

AbstractID: 10410 Title: Patterns of Care in the Era of ICRU-50 for 3D Conformal Radiation Therapy: A Multi-Institutional Study

Purpose: Radiation outcomes can be compared meaningfully only if the target dose prescription and specification is uniform with the disease site and type. ICRU-50 recommended specific guidelines in 3DCRT for target volume definitions and dose reporting. This study evaluates the pattern of care retrospectively among institutions in the era of ICRU-50. **Materials & Methods:** Dosimetric information of 1204 patients with 3DCRT was collected retrospectively from 10 participating institutions. The dose-volume histogram data for the target volume was evaluated. Standard dose parameters such as minimum, maximum, median, and mean doses to the target volume along with V_{90} , V_{95} , V_{100} , V_{105} , V_{110} , V_{115} , D_{max} i.e. volume (%) receiving 90%, 95%, 100%, 105%, 115% and maximum dose respectively were collected. The normalization dose is also reported. **Results:** Significant dosimetric variations from 0% to 138% were observed in disease sites and institutions. The minimum target dose reflective of poor quality of treatment planning, intertwining structures and structure closed to the surface has wide variation. The number of patients with doses beyond 10% and +10% was 41% and 22% respectively. When -5% and +5% dose window was used, 55% and 69% patients failed to meet the dose criterion respectively. For a small subset of patients the minimum dose in the target was higher than 100% and maximum dose was lower than 100%. The variation in mean target dose was $102.3 \pm 3.7\%$. The diversity in normalization was also significant. **Conclusion:** Even with the implementation of ICRU-50 guidelines, there is a large variation in dose delivery in 3DCRT. The variation is institution and site specific. It is shown that mean target dose is very close to the prescribed dose that can be used as a surrogate for the prescribed dose. For any meaningful comparison of the 3DCRT outcome, strict guidelines for dose reporting should be maintained.