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Near Peer Teaching in Radiation Oncology: Proof of Principle Study for Treatment Planning Skills

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Purpose: Radiotherapy techniques are expanding in range and complexity, therefore protecting learning environments where residents nurture treatment planning skills is critical. The evidence base for 'near peer' teaching (NPT), where professionals at a similar career stage assist in each other's learning, is growing across hospital-based disciplines. Although this teaching format occurs according to anecdotal accounts, it has not been reported on or optimised in radiation oncology. The feasibility of a resident-led teaching program for developing treatment planning skills was investigated herein through a quality improvement (QI) methodological approach.

Approach/Methods: Following consultation with attendings (n=10) and all residents (n=17) at the two cancer centres in the region, a regular NPT session focused on planning skills was initiated at the largest centre, with video-linking to the second centre. Tutorials were case-based and pitched at the level of qualifying examinations. Plan-Do-Study-Act (PDSA) cycles were designed based on primary and secondary improvement drivers derived by group consensus among residents, with tutorials adopted accordingly. Participation, content and satisfaction were monitored for 20 months.

Results/Outcomes: Mean resident participation was 67% (range 33-100). Six PDSA cycles reformed the tutorial format, leading to pedagogical benefits including interdisciplinary contributions and enhanced interactivity, as well as logistical improvements. Tutorials occurred on 85% prescribed occasions (n=45) during the subsequent 18 months' follow-up, with 25 distinct tumour sites featured. A medical dosimetrist participated in 60% sessions. An attending was available for 20 sessions (44%) and radiation therapist input was utilized for 5 sessions (11%). Improvement in 'on the job' learning from the sessions increased from 83% to 100%. The proportion of respondents indicating that senior residents and junior residents benefitted from the tutorials increased from 46% to 100%, and 38% to 50% respectively. The value of attending input was rated as crucial by all residents at all time-points. The frequency of interruptions for non-emergency clinical scenarios was stable throughout the study. Tutorials were paused for the first 2 months of the SARS-CoV-2 pandemic only. No costs were incurred in the organisation or maintenance of the program.

Discussion: A sustainable, high quality and cost-effective regional, trainee-led teaching program on treatment planning was feasible and cost-effective in this study. Important elements to consider for integrating NPT in radiation oncology include interdisciplinary collaboration, attending engagement and QI methodology.

Significance: Near peer teaching is a readily adoptable learning resource for residents with additional benefits including interdisciplinary collegiality, teaching and leadership experience.

Keywords: Near-peer teaching, interdisciplinary, quality improvement

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Remote Contouring and Virtual Review During the COVID-19 Pandemic (RECOVER-COVID19): Results of a Quality Improvement Initiative for Virtual Resident Training in Radiation Oncology

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Purpose: The urgent need to minimize in-person interactions during the ongoing COVID-19 pandemic has limited trainee access to clinical learning opportunities. With ongoing utilization of virtual platforms for resident education, efforts to maximize their value are essential. Herein we describe a resident-led quality improvement initiative to optimise remote contouring and virtual contour review.

Methods: From April to June 2020, radiation oncology residents at our institution were assigned modified duties. We implemented a program to source and assign cases to residents for remote contouring, and to promote and optimize virtual contour review. Senior residents used a mentorship model to match cases with junior residents. Microsoft Teams software was used for virtual review with the supervising radiation oncologist, including direct observation with immediate feedback. Resident-perceived educational value was prospectively collected and analyzed. Case logs completed after contour review integrated our institution's competency-based medical education (CBME) assessment platform.

Results: All 9 radiation oncology residents at our institution (PGY1-5) participated in the program, and 97 cases were contoured during the evaluation period. Introduction of the RECOVER program coincided with a significant increase in mean cases contoured per week, from 5.5 to 17.3 (p=0.015), and an increased proportion of cases receiving virtual review, from 14.8% to 58.6% (p<0.001). Residents agreed that the overall educational value of virtual review was comparable to in-person review (4.4±0.1 vs. 4.5±0.3, p=0.993; mean±standard error; 5-point Likert scale), and significantly better than no review (3.1±0.4, p=0.003). The value of immediate feedback during virtual review was highly rated at 4.6±0.1, similar to that of in-person review (4.5±0.2, p=0.803), and significantly higher than feedback received post hoc (e.g., email, phone; 3.6±0.2, p<0.001).

Discussion: The implementation of a remote process for contour review led to significant increases in contouring and contour review and was rated as highly as in-person interactions. Challenges of program implementation included issues with software deployment requiring technical support. A strength of this program was that this was a trainee-led initiative. However, the workflow was dependent on added responsibilities for senior residents.

Significance: This initiative led to transformational change in the contour review process at our institution even after apprenticeship rotations were reinstated. It provided residents with a novel means of achieving their educational milestones and ultimately attaining the core RO competencies during the pandemic and beyond. Future work on contour assessment and feedback as part of CBME may be helpful.

Keywords: Contouring, virtual medical education, feedback

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Analysis of Resident and Faculty Assessment Methods Used by United States Radiation Oncology Residency Programs

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