Australian Government

Australian Radiation Protection and Nuclear Safety Agency

arpansa

National Diagnostic Reference Level Service

Newsletter No.1 2018

Welcome to the first ARPANSA NDRLS newsletter for 2018

This edition includes important information regarding changes to the multi-detector CT (MDCT) DRLs and a reminder that DIAS auditors will soon be expecting evidence of dose comparisons in nuclear medicine.

Website update

The NDRLS section of ARPANSA's website has been updated to coincide with the release of the new MDCT DRLs. We hope that you will find the new site a valuable resource for information about DRLs in Australia. If you would like more information about DRLs, guidance on your responsibilities or a summary of the data submitted to the NDRLS visit **our website**.

MDCT web portal service interruption

The MDCT web portal will be unavailable for users on the morning of 2 July 2018 while it is updated to accommodate the new DRLs. See right.

MDCT DRL update

Background

The MDCT DRLs for adult patients have been updated for the first time since their release in 2012. The new DRLs are based on the 75th percentile of the doses submitted to the NDRLS during 2017 – if you submitted data to us last year you have helped shape the DRLs.

The update was required due to the general trend towards lower doses – the old DRLs were no longer representative of common practice, with the main driver being technological changes, including the prevalence of iterative reconstruction. In addition to a general lowering of the DRL quantities, there have been changes to the scan types covered by the DRLs. Two new protocols, one for soft-tissue neck scans and one for cervical-spine scans have replaced the original neck protocol. A kidney-ureter-bladder (KUB) protocol has also been introduced.

The scan ranges and clinical indications of the remaining protocols have been reviewed and updated. For many protocols, the listed clinical indications have been narrowed. See **our website** for details.

Also provided on our website are the **25th and 50th percentiles of the dose distributions used to derive the DRLs**. Comparing your doses against these percentiles will give you a better indication of how you compare with your Australian colleagues. You can also compare your doses to your peers that use iterative reconstruction and those that use filtered back-projection.

A review of paediatric DRLs is currently underway, but new DRLs are not expected in the short term.

Transitional arrangements

On 1 July 2018, the new MDCT DRLs for Adults will come into effect. From this date, facility dose audits should be compared against the new MDCT DRLs.

The NDRLS MDCT portal will be updated on 2 July 2018 to enable surveys to be compared against the new MDCT DRLs. Any surveys for head, chest, abdomen-pelvis, lumbar spine and chest-abdomen-pelvis scan regions started before 2 July 2018 but completed after the portal update will be compared against the new DRLs. Neck surveys started before 2 July 2018 will be compared against the existing neck DRL.

Accreditors for the Diagnostic Imaging Accreditation Scheme (DIAS) have been advised to accept facility dose comparisons conducted against the existing DRLs until 31 December 2018.

From 1 January 2019, as part of an application for accreditation (including re-accreditation), accreditors will require evidence that policies for undertaking a DRL comparison have been updated to include the new MDCT DRLs, and that audits conducted after 1 January 2019 have been compared against the new MDCT DRLs.

State and Territory radiation regulatory authorities have also been briefed on the changes through discussions within ARPANSA's Radiation Health Committee. The radiation regulatory authorities have also agreed to accept dose comparisons conducted against the existing DRLs until 31 December 2018 and will require that audits conducted after 1 January 2019 be compared against the new DRLs.

New MDCT DRLs for Adults (15+)

Table 1: Pending multi detector computed tomography diagnostic reference levels for adults

Scan Region [1]	Description (e.g. indication) [2]	$CTDI_{vol}$ [3] (mGy)	DLP [3] (mGy.cm)
Head	Non-contrast brain (trauma/headache)	52	880
Cervical spine	Non-contrast (trauma)	23	470
Soft-tissue neck	Post contrast (oncology)	17	450
Chest	Post contrast (oncology)	10	390
Abdomen-pelvis	Post contrast (oncology)	13	600
Kidney-ureter-bladder [4]	Non-contrast (suspected renal colic)	13	600
Chest-abdomen-pelvis	Post contrast (oncology)	11	940
Lumbar spine	Non-contrast (degenerative pain)	26	670

Notes:

*[1] Diagrams of the scan regions and additional protocol information are available from the updated **scan region descriptor page**.*

[2] The scans included in a dose comparison do not necessarily have to be for the listed phase/indication; however, the exposure parameters of the included scans must match what would be used for the listed phase/indication.

[3] Dose indices for the head region are based on the 16 cm reference phantom. Dose indices for all other scan regions are based on the 32 cm reference phantom.

[4] Kidney-ureter-bladder (KUB) is a new category. Provisional DRLs for this category have been set using the data for abdomen-pelvis. This choice is expected to be conservative; facilities should not be overly concerned if their FRL is well below the DRL. Data will be reviewed within two years to set specific DRLs that reflect current practice.

Nuclear medicine

A reminder

The nuclear medicine DRLs have been in effect since July 2017. At the time of their introduction, the Diagnostic Imaging Accreditation Scheme (DIAS) Advisory Committee, in consultation with assessors, established a 12 month grace period, during which applicants would not require nuclear medicine DRL records. Sunday 1 July 2018 marks the end of this grace period; to see what DIAS expects from facilities see the **advisory statement**.

Unlike for MDCT, ARPANSA is not running a continuing survey for nuclear medicine providers. You can find the DRLs and information on how to compare your doses to the DRLs on **our website**.

Preventing unintended and accidental exposures

ARPANSA participated in a recent IAEA technical meeting on 'Preventing unintended and accidental exposures in nuclear medicine'. Participants reviewed the causes of and the contributing factors to unintended and accidental exposures during the stages of the nuclear medicine process and defined actions for preventing such incidents. This information will be summarised in a publication for release later this year. Key outcomes also included an ongoing dialogue with relevant international bodies to learn from incidents in the nuclear medicine space and to provide education to practitioners to ensure high level of radiation protection of patients. The meeting recommended upgrading the IAEA voluntary reporting and learning system SAFRON (Safety in Radiation Oncology) to include also radionuclide therapy.

Further information can be found on the **IAEA Radiation Protection of Patients (RPOP) website**.

Medical exposure code

As some may be aware, ARPANSA is drafting a new *Code for Radiation Protection in Medical Exposure* intended to replace RPS 14. The draft was open for public comment from February to May this year and garnered 26 submissions. You can view the draft code, and some of the submitted comments, by visiting **our wesbite**.

Contact us

arpansa.gov.au/ndrls **ndrld@arpansa.gov.au** **1800 033 972**