

AbstractID: 12856 Title: Absorbed dose to the conceptus and patient size in x-ray projection imaging

Purpose To investigate how absorbed doses to the conceptus vary with patient size in projection radiography. **Method and Materials** Absorbed doses to the uterus (i.e., conceptus) were obtained using a commercial patient dosimetry software package (PCXMC 2.0.1). Pelvic x-ray images were simulated for a range of projections (Anteroposterior to Posteroanterior), and x-ray beam qualities were varied by making adjustments to the x-ray tube voltage (50 to 120 kV). Calculations were performed on patients whose weights ranged from 50 to 120 kg. For a given projection and beam quality, normalized uterus doses were obtained by dividing the uterus dose by the free-in-air kerma incident on the patient (i.e. mGy per mGy). **Results** For AP projections performed at 50 kV, increasing the patient size from 50 to 120 kg reduced the normalized uterus dose from 0.24 to 0.097 mGy per mGy; at 120 kV, the corresponding normalized uterus dose was reduced from 0.71 to 0.40 mGy per mGy. At 80 kV, increasing patient size from 50 to 120 kg reduced the normalized uterus dose from 0.28 to 0.11 for PA projections, and from 0.061 to 0.0085 for lateral projections. **Conclusion** Increasing patient size from 50 to 120 kg changes normalized uterus doses by about a factor of 2.0 for AP projections, a factor of 2.5 for PA projections, and a factor of 7 for lateral projections.