

ACCEPTANCE TESTING OF FLUOROSCOPY SYSTEMS USED FOR INTERVENTIONAL PURPOSES

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Acceptance testing and routine Quality Assurance (QA) of X-ray systems is a requirement of the EU Medical Exposures Directive (97/43/EURATOM). This requirement was implemented into Irish legislation in 2002 and states that special consideration should be given to the QA and dose assessment of high dose procedures such as interventional fluoroscopy. International and European guidance documents are available, detailing testing methodologies and criteria of acceptability against which equipment performance may be judged. These guidelines have been used to develop in-house QA protocols for testing fluoroscopy systems and protocols are reviewed on a regular basis to take into account new guidelines and technical data. New developments in diagnostic imaging technology are providing challenges for those involved in performing fluoroscopy QA and the technology is developing faster than the published criteria of acceptability. Flat-panel detector (FPD) digital fluoroscopy systems are beginning to replace Image Intensifier (II) technology and mobile C-arm II/TV systems are becoming increasingly more complex. The time required to perform comprehensive testing, analysis and reporting of all variables on complex fluoroscopy systems is a real challenge in a busy hospital environment. This study compares the results of acceptance testing for several different fluoroscopy configurations and highlights some recurring problems. All systems were found to have failed one or more acceptance tests. Dose rate, image quality and radiation protection issues were identified on the majority of systems tested. A consistent outcome from acceptance testing was that many "user awareness" issues were identified, and as a result the users were notified of significant operating features of their system. The results from this study highlight the importance of comprehensive yet efficient acceptance testing for complex fluoroscopy systems. Comparative studies of new systems will assist with the on-going development of testing guidelines and criteria of acceptability for modern fluoroscopy equipment.

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