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BOOK OF ABSTRACTS

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Implementation of a new IAEA remote and automated quality control program for radiography equipment

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Quality control (QC) guidelines published by the IAEA, American College of Radiology, European Commission, and other authorities have demonstrated that regular QC testing of radiographic facilities, involving daily or weekly tests, effectively contributes to patient radiation exposure reduction and improvement of image quality. Often lack of staff qualified to effectively perform and analyze testing results, and needed resources (phantoms, measuring equipment) leads to poor QC practice and detection in system performance deficiencies only after they become clinically significant. New IAEA publication offers a solution with simple, inexpensive test objects which, using the advantages of computer networking, can allow the collection of data in a harmonized manner. The creation of a centralized data system should ensure consistency, easier evaluation, and comparison between different systems. The aim of this study was to implement the newly proposed QC program and test the available radiographic equipment for short-term fluctuations of some critical components of the imaging chain to ensure consistent system performance, clinically adequate image quality, and increase patient safety. The measurement was performed at the University Clinical Center of Vojvodina on a “home-made” phantom.

The consistency of acquisition technical parameters and image quality indicators, metrics, and artifacts were assessed by generating images of the test phantom. Test phantom was formed by a uniform attenuator plate made of 10 cm × 10 cm, 2 mm thick square sheet of copper, and target plate consisted of a 5mm thick polymethyl methacrylate (PMMA) carrier, and 4mm thick aluminum and 2mm thick copper inserts, as proposed by the IAEA. Generated images were analyzed using the ATIA software available for download for all Member States via the IAEA Human Health Campus.

This paper presents preliminary results of the performed QC testing with the use of a “simple” phantom designed in accordance with the IAEA Human Health Series No.39 (2021).