utero in sagittal plane and, afterwards, utilizing the automatic ultrasound array to sweep over the region of interest.

Conclusions: The quality of the ultrasound images using the 3D probe was superior to the images of the 2D probe. Moreover, the uterine capture, using the 3D probe required less effort than the cumbersome 2D probe. In summary, the 3D probe is a user-friendly and promising alternative as an IGRT system for GYN patients in radiotherapy.

PO-1118
Reproducibility of lung volume with an external surrogate for respiration for deep inspiration breath hold (DIBH)
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Purpose/Objective: DIBH can reduce heart dose when planning breast RT versus free breathing. Whilst reducing heart dose is an important clinical objective, DIBH must support accurate and reproducible treatment. Inspired lung volume (VInsp) variation was considered an important variable in terms of the impact on set-up accuracy in the DIBH setting. The Varian Real Time Position Management system (RPM) uses a reflective marker block that when positioned on the patient acts as a respiratory surrogate. The aim of this study was to measure the variation of VInsp when performing DIBH with the Varian RPM over a treatment course.

Materials and Methods: 10 staff volunteers were positioned supine on a 15° inclined breast board with both arms raised. The RPM marker block was localised on midline where vertical movement was observed during DIBH coaching. Three DIBHs were acquired within a preparatory session and the largest amplitude selected to set the reference threshold. From this the volunteer was visually coached to acquire the reference DIBH, simulating a ‘planning’ CT. Each volunteer attended 8 subsequent ‘treatment’ sessions where they were visually coached to perform 3 DIBHs to the reference amplitude (5mm threshold). For all sessions, VInsp was measured with the SDX® DynR spirometer. Systematic and random error was calculated by analysing the mean and standard deviations of the VInsp for each individual and the entire cohort. Variation was measured as a percentage difference from the reference VInsp.

Results: All volunteers performed 25 second DIBHs with minimal coaching, meeting their RPM amplitude (5mm threshold) for all sessions. Mean time between reference session and first treatment was 14.1 days (range 5 - 28). Mean time to acquire 8 treatment sessions was 72 days (range 35 - 105). 10 reference and 240 treatment DIBHs were acquired. Mean reference RPM amplitude was 21.8mm (range 12.2 - 32.2). Mean reference VInsp was 1.94 litres (range 1.41 - 3.44). Mean total VInsp variation for treatment compared to the reference sessions for the population was 22% (range 0% - 100%). The systematic error in VInsp between reference and treatment sessions for the population was 30% (individual systematic error varied from -25% to 74%) and random error between the reference and treatment sessions for the population was 14% (range 5% - 24%). The population mean was 1%, showing there was no systematic directional error in VInsp for the cohort.

Conclusions: DIBH with the Varian RPM is associated with a variation in the volume of air inspired over a treatment course and compared to the reference. The impact of this variation on the dose planned versus that delivered needs further prospective evaluation. Quantifying the dosimetric effect on the heart, lungs, tumour bed and ipsilateral breast when using the Varian RPM for DIBH breast radiotherapy is recommended.

PO-1119
Suitability of lung margins following analysis of set up data within a multi-national lung trial
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Purpose/Objective: To assess suitability of lung margins following analysis of set up data from patients recruited within the Concurrent ONce-daily VERSus twice-daily RadioTherapy (CONVERT) Trial: A 2-arm randomised controlled trial of concurrent chemo-radiotherapy comparing twice-daily and once-daily radiotherapy schedules in patients with limited stage small cell lung cancer (SCLC) and good performance status (grade 0 to grade 1). Margins outlined within the CONVERT trial define the clinical target volume (CTV) as the gross tumour volume (GTV) + 0.5cm in all directions and the planning target volume (PTV) as the CTV + 0.8cm anterior-posterior (A/P) and left-right (L/R) plane, and 1.0cm in the superior-inferior (S/I) plane. The impact of gender or immobilisation device on margins was also assessed.

Materials and Methods: At this institution ninety patients were recruited, planned and treated within the CONVERT trial. Patients were treated supine, either with a 5 point immobilisation shell or with both arms positioned above their head on a lung board. Knee bolsters were used for added comfort. Cone Beam Computed Tomography (CBCT) images using Elekta Synergy® - version 4.5 were acquired during treatment for the first 3 fractions and then at least weekly thereafter following a systematic error reduction strategy