AbstractID: 9416 Title: Is it safe? A look at exposures in the shadow of MDCT scanner gantries.

Purpose: Computed tomography (CT) is used quite frequently as an imaging tool during interventional radiology (IR) procedures. Interventional radiologists at our institution often stand adjacent to the gantry of the CT scanner while scanning in "biopsy" mode, as it is commonly thought that the shadow of the gantry is the safest place to be if one remains in the room during CT scanning. An investigation was performed to more closely investigate the radiation dose to persons standing in the shadow of the gantry.

Materials and methods: OSL area monitors were used to gather long-term dose data at various points outside the CT gantry. Measurements were performed on 16 and 64 slice scanners used in the IR department.

Results: Dose rates varied substantially within the shadow of the CT scanner gantry for both the 16 slice and 64 slice scanners. Compared to the value in the center of the gantry shadow, doses measured halfway between the center and edge of the gantry towards the "foot" side were 34.8 and 17.0 times higher for the 16 slice and 64 slice scanners, respectively. Similarly measured doses towards the "head" side were 4.2 and 3.4 times higher than dose levels in the center of the shadow for the 16 slice and 64 slice scanners, respectively. The ratio of foot side to head side doses was 8.2 and 5.0 for the 16 slice and 64 slice scanners, respectively.

Conclusions: Asymmetric distribution of hardware within the gantry can lead to steep dose gradients along the table axis in the shadow of modern CT gantries. It was found that the dose to someone standing in the shadow of a CT gantry can vary by as much as a factor of 35 based on position within the shadow.