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A regional level survey on acceptance test assessment in radio diagnostic instruments

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The present study emphasizes the current status of quality assurance (QA) assessment on various radio-diagnostic instruments in and around southern parts of India. A pilot survey was conducted at the 230 instruments from 151 hospitals over a period of three years (2014–2017). This study includes as per Atomic Energy Regulatory Board, India (AERB) guidelines 16 mandatory tests were performed in X-ray tube such as congruence of radiation and optical field, central beam alignment, determination of focal spot size, linearity of exposure timer, accuracy of X-ray tube operating potential (kVp), linearity of X-ray tube current (mA), half value layer (HVL), total filtration, output consistency, measurement of computed tomography dose index (CTDI), slice thickness in CT, low and high contrast resolution, performance check of the image intensifier tube (in C-Arm and O-Arm), calibration of compression device (in Mammography), X-ray tube housing leakage radiation, and radiation survey throughout diagnostic department. In this work, we used calibrated PTW-NOMEX multimeter, pressurized ion chamber based survey meter, and other QA tools. Out of 230 instruments, 78% of the equipments were found good condition and the remaining 22 % of the equipments with malfunction were identified and rectified. However the present survey is to reduce unnecessary exposure to patients (who have been undergoing radio diagnostic procedure in various centers every day), radiation occupancy, and public, which also provide pipeline of Diagnostic Reference Levels (DRLs) and to create a new protocol for diagnostic instruments.

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