

## IMRT treatment plans in prostate carcinoma: Comparison with 3DCRT. Dosimetric study

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### Abstract

**Introduction:** The concave dose distributions produced by intensity modulated radiotherapy (IMRT) of prostate cancer increases the scope for dose escalation as the high dose region wraps around the overlapping rectum in the PTV (planning target volume) so conforms the dose to the target volume with better rectum sparing.

**Aim:** The aim of this study was to compare IMRT with 3DCRT plans for low risk prostate cancer patients and to evaluate to what extent IMRT plans can achieve target conformity and sparing for rectum, bladder and femoral heads compared with 3DCRT plans.

**Methods:** CT studies of ten low risk prostate cancer patients were planned using 3DCRT and IMRT plans. PTV2, PTV1, rectum, bladder and femoral heads were outlined. 78 Gy was prescribed to the isocenter. Dose volume histogram parameters (DVPs) for both plans were compared and analyzed statistically.

**Results:** PTV2 dose coverage was significantly superior in IMRT plans but its dose homogeneity was significantly superior in 3DCRT. On the other hand, PTV1 dose coverage and homogeneity in IMRT plans were not significantly different from the 3DCRT plans. This was with greater sparing of the rectum, bladder and femoral heads with IMRT plans.

**Conclusion:** Although IMRT plans usually give comparable PTV1 dose coverage to the 3DCRT plans, the PTV2 coverage is significantly superior. This is with greater sparing of the rectum, bladder and femoral heads in IMRT plans which gives the scope to escalate the dose to more than 78Gy. I declare that there is no conflict of interest with any financial organization regarding the material in this manuscript