Recent Advances in Patient Dosimetry

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Diagnostic x-rays represent by far the largest man-made source of public exposure to ionising radiation. While the medical benefits from an x-ray examination far outweigh the risk of the individual, medical personnel have an obligation to keep exposures as low as possible. Evidence from recent UK National Radiological Protection Board (NRPB) national surveys have indicated a significant potential for dose reduction and a need for more widespread evaluation of patient doses. In the UK it has been estimated that by judicious application of dose reduction methods the annual collective dose to the population from medical x-ray examinations could be reduced by almost one half without detriment to patient care. Measurement of dose provides an appropriate way of monitoring performance in the radiology departments. More detailed assessment of potential radiation risk to patients requires knowledge of organ doses and these can be estimated using data derived experimentally or theoretically. Patient doses in conventional radiography, fluoroscopy, mammography and computed tomography and methods for dose reduction will be reviewed. A comparison of reference dose levels and protocols from the UK, USA and IAEA indicate that there is a need for more extensive patient dosimetry. Malaysian efforts towards evaluations of patient doses and implementation of dose reduction methods are currently underway.