CT Radiation Dose Optimisation Program

It is now a legal requirement to review your facility’s CT radiation doses against diagnostic reference levels (DRLs).

The Australian Radiation Protection and Nuclear Safety Agency’s (ARPANSA), Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (2008) requires that:

The Responsible Person must establish a program to ensure that radiation doses administered to a patient for diagnostic purposes are:

- periodically compared with diagnostic reference levels (DRLs) for diagnostic procedures for which DRLs have been established in Australia; and
- if DRLs are consistently exceeded, reviewed to determine whether radiation protection has been optimised.

DRLs, together with an optimisation process, help reduce unnecessary patient doses and the consequent radiation risks.

Biomedical Technology Services (BTS) qualified experts have worked through the optimisation “problem” on each of the major CT vendors’ systems and documented the process in dose optimisation guides which are available for purchase or can be implemented by BTS to ensure that you meet your legal requirements.

Implementation service

Let BTS take the hassle out of optimising the CT radiation doses for you with our complete implementation service performed by a BTS qualified expert.

BTS qualified experts can work with your practice staff to ensure that your CT system’s doses are optimised and meet legal obligations and ensure the best outcomes for your facility and patients.

The key elements of the program include:

- dose survey tailoring to the site: decisions regarding which protocols to survey and best methods for extracting data e.g. RIS based examination search with data extracted from PACS or CT workstation based survey
- pre-optimisation dose survey
- data processing and analysis of first survey
- documentation of first pass optimisation recommendations
- implementation of protocol changes
- review of image quality acceptability
- post-optimisation dose survey
- data processing and analysis of follow-up survey
- final report of outcomes.

Participation from practice staff will include:

- orientation of BTS qualified experts to the practice
- involvement in discussions regarding protocol changes
- radiologist review of image quality acceptability.
CT radiation optimisation guides
To optimise the CT system yourself purchase a CT radiation dose optimisation guide.
CT radiation dose optimisation guides are available for the following CT systems:

- GE
- Philips
- Siemens
- Toshiba.

The guides have been developed by BTS qualified experts for all major CT systems and can be implemented by certified medical physicists1 or an advanced CT radiographer in consultation with a radiologist. These guides run through the process step-by-step providing key supporting information to facilitate effective protocol optimisation, from initial dose surveying through protocol modification to a final dose re-survey to verify the results.

An appendix showing the results of experimentation designed to explore the detailed characteristics of each manufacturer’s radiation dose management tools is provided.

Successful optimisation requires an in depth understanding of these tools.

Further information
Contact BTS to organise our implementation service or to purchase a dose optimisation guide.
Phone 1300 400 261 or email bts@health.qld.gov.au.

References


1 Medical physicists certified by the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) (Qualified Experts as defined by the Code) must be available to CT practices specifically for this kind of purpose.