



## A Single Center Experience of Phase-gated Lung Stereotactic Ablative Radiotherapy

**Laura Barry, BSc** - Bon Secours Radiotherapy Cork in Partnership with UPMC Hillman Cancer Centre; Paul J. Kelly, MB BCh BAO MRCPI FFR RCSI - Bon Secours Radiotherapy Cork in Partnership with UPMC Hillman Cancer Centre; Erica Bennett, MSc - Bon Secours Radiotherapy Cork in Partnership with UPMC Hillman Cancer Centre

**Objectives:** A retrospective review of SABR lung patients was conducted to audit the use of phase-gated lung SABR at our centre.

**Methods:** For patients who cannot achieve a reliable breath-hold technique, institutional policy mandates a motion management strategy when motion of GTV on 4DCT exceeds 5mm in any direction. For patients with 5mm GTV motion exists in any direction a phase-gated approach is adopted with the gating window restricted to phases around end-expiration with < 5mm motion. A phase-gated GTV is contoured on each phase of the gating window to create an iGTV eg iGTV30-70. For mobile tumours a phase-gated approach reduces the PTV compared to the ITV method and may result in reduced risk of toxicity.

**Results:** In our centre, 22 patients with either primary or metastatic lung cancer were treated between 2020 and 2022 using phase-gated lung SABR. The majority of these patients were treated using 2 VMAT FFF half-arcs, with only 2 patients requiring a 3-arc plan.

**Conclusion(s):** A phase-gated approach provides an attractive method of reduction in the volume of the PTV.

A gated 4D-CBCT demonstrates a 'like-for-like' dataset, providing clarity in relation to online image review and reducing possibilities of mismatch, particularly in the longitudinal plane where mismatches can occur using the ITV method and standard CBCT.

Phase-gated lung SABR typically results in longer treatment sessions compared with free-breathing delivery.

