Abstract

ASSESSMENT OF QUALITY MANAGEMENT IN THE USE OF COMPUTED TOMOGRAPHY MACHINES IN KENYA

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Background: The use of x-rays in radiation imaging is ever increasing in magnitude with increase in radiological procedures, and complexity of radiology equipment, Computed Tomography (CT) scanning included. Quality management with patient radiation dose monitoring is fundamental in optimizing radiation protection and safety while optimizing image quality.

Objective: To assess the level of quality management with respect to quality assurance, image quality and patient dose in CT facilities in Kenya.

Methodology: A quantitative method was developed and used to score the results obtained from the physical image quality, patient dose and quality assurance inspection results. Physical images were obtained from American Association of Physicists in Medicine (AAPM) water phantom, and patient dose measured using head and body phantoms. The results obtained were compared with internationally recognized standards including the European Guidelines Quality Criteria for CT and the International Basic Safety Standards for Protection against Ionizing Radiation.

Study Design: A quality assurance inspection, physical image quality and patient dose assessment in eighteen representative CT facilities.

Results: The overall findings placed the national quality management performance level at 57 ± 2% while patient dose, image quality and quality assurance administration performance were 71 ± 4%, 61 ± 3% and 40 ± 2%, respectively.

Conclusion: The national level in quality management system in diagnostic radiology was benchmarked as good. Diagnostic Reference Levels (DRLs) were proposed in order to enhance the optimization of radiological protection of patients in Kenya. In future, we hope to demonstrate optimization of patient dose using typical patient dose in the new state-of-the-art multi-slice CT.

Recommendation: Kenya should adopt Radiology facility accreditation system whereby a scrutiny of scores from each stage in the medical imaging chain is performed to enhance quality improvement.