Task Group 108: Optimisation of Radiological Protection in Digital Radiography, Fluoroscopy, and CT in Medical Imaging

Members
Colin Martin (Chair), University of Glasgow, UK
Kimberly Applegate, University of Kentucky, USA
John Damilakis*, University of Crete, Greece
Dina Husseiny*, Radiologist, Egypt
Mika Kortesniemi, University of Helsinki, Finland
Helen Khoury*, Universidade Federal Pernambuco, Brazil
Maria Perez*, Radiation oncologist, Argentina, WHO
David Sutton, Ninewells Hospital, Dundee, UK
Jenia Vassileva*, IAEA, Bulgaria
* Corresponding members

Aims and summary
The table of contents for the report is shown left. An aim to is to provide more exploration of image quality requirements for diagnostic tasks, as this is an essential part of the optimisation process. Chapters will be included on the major x-ray imaging modalities, setting out the requirements needed to understand the operation of x-ray equipment that continues to become more sophisticated and complex. Application of new facilities means that lower doses can potentially be achieved, but if users do not understand the interplay of different factors this can lead to an increase in dose rather than a decrease.

Radiology centres are encouraged to set up optimisation teams comprising radiographers, radiologists, and medical physicists with the aim of reviewing and optimising clinical protocols for each modality. This will require training of multidisciplinary groups of local professionals in optimisation requirements, which might be through visits to international centres. National surveys of patient doses, initially for CT and radiography, can highlight broad needs for optimisation, and may also be used in establishing DRLs for identifying facilities to target where optimisation is required. Specialist national teams might visit centres to optimise protocols throughout a country, especially CT.

The stage in the optimisation process depends on the systems already in place and the level of expertise of staff. The development stages can be described in terms of three aspects that can be described as:
1) Professional skills, collaboration and management
2) Methodology and technology
3) Organisational processes and documentation.

Development stages (C, B, and A) are illustrated below.

Digital imaging presents challenges particularly when it is introduced into centres with more limited facilities and expertise. X-ray units are more complex and dose levels for imaging can be unreasonably high without users realising, because greyscale images are optimised for viewing.

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