

Supplementary Table S1. Doses to targets and organs at risk for each patient.

	Control Plan		Distorted Plan		Differences*	
	D _{mean}	D _{max}	D _{mean}	D _{max}	ΔD _{mean}	ΔD _{max}
<i>Patient 1 (stomach tumor)</i>						
PTV	46.41	50.07	46.40	49.95	-0.01	-0.12
Cord	10.62	33.15	10.78	33.69	0.16	0.54
Right Kidney	1.47	7.39	1.55	7.41	0.08	0.02
Left Kidney	3.05	35.57	2.99	37.03	-0.06	1.46
Liver-GTV	11.42	47.92	11.44	48.06	0.02	0.14
Heart	11.35	50.07	10.33	49.96	-1.02	-0.11
Superior Mesenteric Artery	46.42	47.82	46.05	46.90	-0.37	-0.92
Celiac	46.54	47.23	46.58	47.19	0.04	-0.04
<i>Patient 2, liver tumor</i>						
PTV 67.5	69.59	81.41	69.57	78.84	-0.02	-2.57
PTV 37.5	49.30	77.69	49.03	75.31	-0.27	-2.38
Right Kidney	8.51	26.94	8.83	29.52	0.32	2.58
Left Kidney	3.11	10.61	2.89	10.27	-0.22	-0.34
Liver	29.86	81.41	29.79	78.84	-0.07	-2.57
Liver-GTV	23.95	76.98	23.90	76.45	-0.05	-0.53
Partial Right Lung	5.81	51.82	5.51	52.28	-0.30	0.46
Partial Left Lung	4.46	17.11	4.20	17.63	-0.26	0.52
Partial Total Lung	5.17	51.82	4.89	52.28	-0.28	0.46
Heart	4.77	34.35	4.87	36.65	0.10	2.30
Partial Esophagus	8.95	20.86	8.49	19.88	-0.50	-0.98
Stomach	20.64	52.18	21.32	54.01	0.68	1.83
Duodenum	33.27	46.07	33.23	46.18	-0.04	0.11
Colon	21.56	65.04	22.54	63.22	0.98	-1.82
Spinal Cord	5.59	12.96	5.28	12.55	-0.31	-0.41
<i>Patient 3, liver tumor</i>						
PTV	56.85	61.95	56.81	63.94	-0.04	1.99
Liver	9.24	61.95	10.13	63.94	0.89	1.99
Stomach Avoid	1.85	9.96	2.39	12.96	0.54	3.00
Bowel Avoid	17.64	32.78	17.74	35.66	0.10	2.88
Chest wall	34.22	56.89	40.41	57.64	6.19	0.75
<i>Patient 4, prostate tumor</i>						
PTV	80.25	82.54	80.16	82.02	-0.09	-0.52
Bladder	16.09	82.77	15.75	81.61	-0.34	-1.16
Rectum	29.18	80.33	28.26	81.82	-0.92	1.49
Prostate	80.20	81.66	80.23	81.47	0.03	-0.19

Prox SV	80.61	81.64	80.32	81.34	-0.29	-0.3
Femoral Head	18.78	40.45	18.19	37.31	-0.59	-3.14
Bladder-PTV	11.92	80.60	11.63	80.11	-0.29	-0.49
Rectum-PTV	23.69	74.01	22.75	72.37	-0.94	-1.64

Patient 5, prostate tumor

PTV	79.97	83.01	79.86	83.67	-0.11	0.66
Prostate	80.12	82.78	80.09	83.10	-0.03	0.32
Proximal Seminal Vesicles	68.11	81.67	67.73	82.50	-0.38	0.83
Distal Seminal Vesicles	15.68	34.91	16.55	37.31	0.87	2.40
Bladder	19.63	81.60	19.34	80.98	-0.29	-0.62
Rectum	23.29	81.49	23.39	83.67	0.10	2.18
Femoral Heads	5.24	33.74	6.18	35.19	0.94	1.45
Sigmoid	1.86	2.71	1.78	2.60	-0.08	-0.11
Right Femur	6.16	33.74	7.49	35.19	1.33	1.45
Left Femur	4.43	14.87	5.02	16.73	0.59	1.86

Patient 6, lung tumor

PTV	58.87	68.38	58.82	68.42	-0.05	0.04
Spinal Cord	3.59	20.50	3.44	19.30	-0.15	-1.20
Esophagus	3.76	13.76	4.00	15.43	0.24	1.67
Right Lung	3.73	68.38	3.77	67.95	0.04	-0.43
Left Lung	1.23	13.60	1.16	11.02	-0.04	-2.58
Total Lung	2.48	67.07	2.46	67.09	-0.02	0.02
Heart	1.67	12.72	1.76	13.07	0.09	0.35
Liver	2.87	57.16	2.74	55.32	-0.13	-1.84
Chest Wall	4.55	64.34	4.54	67.12	-0.01	2.78

Patient 7, lung tumor

PTV	74.63	80.35	74.54	80.46	-0.09	0.11
Spinal cord	6.98	29.54	5.80	32.57	-1.18	3.03
Esophagus	7.47	40.41	7.42	44.46	-0.05	4.05
Right Lung	11.71	80.35	11.83	80.67	0.12	0.32
Left Lung	2.97	26.09	3.07	31.26	0.10	5.17
Normal Lung (Total)	7.34	79.79	7.45	80.67	0.11	0.88
Heart	9.73	65.61	10.22	69.73	0.49	4.12
Heart Atria	7.54	44.54	7.19	42.33	-0.35	-2.21
Heart Ventricle	4.21	19.71	4.50	22.27	0.29	2.56
Chest Wall	10.84	54.29	10.85	59.31	0.01	5.02

Patient 8, nasopharynx tumor

PTV 70	72.02	76.04	72.13	74.12	0.11	-1.92
PTV 66	68.17	72.45	68.39	72.42	0.22	-0.03

PTV 59.4	62.56	75.59	62.47	74.11	-0.09	-1.48
PTV 57	61.28	69.18	61.31	68.28	0.03	-0.90
Right Parotid	24.31	70.44	26.98	69.33	2.67	-1.11
Left Parotid	22.48	61.01	24.21	61.59	1.73	0.58
RSM	36.66	63.31	37.15	60.63	0.49	-2.68
LSM	33.86	62.72	34.81	59.63	0.95	-3.09
Larynx Avoid	25.38	59.84	26.94	56.30	1.56	-3.54
Esophagus	32.49	60.14	34.26	57.81	1.77	-2.33
Right Lens	4.61	5.87	4.83	6.51	0.22	0.64
Left Lens	4.47	5.82	4.93	6.22	0.46	0.40
Right Cochlea	43.73	55.92	46.48	56.86	2.75	0.94
Left Cochlea	29.05	32.70	29.12	33.56	0.07	0.86
Right Optic Nerve	26.16	49.91	33.27	50.56	7.11	0.65
Left Optic Nerve	11.50	19.05	11.80	21.11	0.30	2.06
Chiasm	27.02	46.31	26.71	47.37	-0.31	1.06
Spinal Cord	24.85	35.33	25.78	36.18	0.93	0.85
Brainstem	39.62	60.80	41.64	62.82	2.02	2.02
Oral Avoidance	25.48	63.39	25.43	60.44	-0.05	-2.95

Patient 9, right neck tumor

PTV 45	47.16	50.16	47.36	49.94	0.20	-0.22
PTV 40	45.77	49.37	45.73	50.15	-0.04	0.78
Spinal Cord	3.87	9.61	3.98	10.22	0.11	0.61
Right Cochlea	0.49	0.54	0.56	0.62	0.07	0.08
Left Cochlea	0.21	0.24	0.21	0.24	0.00	0.00
Oral Avoid	9.38	28.08	8.84	26.72	-0.54	-1.36
Right Carotid	30.40	44.91	31.13	45.24	0.73	0.33
Left Carotid	2.14	2.91	1.95	3.23	-0.19	0.32
Right Parotid	15.50	43.76	16.92	44.56	1.42	0.80
Right Parotid Critical	12.30	34.55	16.35	38.45	4.05	3.90
Brainstem	4.31	6.76	4.73	7.99	0.42	1.23
Brain	0.14	10.30	0.18	11.50	0.04	1.20
Right Parotid Avoid	15.71	43.76	17.20	44.56	1.49	0.80
Right Carotid Avoid	28.46	42.57	29.31	42.37	0.85	-0.20

Patient 10, left occipital tumor

PTV 42.5	44.74	46.23	44.74	48.92	0.00	2.69
PTV 37.5	42.66	46.23	42.32	48.92	-0.34	2.69
Spinal Cord	5.69	9.35	5.46	9.15	-0.23	-0.20
Brain Stem	1.27	10.73	1.38	10.29	0.11	-0.44
Left Parotid	4.71	12.10	4.78	11.90	0.07	-0.20
Right Cochlea	0.47	0.58	0.42	0.50	-0.05	-0.08
Left Cochlea	2.36	3.37	2.16	3.00	-0.20	-0.37

Pharynx & Mastoid	15.59	29.58	14.83	30.55	-0.76	0.97
Right Carotid	4.93	9.94	4.73	9.85	-0.20	-0.09
Left Carotid	12.47	43.24	12.62	43.33	0.15	0.09
Right Optic Nerve	0.15	0.19	0.14	0.16	-0.01	-0.03
Left Optic Nerve	0.16	0.22	0.16	0.21	0.00	-0.01
Optic Chiasm	0.19	0.21	0.18	0.20	-0.01	-0.01
Cerebellum	9.74	38.54	9.81	38.81	0.07	0.27

Patient 11, T9-T10 spinal tumor

PTV Boost 40	41.71	44.42	41.72	45.42	0.01	1.00
PTV 30	34.13	43.60	34.83	45.79	0.70	2.19
Spinal Cord	28.02	32.72	28.01	34.04	-0.01	1.32
Right Kidney Mass	16.36	38.80	17.60	37.39	1.24	-1.41
Bowel Bag	6.88	21.31	6.90	20.59	0.02	-0.72
Left Kidney	8.19	29.89	8.37	31.25	0.18	1.36
Right Kidney	9.15	21.60	9.33	20.74	0.18	-0.86
Liver	6.70	35.57	6.90	33.79	0.20	-1.78
Heart	1.34	9.25	1.23	7.59	-0.11	-1.66

Patient 12, T12 spinal tumor

GTV 24	26.08	28.44	26.09	29.31	0.01	0.87
CTV 16	19.22	26.75	19.29	26.84	0.07	0.09
Bone	6.72	28.25	6.84	29.21	0.12	0.96
Spinal Cord	7.55	11.11	7.22	11.97	-0.33	0.86
Bowel	1.67	5.12	1.60	4.84	-0.07	-0.28
Right Kidney	1.07	7.67	1.07	8.24	0.00	0.57
Cauda	4.73	13.14	5.17	13.57	0.44	0.43

Patient 13, L3 spinal tumor

GTV 24	25.81	28.53	25.81	29.00	0.00	0.47
CTV 16	18.77	26.97	18.57	26.68	-0.20	-0.29
Bone	7.26	28.53	7.49	29.00	0.23	0.47
Cauda	8.61	15.80	9.17	16.25	0.56	0.45
Right Kidney	1.83	10.02	1.95	10.56	0.12	0.54
Left Kidney	1.21	6.67	1.22	5.86	0.01	-0.81
Bowel	3.27	10.80	3.32	10.56	0.05	-0.24

Patient 14, T11 spinal tumor

GTV 24	25.54	26.39	25.54	26.49	0.00	0.10
CTV 16	19.73	26.39	19.83	26.49	0.10	0.10
Spinal Cord	4.80	11.39	3.94	10.31	-0.86	-1.08
Bowel	0.71	8.49	0.69	8.52	-0.02	0.03
Right Kidney	0.02	0.17	0.02	0.18	0.00	0.01

Left Kidney	0.19	4.90	0.18	4.65	-0.01	-0.25
Aorta	3.35	21.84	3.18	22.78	-0.17	0.94
Stomach	2.03	6.56	1.83	6.35	-0.20	-0.21

All values shown are in Gy.

*Differences of >2 Gy for Dmean and >3 Gy for Dmax were considered to be clinically meaningful.

Abbreviations: PTV, planning target volume; GTV, gross tumor volume; PTVx, PTV volume covered by x% of the dose prescription for each target.