ICRP TG108 part 2

WORKSHOP:

Optimisation of Radiological Protection in Digital Radiology Techniques for Medical Imaging

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Brazilian College of Radiology and SLARP
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No conflicts of interest
Latin Safe mission

To promote the radiological protection of patients in Latin America following “Bonn Call for Action”

Latin Safe President: Martha Edith Oyuela

Latinsafe.org
Optimisation

DRL project implementation

ADULT CT

PEDIATRIC CT

Patient radiation protection

Engagement
Multiprofessional team

DATA COLLECTION
Equipment/patient dose/clinical indication/BMI

ANALYSES
ICRP 135/publication

TRAINING OPTIMISATION
Onsite and online workshop
Task group/Local Societies

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29 Hospitals
New 50 Hospitals
allowing progress to be tracked. Whichever method is implemented, it needs to be easy to use and interrogate, and enable data to be easily found and shared, to encourage appropriate actions.

Such systems make follow-up of patients conceptually easier, so that checks can be made readily to identify problems, trace them and find out whether the problems have been fixed. Processes could be set up to check protocol use, follow dose trends, provide current dose values, and identify outliers. Results could be highlighted in dose histograms showing dose distributions and allow individual examination data to be interrogated in order to allow investigation to determine possible causes of anomalies. Inclusion of the weight or patient dimensions in such a system would provide even more potential for analysis and improvement.

They will however require increased human resource to adequately implement and will need to be subject to QC tests.

Some of the steps discussed in this section are set out in Table 4.2 in terms of the levels of optimisation discussed in Section 3.

Table 4.2 Arrangements that should be in place for facilities at different levels.

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>D:</strong> Pre-optimisation level (Basic infrastructure)</td>
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<tr>
<td>• Availability of radiation instruments for measurement of radiation dose and exposure parameters.</td>
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<td>• Availability of simple protocols setting out measure equipment performance.</td>
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<td>• Purchase of range of instruments sufficient for carrying out QC tests on all imaging modalities.</td>
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<td>• X-ray equipment has displays of dose parameters (e.g. KAP for radiography and fluoroscopy and displays of CTDI\textsubscript{vol} and DLP on CT scanners)</td>
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<tr>
<td><strong>C:</strong> Basic (Level D plus)</td>
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<tr>
<td>• Calibration of all KAP meters, and displays of CTDI\textsubscript{vol} and DLP</td>
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<td>• Dose audits performed every 3 years</td>
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<tr>
<td>• Dose audit results fed back to radiographers and radiologists periodically</td>
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<tr>
<td>• In process of developing national DRLs</td>
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<td><strong>B:</strong> Intermediate (Levels D and C plus)</td>
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<tr>
<td>• Standardisation of protocol names for procedures</td>
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<tr>
<td>• Radiologists have agreed arrangement for development of examination protocols</td>
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<tr>
<td>• Agreed codes for identifying more complex examinations</td>
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<tr>
<td>• National DRLs established for a wide range of procedures</td>
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<tr>
<td>• Annual survey of patient doses on wide range of procedures</td>
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<tr>
<td>• Local DRLs and typical values set by organisation linked to local dose surveys</td>
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<tr>
<td>• Results of patient dose audit included in annual review of examination protocols</td>
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<tr>
<td><strong>A:</strong> Advanced (Levels D, C and B plus)</td>
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<tr>
<td>• Continual feedback and comparison of patient dose results with typical values</td>
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<td>• Application of dose management system software</td>
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Optimisation Challenges

Current scenario:
- Sub-optimal skill in dose parameters, AI instruments, dose monitoring control;
- Heterogeneous technology scanners;
- Clinical indication and patient size (BMI);
- Need to optimize adult and pediatric CT.

Opportunities
Education and training; DRL implementation; revision protocols; update scanners; improve justification, and optimisation.
THANKS!

GRACIAS!

OBRIGADA!

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