The implementation of a quality system conforming to EN ISO/IEC 17025:2005 standard [ISO 17025] is a way to demonstrate that the dosimetry service operates a quality system, is technically competent, and capable of generating technically valid results. Active personal dosemeters (APD) have traditionally been used in the context of operational radiation protection taking advantage of an immediate dose reading and an alarm at a pre-set dose and/or dose rate level. This is of concern with regard to entries in the national dose registers of a Member State. Conclusions CT protocols and radiation doses vary greatly across countries and are primarily attributable to local choices regarding technical parameters, rather than patient, institution, or machine characteristics. These findings suggest that the optimization of doses to a consistent standard should be possible. Study registration Clinicaltrials.gov NCT03000751.

Introduction. Average machine and institutional practice volumes could be associated with dose based on volume-outcome associations described in many other areas of medical practice. Volumes were calculated on the basis of all CT examinations performed on weekdays. Machine characteristics included manufacturer and model. Absorbed dose, dose equivalent (ICRP) and equivalent dose (ICRU) are the basic physical quantities in the medical application of ionising radiation and for the radiation protection and safety work. In radiation protection, doses and dose rates are normally low, and the dose equivalent is considered to be correlated with the probability of cancer incidence during the rest of the person’s life. Only in exceptional cases, the dose is so high that cell killing and tissue damage occur, so-called deterministic (or tissue) effects. There are specific operational quantities developed for individual and workplace monitoring. Keywords. Effective Dose Dose Equivalent Radiation Protection Linear Energy Transfer Radiological Protection.