

rate and temperature in a hermetically sealed implanted system. All leads feature solid state pressure tipped sensors, eliminating slow frequency response, head pressure and animal movement noise which are associated with fluid filled catheters.

Conclusions: All mentioned above parameters can be estimated in already made chemical animal models of Cardiovascular or Neurodegenerative diseases. Animal models of adult-onset neurodegenerative diseases have enhanced the understanding of the molecular pathogenesis of Alzheimer's disease, Parkinson's disease, frontotemporal dementia, and amyotrophic lateral sclerosis. In parallel with physiological parameters estimation. Nevertheless, our understanding of these disorders and the development of mechanistically designed therapeutics can still benefit from more rigorous use of the models and from generation of animals that more faithfully recapitulate human disease. Here we review the current state of rodent models for Alzheimer's disease, Parkinson's disease, fronto-temporal dementia, and amyotrophic lateral sclerosis. We discuss the limitations and utility of current models, issues regarding translatability, and future directions for developing animal models of these human disorders.

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Multicentric study on patient doses in diagnostic and interventional cardiology in Bulgaria and patient follow up: Preliminary results

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Introduction: New National Diagnostic Reference Levels (NDRL) were established in Bulgaria in 2018, in terms of kerma-area product, P_{KA} , for coronary angiography (CA), 4600 cGy.cm², and for percutaneous coronary intervention (PCI), 13600 cGy.cm².

Purpose: The purpose of this study was to: (1) determine typical P_{KA} values for CA and PCI procedure in the biggest cardiology departments; (2) compare with NDRL and (3) investigate the number of patients exceeding the proposed trigger levels for radiation-induced effects.

Materials and methods: Seven interventional cardiology departments were included in the study, with eleven different angiography systems. Data for P_{KA} , cumulative dose (CD) and fluoroscopy time (FT) values was recorded.

Results and discussion: The typical P_{KA} values for CA procedures for four of the angiography systems are higher than NDRL with a factor 1.05–1.46. The typical P_{KA} value for one of the systems is 0.3 times lower than NDRL, but the typical FT value is 1.96 times higher, which could be associated with poor image quality.

The analysis of the results for the PCI procedures show that NDRLs are exceeded by a factor of 1.02–1.56 (P_{KA}) for three of the units and 1.17–1.86 (FT) for five of them.

The percentage of patients exceeding at least one trigger level for radiation-induced effects varies between 1–13 % for the different angiography systems. Follow-up program is successful implemented in one hospital, still in progress in four and not performed in one of the surveyed hospitals.

Conclusions: Additional survey should be performed to investigate the equipment performance and the cardiology practice in the departments with typical P_{KA} and FT values exceeding the NDRLs. No radiation-induced effects have been reported among the patients exceeding the trigger levels. Individual patient follow-up approach should be used, depending on the type or combination of exceeded trigger levels.

Key words: NDRLs, Radiation-induced effects, Interventional cardiology.

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Comparative study of patient doses on four CT scanners

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Purpose: The purpose of this study is to determine typical patient doses from four CT scanners in two hospitals and to compare the CT protocols most commonly used.

Materials and methods: The 4 scanners were the same model SOMATOM Definition AS+ (Siemens) with automatic tube voltage selection and tube current modulation, three of them with iterative reconstruction (SAFIRE). Patient data were retrospectively retrieved from PACS with automated dose tracking software Radimetrics (Bayer) for a 6 month period and thirteen types of examinations were considered. Descriptive statistics data were calculated for CTDI_{vol} and DLP on each scanner and for each examination type. Since information on patient weight wasn't available, all data below the 5th and above the 95th percentiles were removed and statistical parameters were recalculated, as recommended by ICRP (Report 135). Mean values were compared with the national diagnostic reference levels (NDRL) for consistency with the methodology used, but median values were chosen as typical doses for each examination type as more representative.

Results: Data were analyzed for a total of 13,485 patients. Even though the protocols were supposed to be identical on all scanners (apart from the one without iterative reconstruction), several differences were found between them. This was most probably due to erroneous data input. All doses were below NDRLs except for Chest HR on one of the scanners. Some of the examinations were related to significant dose differences, most dramatic for Urogram, for which the median ratio was up to 2.5 between scanners.

Conclusions: Additional optimization of the CT examinations is needed with the initial step of standardisation of the protocols used. Data retrieval and analysis is planned for the third hospital in the Trust with three CT scanners. Local DRLs for the Trust will also be calculated.

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Patient exposures from three different modalities on one mammography unit

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Purpose: The purpose of this study is to estimate and compare mean glandular patient doses (MGD) from the three imaging tech-