

## Comparison of 3D Compensation versus Conventional Wedge Techniques : Potential of a New Compensating Device

**PURPOSE:** To compare treatment plans using 3D compensation to the same cases planned with conventional wedge techniques, advocating the utility of a new compensating device.

**METHODS AND MATERIALS:** Cases were chosen that demonstrated sufficient irregularity of external surface to require compensation for adequate target dose uniformity. Two treatment plans were produced for each case, one using wedges and one compensators. All plans were produced on the Theratronics, Theraplan Plus system, version 3. Plans were compared on the basis of planning time and dose statistics.

**RESULTS:** A brain case demonstrated a significant decrease in planning time when 3D compensation was used. The resulting target dose distributions for both plans were almost identical, however, improvement of target dose uniformity in the compensator plan would lower the maximum dose by approximately 1% for a given prescription, thus producing less intense hot spots. A breast case was planned with comparable ease using either compensators or wedges. A striking difference, however, was demonstrated in target dose uniformity. The 87% isodose would be used for prescription in the wedge plan, versus 93% with compensators. Extensive hot spots found with wedges are thus virtually eliminated and maximum lung dose lowered considerably when compensators are used.

**CONCLUSIONS:** These results demonstrate the efficacy of radiotherapy with compensators, improving target dose homogeneity while requiring less planning time. This project thus advocates the future efforts of this group to develop a new, technologically advanced compensating device.