

Title: Radiation dose assessment: Establishment of local diagnostic reference levels for selected radiography examinations across three prominent hospitals in Sudan

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Abstract: Due to variation among radiographers' practice, and the importance of unifying practice during radiography for optimizing radiation level and [image quality](#), the current manuscript aims to assess the radiation dose level and propose local diagnostic reference levels (LDRL) for posterior-anterior (PA) chest, antero-posterior (AP) abdomen, and pelvis examinations in two hospitals in Khartoum ('K') and one hospital in Wad-Medani ('M') cities, Sudan. Along with patient demographics like height and weight, the radiation exposure parameters including tube potential, current, and radiation duration were documented. This included 732 patients whose tests were conducted at one of three departments located in two different cities. The entrance surface air kerma (ESAK) was calculated using DosCal software and an Unfors -Xi-meter. The average ESAK for an X-ray of the chest was 0.18 mGy in M, 0.19 mGy in K (averaged over two hospitals in the K), for the abdomen it was 1.1 and 1.23 mGy, and for the pelvis it was 1.8 and 01.9 mGy respectively. The proposed DRL was achieved from the third quartile of radiation dosage of data, and it was 0.21, 1.7 and 1.9 mGy for the chest, abdomen and pelvis respectively. There was a wide variation in dosage levels among the three hospitals. The current proposed DRL was lower than most literature for the chest, abdomen and pelvis. More studies are recommended for other examinations such as skull and contrast [media studies](#).

Key words: Diagnostic reference levels (DRL) Radiation dose assessment Posterior-anterior (PA) chest X-ray Antero-posterior (AP) abdomen X-ray Pelvis X-ray
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