AbstractID: 5795 Title: Skin and body dose measurements for Varian Cone-Beam CT (CBCT) during IMRT for prostate cancer

Purpose: **With the increased use of CBCT for daily patient setup, kV dose delivered to patient should be investigated. This study is to measure skin and body dose from Varian daily CBCT for prostate patients.**

Methods and Materials: **CBCT scans were acquired in half-fan and pulsed-fluoro mode with a half bow-tie mounted. A technical setting of 125kV, 80mA and 25ms was used. Skin and body doses were first measured for a Rando pelvic and an IMRT QA phantom, set centrally, with TLD and a cylindrical chamber. Then skin dose for 7 prostate patients undergoing daily CBCT was measured. To avoid the ring artifacts centered at prostate, the treatment couch was dropped 3cm from patient's tattoo. TLD capsules were placed on patient's skin at 3 sites: AP, Lt Lat and Rt Lat. Phantom measurement was also made for this setup. The absorbed dose was determined by the air-kerma-based calibration method recommended by TG61.**

Results: **For phantoms set centrally, measured skin dose was ~6 cGy, ~5.6 cGy, ~3.7cGy at AP, Lt Lat, and Rt Lat, respectively. Body dose at the center was ~3-4 cGy. With table dropping (TD), only AP skin dose was increased ~12%. Patient AP skin dose varied with separation, ranging 4–6 cGy for thicker patients (AP 23 – 33 cm) and 6 – 8 cGy for thinner patients. Minimum changes were observed on lateral dose for patients with different size. Lt Lat skin (4cGy) and bone (9cGy) doses were higher than Rt Lat skin (3cGy) and bone dose (6cGy)**

Conclusions: **Daily CBCT provides better patient setup but it increases skin and body dose. The dose can range from 120 – 330 cGy for skin and 120 – 380 cGy for body during the 42 daily fractions delivered for IMRT prostate patients.**