

AbstractID: 10821 Title: Lead Apparel Management Program at a Large Medical Center

Purpose: To determine whether our new lead apparel management program was effective at minimizing radiation doses to waist badges worn underneath lead apparel, improving compliance with lead apparel integrity testing, and detecting lead apparel defects.

Method and Materials: From 1999-2008, 14,343 items of lead apparel were tested for integrity (including both visual and fluoroscopy testing). Of these, 723 failed (5.0%) and were removed from service. In 2006, number of items tested decreased by 20% compared to 2005, and failed items decreased to 1.2%, which prompted the new lead apparel program. To minimize radiation dose to waist badges, lead apparel below 85% in lead equivalence above 100 kVp, was not allowed to be purchased. The basis for this was kVp recorded for 14,644 scenes in our 4 busiest cardiac catheterization labs over a 3 month period. From 14.4 to 33.9% of scenes were taken at 100 – 120 kVp; and from 1 – 4% of scenes were taken at > 120 kVp. To improve inventory and tracking, each piece of lead apparel was required to be embroidered with a unique code sewn to the inside cover. Training and skills validation were instituted for integrity testing personnel.

Results: The average annual waist and collar doses to 17 interventional cardiology fellows were 0.72 (+1.1) mSv and 8.2 (+10.6), respectively, in 2008, and the estimated lead apparel effectiveness was 90%. Twenty-five technical personnel were trained to perform the integrity testing which included skills validation by an experienced medical physicist. The number of items tested increased significantly to 1,951 in 2008 (vs. 1,444 in 2006), the highest in 10 years. In 2008, failure rate increased significantly to 8.3% (162 defective items).

Conclusions: Our lead apparel management program is effective at minimizing waist doses, tracking and testing lead apparel, and identifying defects.