## AbstractID: 13307 Title: Interfractional breast shape variation and dosimetric consequences in whole breast irradiation

**Purpose:** This work aims to quantify interfractional variations in breast shape and their dosimetric consequences for conformal whole breast irradiation (WBI). **Materials/Methods:** Daily CT data acquired for 10 breast cancer patients during IGRT were analyzed. Patients were setup supine and daily pre-treatment CTs were acquired using CT-on-Rails (CTVision, Siemens). Contours of breast and critical structures on daily CTs were generated using a tool (ABAS, CMS) based on deformable image registration. Interfractional changes of breast shape and volume were measured by using Dice's Coefficient. For each patient, two commonly-used WBI plans with tangential beams based on the planning CT, one using wedges and another using field-in-field (FiF) technique, were developed. Each daily CT was registered with corresponding planning CT to obtain repositioning shifts. Plans were applied to the daily CTs. Dosimetric variations were measured by a series of dose-volume parameters. **Results:** Breast volume variations were generally small. Interfractional shifts can be significant and breast shape varies modestly. The average overlap between planning and daily breast volumes was 88-93%. The daily values of D95 and D50 (dose received by 95% and 50% of treated breast volume) varied by 1-2% from their planning values for both plans. For D98, the variation was upto 5%. These variations were not significantly different between the wedge and FIF plans. Daily global maximum was on average increased by 2-4% for the FiF plans compared to the corresponding wedge plans. **Conclusion:** Interfractional variations in patient positioning result in modest breast shape changes which can lead to dosimetric variations during the course of treatment and cannot be fully corrected for by patient repositioning. FiF plans are more sensitive to the breast shape change than wedge plans.