

PATIENT DOSE MANAGEMENT IN COMPUTED TOMOGRAPHY AND INTERVENTIONAL FLUOROSCOPY WITH SPECIAL EMPHASIS ON PEDIATRIC PATIENTS

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This study is conducted in order to manage the patient dose in computed tomography (CT) and interventional fluoroscopy (IVF) by comparing the measured dose values with dose reference level (DRL) established by relevant authorities (ICRP/IAEA/EC). Data on frequency and dose were collected in three hospitals: National Hospital of Sri Lanka (NHSL), Lady Ridgeway Hospital (LRH) and National Cancer Institute Maharagama (NCIM). All patients in the ages 0–15 y were classified as pediatric patients.

CT study included head, chest, chest–high resolution (HR) and abdomen and pelvis examinations for adult and pediatric patients and information was collected on tube voltage, tube current, slice width, number of slices, pitch, collimation, $CTDI_{w/vol}$ and DLP. The frequency of a particular CT examination was determined by using register. FGIP study included procedures done during the data collection and information was collected on tube voltage, tube current, fluoro time, absorbed dose, and field size. Gafchromic films and computer console were used to measure the dose.

The frequency of CT examination in NHSL is high comparing to the other hospitals. Also the dose values are higher than DRL in NHSL. So the protocols used were revised to optimize the patient dose. The factors affecting the patient dose such as tube current, tube potential, image thickness, helical pitch and tube rotation time were adjusted in order to reduce the patient dose and the resulted image quality also commented.

For all interventional procedures at LRH the patient doses are very less than the first notification values. But in NHSL for some cases the dose was very high. Absorbed dose and DAP gradually increasing with fluoro time. But it is a poor predictor of dose because it does not account for the effects of image acquisition modes and various uses of different beam geometries and output modes of operation. DAP is more significantly correlated with skin dose than is fluoroscopy time. By pre planning the procedure and the required fluoroscopy setup the dose can be reduced efficiently.

