

Building a new model of care for rapid breast radiotherapy delivery: Evaluation of the clinical specialist radiation therapist role within a multidisciplinary team

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Abstract

Breast radiotherapy (RT) is commonly managed by a multidisciplinary team. The "QuickStart" process is a collaborative, multi-disciplinary approach to optimize planning efficiency in a new model-of-care whereby a clinical specialist radiation therapist (CSRT) provides seroma target delineation and review of the initial whole breast RT plan. This prospective study examines the concordance of seroma target delineation and plan review between a CSRT and radiation oncologists (ROs).

Thirty women receiving whole breast RT were included. Two ROs defined criteria for breast planning and plan review to the CSRT. The CSRT delineated all seroma targets and complex cases were reviewed with the RO prior to planning. Treatment planning was completed using automated software that generates breast target volume, field placement, modulation, and a summary report. The CSRT and RO, blinded from each other, reviewed the plans based on predetermined criteria, which included defined parameters for target, CTV, OARs, and dose distribution. All plans were approved by the attending RO prior to treatment delivery and then reviewed in QA rounds. Concordance in seroma delineation was collected together with plan review outcomes. The conformity index (CI) was calculated for all discordant seroma contours.

Of the 30 CSRT-delineated seroma contours, 22 (74%) were approved by the RO with no changes. The CSRT identified 7 (23%) complex contouring cases due to low cavity visualization; these were modified by the RO prior to planning, mean CI=0.88±0.12. One (3%) patient contour was changed by the RO (CI=0.93) for boost and did not impact the tangential plan. The attending ROs approved 28 (93%) of the 30 final treatment plans. Two (7%) RO-rejected cases required re-planning to reduce cardiac dose were both identified independently by the CSRT for RO consultation. The CSRT rejected 2 (7%) plans which were discordant with the RO's choice. One CSRT-rejected final plan had incomplete display of the required dose distribution and one was due to seroma target under-coverage. The latter case was rejected in peer-review

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QA rounds; all other plans were later approved.

Within a multi-disciplinary team, the CSRT delineated seroma contours appropriate for clinical planning and identified complex and non-standard planning cases for RO consultation. Future study of task delegation of non-complex seroma delineation to the CSRT and cost efficiencies of this model is warranted.