

Proton beams can potentially increase the dose delivered to lung tumors because the protons can be stopped before encountering critical normal structures. The ICRU #50 planning target volume can only be used to design the lateral margins of beams because the distal and proximal margins due to CT number, beam range uncertainty, tissue motion, and set-up uncertainties, are different than the lateral margins due to these same factors. Proton beam treatment plans were generated for multiple cases using several different planning strategies. It was concluded that target motion and set-up uncertainties should be included into the beam design step rather than creating new targets. Suggestions for new computerized treatment planning system tools are presented.