

BACKGROUND

In large part, the current System of Radiological Protection for humans is based on population averaged approaches for practical and ethical reasons, for example in the age and sex-averaged values of Effective dose. There are nonetheless some areas where stratification is applied; detriment for example is calculated for the entire population and for a working age population in ICRP Publication 103, also an additional restriction to occupational dose limits is applied to pregnant workers. ICRP Publication 147 sets out an approach whereby Effective dose can be considered as an approximate indicator of possible risk, recognizing the lifetime risks vary with age at exposure, sex, and population groups (for example, Western European, Asian, North American etc).

Principally, within the medical imaging community there is an increasing interest in having better indicators of risk from procedures for the individual patient. Furthermore, recent developments in dosimetry, particularly in the libraries of phantoms that encompass age, sex, height, weight and posture, make it more feasible to provide more precise organ/tissue-specific doses accounting for these factors.

Regarding cancer risk, a review of the method of calculation of the radiation-related detriment has been recently performed. As a result, a revision of the method has been launched, and proposes to include an update of cancer risk models and reference rates, better consideration of variations with region, sex and age, and improvement of severity weighting and interpretability.

MANDATE

- Identify the elements of individualisation or stratification (including treatment of sub-groups, such as age and sex) of dose, risk, and radiological protection already used in the current System, and in current practice.
- Identify situations where an additional individualisation / stratification of dose, risk, and radiological protection could be appropriate. These situations will especially, but not only, consider the protection of patients, bearing in mind that cumulative dose relates to lifetime radiation risks and these must be considered alongside all cancer risk factors, including other potentially carcinogenic exposures when evaluating risk to an individual.
- Identify situations where population averaging approaches are appropriate or not.
- Consider the impact of uncertainties, both in dose and risk, and opportunities for their reduction.
- Consider benefits, challenges of, and approaches to communication of risk on the individual / stratified level, and how this might be implemented.

- Identify potential consequences of adopting individualised / stratified approaches on the System and its application in different domains, illustrated with case studies and with specific consideration of ethical issues.

PROCESS

STAGE 1

- Task Group will review and identify the areas where elements of individualisation / stratification are employed within the System of Radiological Protection
- Main Sources: ICRP Publications 103 and 147

STAGE 2

- An open topical meeting organised in cooperation with several organisations in formal relations with ICRP and others, with particular focus on the medical sector
- Aim: to identify current areas of individualisation / stratification and consider where individualisation / stratification may lead to better protection from the harms of radiation exposure

STAGE 3

- Publication of the report in Annals of the ICRP
- Aim: to conclude whether the System of Radiological Protection currently includes elements of individualisation / stratification and consider where further such individualisation / stratification could lead to better protection from the harms of radiation exposure

PROGRESS TO DATE AND ANTICIPATED EVENTS

- The TG has met on nine occasions online, with members exchanging views on the issue of individualisation / stratification.
- The TG is undertaking calculations of cancer lifetime risk and detriment stratified by age, sex and background population using ICRP103 methodology as updated in ICRP Publication 152.
- A workshop will be organised and hosted to facilitate wider radiation protection community involvement in the identification of relevant issues and topics for consideration
- Online open topical workshop will be organised during the public consultation of the group report.
- A series of papers will be published on the topic in open access literature.
- Materials for ICRPædia will be developed.

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