AbstractID: 10248 Title: Converting CT dose length product (DLP) to Kerma Area Product (KAP).

Purpose: The amount of radiation that is incident on patients in CT is measured using the Dose Length Product (DLP mGy-cm) which is not commensurate with the corresponding quantity currently used in radiography and fluoroscopy, namely the Kerma Area Product [KAP]. This study computed DLP to KAP conversion factors that will enable patient exposures in CT to be compared with radiography and fluoroscopy.

Method and Materials: We computed the DLP and KAP values for head and abdominal CT examinations on a GE LS 16 CT scanner for the same examination. Scan DLP data were obtained using the ImPACT spreadsheet. Average CT Kerma values were obtained from the free-in-air intensity of the CT at the scanner isocenter and relative intensities within the fan beam plane. Average x-ray beam areas were obtained using the focal isocenter distance (541 mm) and modeling adult patients as ellipses (heads radii of 7.38 cm/9.47; abdomens radii of 11.25 cm/15.5 cm). Values of KAP were computed per 100 mGy-cm for head and abdominal CT scanning computed in 16 cm and 32 cm diameter acrylic cylinders, respectively.

Results: In head and body CT, a DLP of 100 mGy-cm corresponds to a KAP incident on the patient of 1.9 Gy-cm^2 and 5.4 Gy-cm^2, respectively.

Conclusion: Conversion of DLP into KAP permit patient exposures in CT to be compared to exposures in radiography and fluoroscopy including head and chest radiography (~1 Gy-cm^2), abdominal radiography (~5 Gy-cm^2), barium studies (~20 Gy-cm^2) and interventional procedures (~100 Gy-cm^2).