dose monitoring quantities to predict the skin reactions and to measure the peak skin dose (PSD), in terms of kerma area product (KAP), cumulative dose (CD) and fluoroscopy time (FT); (2) to survey the cumulative dose distribution of different interventional cardiology procedures in Bulgaria, and (3) to present a methodology for real time skin dose color mapping system during interventional procedures. The review of the available literature shows that there is poor correlation between FT and the other dose metrics. A substantial correlation between KAP or CD and PSD is reported. The better real-time dose indicator for skin reactions is KAP or CD. CD typically overestimates PSD and provides a conservative clinical skin-dose management tool. Real-time PSD measurement is the preferred methodology. Data for more than 500 interventional cardiology procedures was collected from three hospitals in Bulgaria and the CD values distribution was surveyed. The results show that 72% of the CD values are lower than 2 Gy; 12.5% are within the range (2–5) Gy; 3.8%: (5–10) Gy; 0.9%: (10–15) Gy and for 0.2%: CD >15 Gy. The dose ranges were selected in agreement with the NCI skin reaction grading system. Although the percentage of patients with CD values exceeding 5 Gy is not high, all kind of efforts to support medical staff avoiding such dose levels should be launched. A color mapping system, following the NCI Skin reaction grading system, will be useful tool for easy and fast orientation of the medical staff, according to the expected degree of complexity of the skin reactions.

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Criteria for acquiring and maintaining the title "Medical Physics Expert" in Bulgaria

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The Council Directive 2013/59/EURATOM requires medical physics experts (MPE) to be recognized at governmental level and their continuity of expertise to be ensured. In 2014 European Guidelines on Medical Physics Expert, Radiation Protection No 174 (RP174) was published. This document provides comprehensive description of educational and training schemes, as well as knowledge, skills and competences that should be possessed by MPE. As of 2005 Bulgarian ordinance was issued, harmonizing Bulgarian legislation with the requirements of the European Union, stating the role of MPE in medical practice. According to this document a physicist should have Medical Radiological Physics specialty and five years of professional experience in some of the fields of medical physics, in order to become MPE. In 2018 modification of the ordinance required implementation of a scheme for continuous professional development (CPD) of MPE. The Bulgarian Society of Biomedical Physics and Engineering is responsible to elaborate guidelines for CPD. A working group (WG) with representatives from all areas (radiation therapy, diagnostic radiology and nuclear medicine) and with experience in education and training was created for that purpose. The WG prepared a draft of guidelines for CPD based on RP174 and EFOMP Policy Statement No. 10.1: Recommended Guidelines on National Schemes for Continuing Professional Development of Medical Physicists. According to the prepared guidelines the MPE is recognized separately in each of the three fields. Credit points are assigned for activities related to education, practical or scientific activities, lecturing and publications. Educational activities include participation in courses, lectures, conferences, defense of PhD, etc. Practical or scientific activities are participation in projects, introduction of new technologies, development of new methods, elaboration of technical protocols, conduction of educational activities at the working place, visits of other hospitals and others. A total of 250 credit points must be collected for a 5 years period.

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