Conclusions: The new streamlined DIBH process improved workflows, decreased BHL variability and received positive feedback from staff. Respiratory inter-fractional errors were reduced, which may lead to reduced systematic setup errors.

187 DETERMINING OPTIMAL VOLUMETRIC IMAGE GUIDANCE STRATEGIES FOR BREAST BOOST RADIATION THERAPY
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Purpose: Breast boost to the tumour bed following whole breast radiotherapy (RT) in breast-conserving therapy can reduce local recurrence. The aim of this study was to identify appropriate and reliable surrogates to optimize cone beam computed tomography (CBCT) image registration for breast boost patients to reduce inter-user variability.

Methods and Materials: Daily localization CBCT images are acquired and any positional discrepancies corrected prior to three-field conformal breast boost treatment delivery. Under ethics approval, patients receiving breast boost RT between October and December 2014 were included in this retrospective process review and revision to streamline and improve the current VM-DIBH process at our cancer centre. Specific guidelines, workflows, and tolerances were established to improve daily treatment accuracy, reduce systematic errors and inter-fractional respiratory variability, and mitigate potential breath hold reproducibility issues prior to treatment.

Methods and Materials: BH measurements were collected for 55 left-sided breast patients at the time of simulation and treatment; to determine population inter-fraction BHL differences. The BHL was determined by measuring the anterior-posterior displacement of the lateral tattoo on the affected side between free breathing and BH. Inter-fraction BHL differences were quantified to establish a baseline for improvement and a BHL tolerance for treatment to reduce the respiratory variation within the VM-DIBH technique. Respiratory reproducibility assessment guidelines to be applied during simulation were developed and validated on a cohort of 12 left-sided breast patients to determine their candidacy for VM-DIBH. This cohort of patients was treated using the new BHL tolerance and was compared to 12 patients treated using the original DIBH process.

Conclusions: The new streamlined DIBH process improved workflows, decreased BH variability and received positive feedback from staff. Respiratory inter-fractional errors were reduced, which may lead to reduced systematic setup errors.