

# ANNALS OF THE ICRP 93: MANAGING PATIENT DOSE IN DIGITAL RADIOLOGY



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With digital techniques exist the potential to improve the practice of radiology but also the risk to overuse radiation. The main advantages of digital imaging: wide dynamic range, post-processing, multiple viewing options, electronic transfer and archiving possibilities are clear but overexposures can occur without an adverse impact on image quality. In conventional radiography, excessive exposure produces a black film. In digital systems, good images are obtained for a large range of doses. With digital fluoroscopy systems it is very easy to obtain (and delete) images. There may be a tendency to obtain more images than necessary. In digital radiology, higher patient dose usually means improved image quality and thus a tendency to use higher patient doses than necessary could occur. Different medical imaging tasks require different levels of image quality and doses which have no additional benefit for the clinical purpose shall be avoided.

Image quality can be compromised by inappropriate levels of data compression and/or post-processing techniques and all these new challenges should be part of the optimization process and included in the clinical and technical protocols. Local diagnostic reference levels should be reevaluated for digital imaging and patient dose parameters should be displayed at the operator console. Frequent patient dose audits should occur when digital techniques are introduced. Training in managing image quality and patient dose in digital radiology is necessary. Digital radiology will involve new regulations and invoke new challenges for practitioners.

As digital-radiology images are easier to obtain and to transmit the justification criteria should be reinforced. Commissioning of digital systems should involve clinical specialists, medical physicists and radiographers to ensure that imaging capability and radiation dose management are integrated. Quality control requires new procedures and protocols (visualization, transmission and archiving of the images). Educational slides have been developed by the ICRP to accompany this report, and are available free of charge from the society's website - <http://www>.

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