Purpose: To investigate the dosimetric differences of using the enhanced dynamic wedges (EDW) and physical wedges (PW) in various clinical cases.

Methods and materials: Thirteen plans with both EDW and PW generated on Varian Eclipse treatment planning system and delivered on Varian IX were selected for this study. The treatment sites included the head and neck, rectum, bladder, and lung. Each treatment included two plans: one used EDW, and the other used PW. Both had the same wedge angles, and the same field sizes. Dosimetric comparisons were made between EDW and PW in terms of V100, V98, Dmin, Dmax, Dmean, and heterogeneity (H) which was defined as $H = (D_{5}-D_{95})/D_{5} \times 100\%$.

Results: The comparisons were performed by subtracting the values of the interesting parameters corresponding to the EDW plans by the PW plans. The comparisons were made on both the target (GTV) and the critical structures. In most cases, the target received slightly better coverage for the plans with PW. The worst case for EDW was about 21% less coverage in terms of V100 for the floor of mouth cancer. But all EDW plans more or less reduced mean dose to the critical structures. The dose to the spinal cord was reduced by up to 1.1%, parotid by up to 4.1%, heart by up to 1.4 %, and bladder by up to 2.65%.

Conclusions: The dosimetric differences between EDW and PW can be significant. In addition to the automation of treatment delivery, the use of EDW is able to achieve better normal tissue sparing than that of PW.