Estimation Of The Organ Dose In Computed Tomography Exams In Petrolina / PE, Brazil

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Computed tomography (CT) is a non-invasive technique that allows the visualization of a three-dimensional image of anatomical regions of interest and is widely used in health areas. In many countries, tomography is the dominant source of the population dose for the use of diagnostic X-rays, providing, for example, about 70% of contributions in the U.S. and UK, making TC an indicator of patient protection. CT presents a large percentage of the collective dose resulting from diagnostic radiology, requiring special measures that must be taken to ensure the optimization of the examination performance and radiological protection. In this context, some physical parameters are used to determine the tomographic images. This study aims to study the acquisition parameters of the exams already performed in computed tomography equipment obtained in the city of Petrolina-PE and to estimate the organ dose in adult patients in CT, head, chest and abdomen procedures with guidance provided in the BEIR VII report. The collection was carried out in two equipment, one located in a private institution (institution A) and one in a public institution (institution B). Institution A uses equipment whose manufacturer Philips model Brilliance with 64 channels, while institution B uses a Toshiba equipment, model CXL with 64 channels. Date were gathered from scan acquisition parameters (kV, mAs, slice thickness, scan time, pitch, scan length) were obtained in the computer system linked to the equipment and number of scans per patient were documented for head, chest and abdomen exams performed using these scanners. Organs doses were calculates using the CALDose_XCT software. Both institutions A and B had radiological parameters of kVp, mAs, pitch, slice thickness and time of rotation of the tube within the criteria established per European Guidelines on Quality Criteria for Computed Tomography (EUR 16262). Regarding the organ doses, institution A meets the norm, although institution B does not meet, having values above the levels of references established by BEIR VII report. Therefore, exposure parameters should be optimized to prevent excessive radiation damage to certain organs.