

Modern imaging techniques offer the ability to generate detailed images of patient anatomy, whereas current computer technology permits the computation of corresponding radiation dose distributions from diagnostic procedures using Monte Carlo or other numerical techniques. Visualizing radiation dose distributions is commonplace in radiation therapy treatment planning, where doses need to be obtained to minimize radiation damage to normal tissues. Generating visual maps of patient dose distributions is rarely performed in diagnostic radiology since it is the mean organ doses, and the corresponding values of effective dose and integral dose, which are normally of primary concern. Select procedures now involve patient doses which are high enough to run the risk of generating deterministic radiation effects (e.g. transjugular intrahepatic portosystemic stent shunt and neuro-interventional radiology) where more detailed dose information may be desirable. Furthermore, the patient exposure may be the result of multiple beams of radiation such as a frontal plane and lateral plane. In this study, we demonstrate the feasibility of generating dose distribution data for patients undergoing conventional planar radiographic examinations for a range of diagnostic examinations. Potential benefits from using visual (and quantitative) dose distribution data in these types of diagnostic examination are considered.