Kimberly Applegate	keapple5123@gmail.com
25	what about fluoroscopic spectra with hight hvl value? about 7 Al mm equivalent	we will have a separate report for fluoroscopy.	Kimberly Applegate	keapple5123@gmail.com
26	as a medical physicist and RPO , USUALLY RADIOGHRAPHERS asked about whether we use ADR (AUTOMETED DOSE REDUCTION) during exposure patients ?	Do you mean Automatic Exposure Control? If so, the kV and mAs are displayed after the exam as is the KAP on units that have that capability.	David Sutton	d.g.sutton@icloud.com
27	David, can the convolution method be applied to any novel filter so long as you have the spectrum distribution with matching kV and target in the report? Could you please repeat what spectrum generator you utilised rather than Spekcalc? Thank you!	Yes. I used IPEM Report 78, which has potentially more filters than Spekcalc.	David Sutton	d.g.sutton@icloud.com
28	The dose viewer currently only includes dose due to intake of radionuclides? There seems to be nothing on radiography	Yes, this is currently the case. Once the present Report on Radiography is published, the ICRP Dose Viewer will be extended to include the doses for selected bremsstrahlung spectra.	Kimberly Applegate	keapple5123@gmail.com
29	in my opinion if radiographers did not calibrate the machines and not doing QA . SO we got overdose patients.	If you have the factors eg KAP or EAK, you can use the dose coefficients of the report to analyse the impact of the overdose. Discussed in the report	David Sutton	d.g.sutton@icloud.com
30	what about ambient temperature and pressure? would you consider also the x-ray machine's status, quality-wise?	These will impact on the overall uncertainty. If your KAP meter or ionisation is not T & P corrected, then there will be some incerase in the uncertainity. See also IEC standards.	David Sutton	d.g.sutton@icloud.com
31	Can i consider that the effective dose calculated by convolution is a personalised dose ?	no these are not personalised doses. The effective dose is the dose that the reference patient would receive under the defined exposure conditions.	Kimberly Applegate; Nina Petoussi-Henss	keapple5123@gmail.com; npetoussi-henss@bfs.de
32	Will the CT work model the effect of TCM/AECs on effective dose?	Yes, the CT report will include a theoreical ATCM model. This will not mimic any specific vendor's implememtation.	Kimberly Applegate	keapple5123@gmail.com

ICRP Task Group 113 Workshop: Reference Organ Absorbed and Effective Dose Coefficients for Common Radiographic Examinations

Q&A Report | 22 July 2024

#	Question	Answer	Answered By	Contact
33	Balancing radiation dose and image quality is important. The task group works for the quantification and evaluation of the radiographic workflow, but any plans to quantitatively assess the image quality?	Balancing image quality and ptient dose is the essence of optimisation. This has been considered in detail by ICRP Task Group 108. Methods for image quality asessment are discussed in its first publication ICRPPublication 154 (in press). Practical implememntatios will be discussed in the second report - submitted for publication.	David Sutton	d.g.sutton@icloud.com
34	Was bone composition considered as a function of age in adult females?	Different bone compositions have been simulatedfor the reference ages considered i.e. newborn, 1, 5, 10, 15 years old and and adult. For adults (males and females), one single bone composition was considered.	Nina Petoussi-Henss	npetoussi-henss@bfs.de