



South Asia Centre for Medical
Physics and Cancer Research

SCMPCR

Newsletter

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QUALITY EDUCATION AND HEALTH SCIENCE FOR PATIENT BENEFIT

Solve the Problem

Starting this issue, SCMPCR Newsletter will carry a new column – SOLVE IT! – featuring a relatively difficult question / interesting problem for the young medical physics students and young medical physicists to solve. Those who are interested can send their answers to sptgnadar@gmail.com. The best answer would get published in the next issue of the Newsletter along with the name and affiliation of the contributor.

1. A patient has to be treated by a direct 6 MV posterior spinal field of size 6 cm (width) x 48 cm (length) at an extended SSD of 120 cm. The prescribed dose is 1.8 Gy at a depth of 5.5 cm.

Data (output at d_{\max} for 100 cm SSD, TMR) are given in the tables below. Using ONLY the data given in the tables, find out the treatment MUs.

Note: For equivalent square field, use the formula: Side of the square = $4 \times (\text{area/perimeter})$

6 MV photons - Output at the depth (d_{\max}) of dose maximum (SSD = 100 cm)									
<i>[Output (cGy/100 MU) is given at a depth of 1.5 cm in phantom, i.e. at a distance of 101.5 cm from the source]</i>									
Equivalent square side (cm) →	7	7.5	8	8.5	9	9.5	10	10.5	11
cGy/100 MU →	96.3	97.0	97.6	98.2	98.7	99.4	100.0	100.4	100.8

6 MV photons - TMR data for selected field sizes									
Depth (cm)	Equivalent square field size (cm x cm)								
	6x6	7x7	8x8	9x9	10x10	11x11	12x12	13x13	14x14
4.0	0.944	0.949	0.951	0.952	0.953	0.954	0.954	0.955	0.957
4.5	0.928	0.931	0.934	0.935	0.936	0.937	0.938	0.940	0.942
5.0	0.912	0.914	0.916	0.918	0.919	0.921	0.922	0.925	0.927
5.5	0.895	0.898	0.901	0.903	0.906	0.908	0.911	0.914	0.917
6.0	0.878	0.883	0.886	0.889	0.892	0.896	0.899	0.903	0.906