AbstractID: 8997 Title: DVH for Rectum and Bladder in 3D Conformal Treatment of Prostate: Volume Dependence of X-ray Dose.

Relatively more of rectum and bladder tends to extend out side the treatment field when they are large in size. We have studied the possibility of volume dependence of dose to these critical normal structures. Rectum with air and fecal matter, or rectal wall only, and the entire bladder, prostate and SV were contoured. Prescription to target was 75.6 Gy. DVH for whole rectum, rectal wall and bladder for 19 patients treated with 4 and 6 field 3D conformal plans have been analyzed. Linear regression analysis was used to measure the degree of association between dose to 30%, 50% and 70% rectum and bladder vs. rectum, rectal wall and bladder, and field length. There was no relationship between dose to rectum and field length ($p>0.5$). Dose to whole rectum or rectal wall decreased with increase in the rectal volume ($p<0.05$). Dose to rectum was less for 7 patients by 5-20% when rectal wall was used instead of whole rectum. Dose to bladder decreased with the increase in the bladder volume with 4 fields plans ($p<0.01$) but not with 6 field plans ($p>0.2$). Conclusions: **Larger the rectum less is the dose to rectum**. Calculation of dose to whole rectum instead of rectal wall may overestimate the dose to rectum in some patients. Dose to bladder is volume dependent with 4 field but not with 6-field treatments. **Patients with small volumes of rectum and bladder may suffer from higher level of morbidity and would benefit more with IMRT.**