

AbstractID: 1607 Title: Evaluation of monitor unit calculation accuracy of the Pinnacle system for dynamically wedged fields

Enhanced dynamic wedges provide many advantages over traditional hard wedges for linac treatments. However, along with these advantages comes the responsibility of ensuring that this complex technology delivers the correct dose to patients. This involves correctly determining the enhanced dynamic wedge factor for various field sizes and depths for the use of hand calculation of monitor units. In addition, the correct representation of dynamic wedges in the treatment planning computer must also be ensured. This is required so that both the final isodose distributions are correct and that the monitor units calculated by the treatment planning computer match those of the hand calculation.

In this work, we have evaluated the accuracy of Pinnacle's MU calculation for dynamically wedged fields. We also measured the dynamic wedge factor for various field sizes and depths and compared these values to those determined by the Pinnacle treatment planning system.

Our study shows that Pinnacle overestimates the MUs by as much as 6%. We also found that Pinnacle-calculated dynamic wedge factors are as much as 10% lower than measured ones when the point of dose calculations is deeper in phantom. This presentation summarizes the results of this study and discusses potential reasons for this discrepancy