

Thanks to the NACP Varian Grant I have been able to visit the University of Chicago (UofC) and University of Illinois, Chicago (UIC) for a week June 2007 to discuss the use of Intensity Modulated Radiotherapy (IMRT) for Total Body Irradiation (TBI). UofC, UIC and the Department of Radiotherapy at Copenhagen University Hospital, Rigshospitalet (RH) are Varian sites, which made the discussions about practical problems easier.

At RH we have through many years treated TBI patients in a simple way: SSD 420 cm, 3 fractions up to 12 Gy with lung compensators placed only for 1 single fraction. With the implementation and daily use of IMRT we wish to have the possibility of delivering a more homogeneous dose to the patient and using a lung compensation for every single fraction. At same time we do have the possibility to optimise to different levels of dose to separate parts of the body (ex. kidneys).

At UIC a project has been started to evaluate 3 different techniques using IMRT for TBI (IM-TBI):

1. Placing the patient supine on the floor under the gantry (SSD ~ 200 cm), 6-8 gantry angles to irradiate the patient from tip to toe anterior – flipping the patient in prone position treating with 6-8 gantry angles from tip to toe posterior.
2. Placing the patient on the normal treatment couch at the isocenter treating by 7-9 fields for each 40 cm from tip to perineum (3 isocenters) + 2 AP-PA fields to treat legs and feet.
3. Like 2, but using a SSD of 120 cm for all field.

Technique 1 is a possibility of treating the whole body up to different doses, but the technique is similar to AP-PA treatment, which means that a lower dose in ex. lungs will also give a lower dose to the ribs in front of and behind the lungs. An example is shown in figure 1.

Technique 2 and 3 give both the opportunity of making a treatment of the bone marrow (IM-TMI) and a possibility of sparing the rest of the body.

Technique 2 has the disadvantage that the treated volume is limited to a diameter of 32 cm caused limitations in the use of Varian's multileaf collimator. The technique is shown in figure 2.

Technique 3 has the disadvantage that the patient has to be moved for every single field.

In addition to the discussions about IM-TBI and IM-TMI I had the chance to discuss different aspect concerning IMRT and brachytherapy.

I also participated in the work of a clinical physicist for one day at the UofC, which was very interesting.

I want to thank NACP and Varian to give me this opportunity to go to Chicago.

Furthermore I would like to thank assistant professor Bulent Aydogan at the Department of Radiation and Cellular Oncology at UofC, who was very inspiring in the discussions.

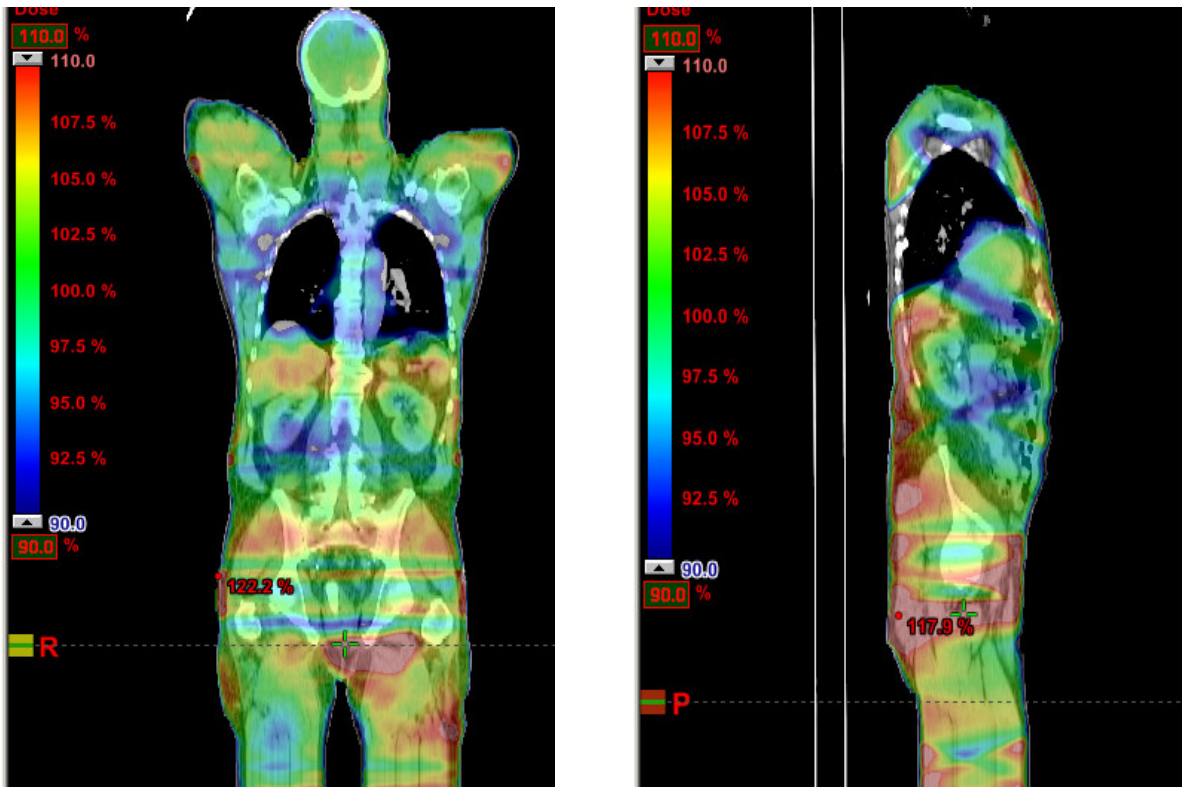


Figure 1:
Coronal and sagittal slices showing dose distribution for a test at RH using technique 1 with 12 fields



Figure 2:
Coronal and sagittal slices showing dose distribution for a test at UofC using technique 2 with 25 fields