

AbstractID: 11240 Title: Evaluation of dose distribution according to various CT slice thickness.

**Purpose:** We investigated the variation of dose distributions in the treatment plans based on CT image sets of different slice thicknesses. **Method and Materials:** An anthropomorphic phantom was scanned with a slice thickness of 1 mm. The acquired images were reconstructed at the slice thicknesses of 2 mm, 3 mm, 5 mm, and 10 mm. For each image set of slice thicknesses, the treatment plan was generated by using a commercial RTP system. Treatment sites were on the breast and H&N (Head & Neck). The dose distributions of 3-axes (sagittal, transverse, and coronal) were exported at the iso-center. The image set of 2 mm slice thickness was used as the reference. Dose differences were evaluated in terms of gamma-index at various criteria. **Results:** Passing ratio of evaluating gamma-index decreases with increasing slice thickness of images. The ratios of 3 mm, 5 mm, and 10 mm thicknesses were 96.3%, 95.9%, and 95.3%, respectively on coronal images of H&N and were 100%, 99.9%, and 93.8% on those of breast. On transversal images of both H&N and breast, the ratios were less than 90%. **Conclusion:** The slice thickness of CT images affects dose distributions on treatment plans. There might be little dose difference in treatment plans based on CT image sets of 2 to 5 mm slice thickness. However, such difference becomes considerable in the organ having a steep slope and/or high dose gradients.