

REFERENCE LEVELS AT EUROPEAN LEVEL
FOR CARDIAC INTERVENTIONAL PROCEDURES

R. Padovani¹, E. Vano², A. Trianni¹, C. Bokou³, H. Bosmans⁴, D. Bor⁵, J. Jankowski⁶, P. Torbica⁷, K. Kepler⁸, A. Dowling⁹, C. Milu¹⁰, V. Tsapaki¹¹, D. Salat¹², J. Vassileva¹³, K. Faulkner¹⁴

¹Medical Physics Department, Udine Hospital, Italy

²Medial Physics Dpt., S. Carlos University Hospital, Madrid, Spain

³Luxembourg's Hospital Association, Luxembourg

⁴Department of Radiology, Gasthuisberg University Hospital, Leuven Belgium

⁵Department of Engineering Physics, Ankara University, Turkey

⁶Radiation Protection Department, Nofer Institute of Occupational Medicine, Lodz, Poland

⁷Department of Radiology, Innsbruck University Hospital, Austria

⁸Tartu University, Estonia

⁹Medical Physics Department, St. James's Hospital, Dublin, Ireland

¹⁰Institute of Hygiene and Public Health, Bucarest, Romania

¹¹Medical Physics Department, Athens General Hospital, Athens, Greece

¹²QA Department, Faculty of Public Health, Trencin, Slovakia

¹³National Centre of Radiobiology and Radiation Protection, Sofia, Bulgaria

¹⁴QARC, Wallsend, Newcastle, UK

Wide variations in patient dose for the same type of X-ray examination have been evident from different studies. These variations are almost due to different complexity of the procedures, but also different causal agents can intervene. By investigating patient dose, variations can be acknowledged, causes founded and the necessary adjustments made. Reference dose levels provide a framework to reduce this variability and aid in the optimization of radiation protection.

A European survey was launched by SENTINEL consortium to investigate doses in interventional cardiac procedures and establish reference levels. Procedures were divided into three main groups: coronary angiography, angioplasty and electrophysiology procedures. Electrophysiology procedures were further divided into pacemaker implantation, defibrillator implantation and radiofrequency ablation. The investigation covered 11 European centres. More than 1,000 examinations were registered.

Information including the fluoroscopy time, the number of frames and the dose-area product, and, when available, the cumulative dose to IRP, was provided. The data set was used to establish the distributions of duration of fluoroscopy, number of frames and DAP and the associated RL values. The examinations were pooled to improve the statistics and reference levels have been assessed as the 75 percentile of distributions.

Because equipment performance and equipment set up by the maintenance service is one of the factors contributing to patient dose variability, entrance air kerma for fluoroscopy and image acquisition are also introduced in the set of proposed reference levels.

E-mail presenting author: padovani.renato@aoud.sanita.fvg.it