# AbstractID: 14096 Title: Organ-Specific Adjustment Factors for Calculating Dose from Any CT Scanner

**Purpose:** To demonstrate a method to estimate organ doses from CT examination of from multiple CT machine models.

**Method and Materials:** A validated computational model of particular CT machine has been constructed and used to calculate organ doses from CT examinations. The dose distribution in space is derived by fitting a parabolic function to the CTDI-center and CTDI-peripheral values of each machine, which provides a dose ratio as a function of distance from isocenter. The distribution of organ location is also calculated in relation to the isocenter position. The dose to the organ is then adjusted based upon an average of the dose ratio weighted by the organ location distribution. This method is demonstrated using the RPI-Adult Male and RPI-Adult Female mesh-based human phantoms but can be applied equally to any patient phantom.

**Results:** If the centerline dose is held constant, the dose to the organs furthest from center of the body will vary the most. For example, using the RPI-Adult Female phantom and a CT machine with the same CTDI-center as the validated model, but a flatter dose distribution (lower CDTI-peripheral), the resultant dose to the breast tissue is 36% lower, the dose to the lung is 20% lower, but the dose to the trachea is less than 1% lower.

**Conclusion:** The ability to estimate organ doses from CT machines other than a fully validated model obviates the need to perform extensive Monte Carlo simulations for every new CT machine that enters the market. One or a few sets of complete Monte Carlo simulations can instead be used to estimate the dose from different CT machines. In conjunction with modern dose reporting software and a family of human phantoms, the dose from a virtually limitless combination of CT machines and CT scan protocols can be determined.