

formalized 1:1 resident-medical student mentorship program during an existing radiation oncology sub-internship. Resident participants completed the Mentorship Competency Assessment (MCA; a validated 26-item survey) before and after the intervention. The primary endpoint was the average change in MCA score (range: -7 to +7). Logistic regression was utilized to assess the association between baseline characteristics and change in MCA score.

Results: A total of 22/27 enrolled residents (82%) who participated in the study completed pre- and post-intervention surveys. Most were PGY-4/5 (55%), from programs with >10 residents (68%), and did not have prior training in teaching (77%) or mentorship (82%). Most residents (80%) completed at least 2 of 3 components of the curriculum. The faculty check-in component was rated helpful or very helpful (76%), followed by the lecture (39%) then the readings (33%). Residents met with students twice weekly (range: 1-4) for an average of 2.3 hours a week (range: 1-8). After the program, most residents felt confident in being a future mentor to students (91%), overall well-being was positively impacted (80%), and mentorship relationships were positively impacted (70%). All 26 mentorship skills on MCA increased after intervention (mean +1.2/7 per skill). Skills showing greatest improvement were negotiating path to professional independence (+1.7/7), coordinating effectively with other mentors (+1.6/7), helping network effectively (+1.6/7), and setting clear expectations of mentorship relationship (+1.6/7). PGY level, residency size, prior formal teaching experience, or prior formal mentorship experience were not associated with greater change in MCA score ($p>0.05$).

Conclusion: A formalized mentorship program can impart mentorship skills to radiation oncology trainees and positively impact their own well-being and mentoring relationships. Future studies should assess how unique strengths of medical residents can be optimally included in student mentorship networks.

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Patterns of Contouring Mistakes in the Novice Resident: A Qualitative Analysis to Guide Future Educational Efforts

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Purpose/Objective(s): Contouring education is a critical component of radiation oncology residency training, as numerous studies link contour variability to adverse patient outcomes. However, there is no standardized curriculum for contouring, and teaching is currently reliant on a 1:1 apprenticeship model. Identifying common patterns of error in target delineation in residents who are new to a disease site can aid in developing new resources for contouring education. We hypothesized that an interactive online educational platform for learners to practice contouring would

reveal the common mistakes made by residents before completing disease-site-specific training.

Materials/Methods: The iContour platform displays anonymized DICOM data and allows for input and analysis of user contours in a web-based interface. A randomized trial assessing the efficacy of the platform for contouring education is underway. All participants are completing their first clinical rotation in either the Head/Neck (H+N), Gynecologic (Gyn), or Gastrointestinal (GI) disease sites. As part of the trial, participants complete a baseline contouring assessment within the first 2 weeks of their rotation. We visually reviewed the baseline contouring assessments from the first 11 participants in the study to look for common patterns of error among learners. Participant contours were overlaid onto expert contours of the same case to assist with analysis.

Results: A total of 11 residents participated (median PGY2, range PGY2-5) from 8 U.S.-accredited residency programs across the 3 disease sites ($n=3$ H+N, $n=5$ Gyn and $n=3$ GI). Each participant completed 3 pre-test cases at the start of their rotation, resulting in a total of 33 unique contours. Qualitative visual analysis of the contours revealed several patterns. When contouring a case of anal cancer, all participants undercontoured the elective inguinal lymph node volume, particularly medially. For nasopharyngeal cancer, participants undercovered the intermediate risk clinical target volume (CTV), most often missing the base of skull and/or lateral retropharyngeal nodes. Participants were generally successful at contouring a grossly involved pelvic lymph node for cervical cancer and the "bowel bag" structure. More inconsistency was seen in the parotid gland, with several participants identifying either the superficial or deep lobe but not both.

Conclusion: Our findings suggest several common patterns of errors for novice contours, such as insufficient lymph node and at-risk CTV coverage. Revealing the frequently missed areas at-risk provides a crucial teaching point for learners and highlights the common mistakes to avoid in each disease site. These findings are informative for the design of future interventions to improve contouring education.

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AI Auto Contouring and Its Impact on Resident Education

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Purpose/Objective(s): The integration of AI auto contouring (AAC) in radiation oncology has streamlined the delineation of organs at risk (OARs). Assessing OAR contours is a vital skill in radiation oncology. This study aimed to elucidate the impact of AAC implementation on resident education, contouring skill development, and longitudinal educational programming.

Materials/Methods: An anonymized survey was administered to all residents and resident-interfacing faculty at a single tertiary academic institution that implemented AAC in the past year. Respondents indicated whether they were resident or faculty and answered questions in free text or on a Likert scale from 1-5 (strongly disagree (1) to strongly agree (5)). Free text responses were analyzed qualitatively. Statistical analyses with t-tests were performed, with p values ≤ 0.05 considered as significant. AAC contours that residents worked on were analyzed to determine the percentage of OARs edited by residents. Contours were considered edited if an entire axial slice was added or removed, or an axial slice was edited to a Hausdorff distance of ≥ 2 mm.

Results: 13/13 residents (100% response rate) and 14/21 faculty (67% response rate) completed the survey. Residents and faculty disagreed on whether AAC improved understanding of anatomy (4.2 vs 2.1, $p<0.01$)