

**Purpose:** To estimate the effective dose (E), corrected for patient size, delivered to patients undergoing CT Pulmonary Arteriography (CTPA).

**Method and Materials:** IRB exemption was obtained to review CT scans for 650 consecutive patients undergoing CTPA in 2005, who were followed for additional CTPA through 2009. Information was collected to calculate the dose-length product (DLP), as CT dose reports were available only for more recent studies. Patient dimensions were used to estimate patient mass. E was estimated using E/DLP conversion factors for 70kg patients. Patient mass was used to estimate the energy imparted relative to a 70 kg patient. Relative energy imparted and patient mass were used to calculate effective dose correction factors. Cumulative E for individual patients was also calculated.

**Results:** The average number of scans per patient was 1.33, with 14 patients receiving >3 scans. Single-scan DLP values averaged  $316. \pm 44.2$  mGy-cm. Using an E/DLP conversion factor of  $17.5 \mu\text{Sv}/\text{mGy-cm}$  yields an uncorrected average effective dose of  $5.4 \pm 0.75$  mSv with a range of 0.65 to 7.9 mSv. Correction factors ranged from 0.48 for the heaviest patient to 1.42 for the lightest patient, with a mean of 0.92. After correction, the mean effective dose was  $5.1 \pm 1.1$  mSv, with a range of 0.92 to 8.7 mSv. Cumulative effective doses averaged  $7.0 \pm 6.9$  mSv, with a range of 0.92 to 111.9 mSv. The highest cumulative dose was for a patient who received 14 CTPA exams.

**Conclusions:** Effective dose calculations in CT are generally performed without correction for patient mass. This may result in errors of about a factor of two. CTPA effective doses are similar to other thoracic CT exams; however it is not uncommon for individuals to have repeat exams. Cumulative effective doses can exceed 100 mSv, potentially increasing the risk of cancer induction.