

## ESTABLISHMENT OF DIAGNOSTIC REFERENCE LEVEL (DRL) FOR COMPUTED TOMOGRAPHY (CT) EXAMINATIONS FROM SELECTED HOSPITALS IN SRI LANKA

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Computed Tomography (CT) examinations deliver higher patient dose in comparison with other conventional x-ray examinations. The aim of this study was to establish local diagnostic reference levels (DRLs) for selected CT examinations. This was a cross-sectional study investigating local DRL in selected hospitals from 16 and 640 slice CT scanners in Sri Lanka. Three hundred and fifty adult patients who underwent CT scans of non-contrast and contrast brain, contrast enhanced chest, HRCT chest, KUB, contrast enhanced abdomen and chest-abdomen examinations were included. Patients' parameters (height, weight, age and sex) and CT scan parameters (kVp, effective mAs, total scan time, slice thickness, CTDI<sub>(vol)</sub> and DLP) were collected. The mean age of the patients was 53.25(±16) years and the age range was 19 - 89 years. Local DRLs were proposed to establish as the 75<sup>th</sup> percentile of CTDI<sub>(vol)</sub> and the DLP values of NC- brain, CE-brain, KUB, CE-chest, HRCT, CE-abdomen and Chest-abdomen obtained from the 16 slice

CT machine. LDRLs for adult examinations determined for NC- brain, CE-brain, KUB, CE-chest, HRCT, CE-abdomen and Chest-abdomen in terms of CTDI<sub>(vol)</sub> were 70.90 mGy, 141.8 mGy, 11.80 mGy, 17.70 mGy, 12.80 mGy, 45.27 mGy and 27.02 mGy respectively. Effective doses for the examinations NC-brain, CE-chest and CE-abdomen were 2.60 mSv, 7.65 mSv and 20.7 mSv respectively and they were higher than the AAPM reference levels. The study's DRLs values were generally higher than the ICRP 2007 recommended values. Moreover according to the research, DRLs values of the commonest CT examinations were generally higher than the DRLs values of some other countries, requiring further optimization process for these determined DRLs.

**Keywords:** Computed Tomography (CT), Volumetric Computed Tomography Dose Index (CTDI<sub>(vol)</sub>), Dose Length Product (DLP), Diagnostic Reference Level (DRL)