A UNIFIED APPROACH FOR SPREADSHEET-BASED

EFFECTIVE DOSE DETERMINATION

Medical physicists are commonly required to cover multiple imaging modalities and, at times, radiation therapy as well as radiation safety responsibilities. When asked for patient dosimetry in an imaging modality, a physicist with limited experience in that modality may spend a great deal of time searching through literature to find data. When comparing or combining doses from different modalities, the task of finding the effective dose is made more difficult due to incomplete information and inconsistencies in published data especially in the use of dose descriptors. The dose determination problem was brought home to us when we were asked to estimate the total dose to a patient from multiple imaging modalities. We have pursued a spreadsheet-based approach that is flexible and that greatly facilitates dose determination.

The spreadsheet program can be used to determine effective dose for either pediatric or adult radiography, fluoroscopy or nuclear medicine, as well as adult computed tomography. The information input by the user consists of data available to the physicist either in the patient chart or as part of required quality control measurements. The dose computation is based on data available commercially or through government agencies. The spreadsheet program is relatively easy to generate and can significantly expedite the process of dose computations. Our approach allows us to tailor the dose estimation to specific machines and techniques. Additionally, it can be updated as new information becomes available.