Innovative medical imaging technologies, such as CT, MRI, molecular imaging positron emission tomography (PET), x-ray ultrasound and IT-supported processes, have proven their ability to enhance the efficiency of medical care and clinical outcomes.

Every year, advances in engineering and processing provide incremental gains and an occasional major breakthrough like low-dose CT, revolutionizing image capture and quality with a greatly reduced radiation dose to the patient. These gains deliver better accuracy, specificity and patient benefits that extend the utility of medical imaging equipment within a healthcare system can be considered a significant factor in attaining a healthcare system can be considered a significant factor in attaining the benefits.

Data from FENIN shows that most of the CT equipment installed in Spain cannot be considered technologically obsolete. In the age profile of their diagnostic imaging installed base, approximately equivalent to 2,500 units in western Europe and 500 units in eastern Europe should therefore be considered inadequate from a radiation safety perspective, and should be considered for replacement. In essence, 25% of the CT installed base, provided at approximately 2,500 units in western Europe and the real-time current control for the x-ray tube, ensuring that patients receive the lowest dose possible (ALARA principle – As Low As Reasonably Achievable).

Reiterative reconstruction algorithms reproduce the image quality of higher dose protocol scans using raw low-dose scan data, reducing the absorbed dose and providing, for the same exposure, images of a higher quality.

COCIR believes that the clear patient benefits afforded by both these technology advances should, at the very least, drive technology upgrades of the current CT installed base and encourage healthcare providers to invest in new and replacement low-dose CT technology throughout Europe. Regarding the potential for upgrading the current installed base, COCIR undertook a review of its vendor market intelligence, which revealed that a quarter of the European CT installed base cannot be upgraded with these important dose-saving technology advances. In essence, 27% of the CT installed base, approximately equivalent to 2,500 units in western Europe and 2,000 units in eastern Europe should therefore be considered inadequate from a radiation safety perspective, and should be considered for replacement. In essence, 25% of the CT installed base, approximately equivalent to 2,500 units in western Europe and 500 units in eastern Europe should therefore be considered inadequate from a radiation safety perspective, and should be considered for replacement.

The highest levels of non-upgradeable CT systems were found in Poland, Germany, Italy and Spain. Perhaps the most concerning issue for Italy and Spain over recent years has been the constant deterioration in the age profile of their diagnostic imaging installed base. COCIR National Trade Associations members Assofismedica, an Italian federation representing healthcare industry, and the Spanish Federation of Healthcare Enterprises (FENIN) have conducted further studies in both countries.

Data has shown that out of 470 CT scanners with ‘up to 16 slices’, currently in use in Italy, 222 are considered technologically obsolete, with Assofismedica recommending immediate replacement. All 222 scanners exceed the threshold of seven years of age, posing questions as to their safety, efficacy and cost of use. In the case of Spain, the lack of investment has been more pronounced than in neighbouring countries, showing the impact of structural deterioration of this diagnostic technique. Most of the CT equipment installed in Spain cannot be considered for immediate replacement and therefore should be considered for replacement. In essence, 25% of the CT installed base, approximately equivalent to 2,500 units in western Europe and 500 units in eastern Europe should therefore be considered inadequate from a radiation safety perspective, and should be considered for replacement. In essence, 25% of the CT installed base, approximately equivalent to 2,500 units in western Europe and 500 units in eastern Europe should therefore be considered inadequate from a radiation safety perspective, and should be considered for replacement. In essence, 25% of the CT installed base, approximately equivalent to 2,500 units in western Europe and 500 units in eastern Europe should therefore be considered inadequate from a radiation safety perspective, and should be considered for replacement.

COCIR expects healthcare providers to prioritise dose reduction and –optimisation when replacing aging CT equipment in order to assure adherence to the ALARA principle. Governments are urged to invest in healthcare, to encourage the uptake of innovative technology and solutions that can help transform the delivery of care. COCIR expects healthcare providers to prioritise dose reduction and –optimisation when replacing aging CT equipment in order to assure adherence to the ALARA principle.

Based on these findings, COCIR urges healthcare stakeholders to put greater emphasis on a sustainable age profile of medical imaging equipment.

Recommendations

- Based on these findings, COCIR urges healthcare stakeholders to prioritize dose reduction and optimization when replacing aging CT equipment in order to assure adherence to the ALARA principle.

Nicole Denjoy is the COCIR Secretary General.