ENTRANCE SURFACE DOSE MEASUREMENT IN ADULT PATIENTS UNDERGOING X-RAY DIAGNOSTIC PROCEDURES IN SELECTED CLINICS IN LAGOS STATE

ABSTRACT

The objective of this study was aimed at determining the Entrance Surface Dose (ESD) in adult patients in selected radiology centers in Lagos state that is six selected radiology centers with seven x-ray machines. ESD is a very important parameter used in determining diagnostic reference levels.

This was achieved by the use of human surrogates (phantoms) of different thickness such as PMMA, Rex Phantom and Copper phantom and detector known as diavolt was used to measured dose in μGy, the output kVp and the x ray exposure time in seconds

This study began by taking exposure reading at different thickness of Aluminium reading (mm); 0, 1, 2,3,4,5 and 6.5 respectively. The half value layer is then evaluated by plotting a graph of the diavolt reading in μGy against the Aluminium thickness (Almm). The half value layer was then determined by interpolation from the graph. The half value was then used to obtain the back scatter factor

The focus to detector distance (FDD) and focus to skin/surface distance was measured (FSD) alongside the mAs

The ESD was then calculated using a mathematical formula, the percentage deviation of the mean kVp was estimated. The ESD calculated was found to be lower than a previous study earlier done. The radiographic parameters used were also found to be lower than that from a previous study.

This study is targeted at adding to the existing pool of knowledge in the area of developing a diagnostic reference level for the country.

Keywords: Diagnostic Reference Level, Entrance Surface Dose, Focus to Detector Distance, Focus to Skin/Surface Distance

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