AbstractID:9179Title :IM RTM onitorUnitEfficiencyComparison of Treatment Planning/DeliverySystems

Purpose: Treatmentpla nningsystem/deli verysyst emcom binations affectIMRTopt imization. Deliverym ethod(stepandshootvs. dynamic), leakageradiation variations(lackofsecondarycolli matorsont heElektaSL -SMLChead) ,hardwarecons traintsandlea f edges hapeallfact ori nw hen arad iationtreat mentplanning system(R TPS)opti mizesMLCsegmen ts. Differentopt imization algorithmswithintreatmen tp lanningsyst emsinfluence I MRTplanningres ultsaswell. Inourstudyweev aluateddeli very efficiencies fromElek ta,Varianand Siemensmachi nescoup lingwit htwodifferenttr eatmentp lannings ystems. **Methodsand Materials:**16 IMRTp lanswerec reated forprostateandheadneck (HN) sites (5and6co -planarbeamsrespe ctively) usingCMSXi o and PhilipsADA CPinnac le. Pla nsw ereopt imizedusing thes amedos eandDVHobj ectivesandmodulatedusingclinicalthr esholds. Themonitorun its neededtodel ivertheweight pointd oseforeachfieldweretabulatedfor eachsiteandmachinesour cedata.
Results: Al l plans haves imilarqual itymeeti ngtheobject ives.HNplanshaveanaverageMUef ficiencyof5. 02+ /-1 .09MU/cGy. Theplan screatedont hePi nnacle RTPShadalowerm eanefficiencybutwasnot stati sticallysignif icantduet othehighst andard deviation. Prost ate plansweremore efficientthantheHNp lanswi thave ragevalueof2. 19+/ -0 .47MU/cGy. Pi nnacle prostate plansha dameanMUef ficiencyof 1. 69+/ - 0.18M U/cGycomparedt o 2.51+/ - 0.22MU/cGyfr omXio. **Conclusions:** Thereisno statisticaldi fferenceinMUeff iciencyforHNpl ansfromdi fferentpl anning/deliverysystemcombinati ons. P rostateplanshavehigher deliveryMUefficienc iesth anth osef romHNpl ans,mostl ikelyduetolessm odulation.Fort he prostatepl ansthereexistslight differences inM Uefficiencies wit h unknownclini calsi gnificancebet weendifferent planning/deliverysyst ems.