

## **RSNA Annual Meeting Submitted Abstract (Nov 27-Dec 2, 2016)**

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**HYPOTHESIS:** Current contouring resources are fragmented and cumbersome to use at the point of care. We hypothesized that creating an accessible interactive web-based atlas would reduce contour variability and improve knowledge of contour delineation among radiation oncology residents.

**TITLE: eContour.org Improves Contour Agreement and Knowledge of Radiographic Anatomy Among Radiation Oncology Residents in a Multi-Institutional Randomized Trial**

**BACKGROUND:** The delivery of safe and effective radiation therapy increasingly relies on accurate target delineation in the era of highly conformal treatment techniques. Current contouring resources are fragmented and cumbersome to use. To overcome these limitations we created a free interactive web-based atlas called *eContour* ([www.eContour.org](http://www.eContour.org)). This study reports on the efficacy and usability of using *eContour* compared to existing contouring resources in a randomized trial among radiation oncology residents.

**EVALUATION:** We enrolled 27 radiation oncology residents from 5 institutions for a two-phase contouring study. All residents contoured a T1N1 nasopharyngeal cancer case using currently available resources. Participants were then randomized to re-contour the case with (Group A) or without (Group B) access to *eContour*. Contour analysis was performed using conformation number and simultaneous truth and performance level estimation (STAPLE). At the completion of each contouring session, residents completed a multiple choice question (MCQ) knowledge test and a 10-item System Usability Scale (SUS).

**DISCUSSION:** Twenty-four residents (89%) completed this study (11 in Group A and 13 in Group B). Residents using *eContour* showed greater agreement with both the consensus contour and the expert contour for the high-risk (59.4Gy) clinical target volume (0.63 vs. 0.52,  $p < 0.01$ ), as well as greater agreement with the expert contour for the right parotid (0.57 vs. 0.47,  $p < 0.005$ ) and right cochlea (0.34 vs. 0.18,  $p < 0.05$ ). Residents using *eContour* demonstrated greater knowledge of contour delineation and radiographic anatomy on 8 MCQs (89% vs. 77%,  $p < 0.05$ ). Usability of *eContour* was high compared to a contouring textbook (89 vs. 66,  $p < 0.0001$ ), which was used by the majority of residents (54%).

**CONCLUSION:** *eContour* improves contour agreement as well as knowledge of contour delineation and radiographic anatomy among radiation oncology residents. The usability of a web-based contouring atlas was high compared to existing resources. These data suggest that *eContour* has the potential to improve contour accuracy and ultimately impact quality of radiation delivery.