Supplementary Materials – Evaluating the effect of higher Monte Carlo statistical uncertainties on accumulated doses after daily adaptive fractionated treatments in prostate cancer

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Table S1 shows the dose-volume criteria that should be met for daily plan acceptability.

Table S1. Dose-volume criteria for plan acceptability.

Structure	**Daily criteria**
PTV	$D_{98\%, daily} > D_{98\%, ref} - 0.5$
	$D_{2\%, daily} > D_{2\%, ref} + 0.5$
Bladder	$V_{37Gy} < 5\ cm^3$
	$V_{32Gy} < 15\%$
	$V_{28Gy} < 20\%$
Rectum	$V_{38Gy} < 1\ cm^3$
	$V_{35Gy} < 2\ cm^3$
	$V_{32Gy} < 15\%$
	$V_{28Gy} < 20\%$

In the results of this study we noted that the dose-volume criteria value of an accumulated dose distribution was sometimes clinically unacceptable, while all individual fraction doses were acceptable. Figure S1 shows the obtained PTV $D_{98\%}$ values for all 20 patients, for the individual fractions as well as after dose accumulation. It can be observed that for each mode of daily variation and for each MC statistical uncertainty value there is at least one patient for whom the accumulated PTV $D_{98\%}$ is either higher or lower than all five fraction values.

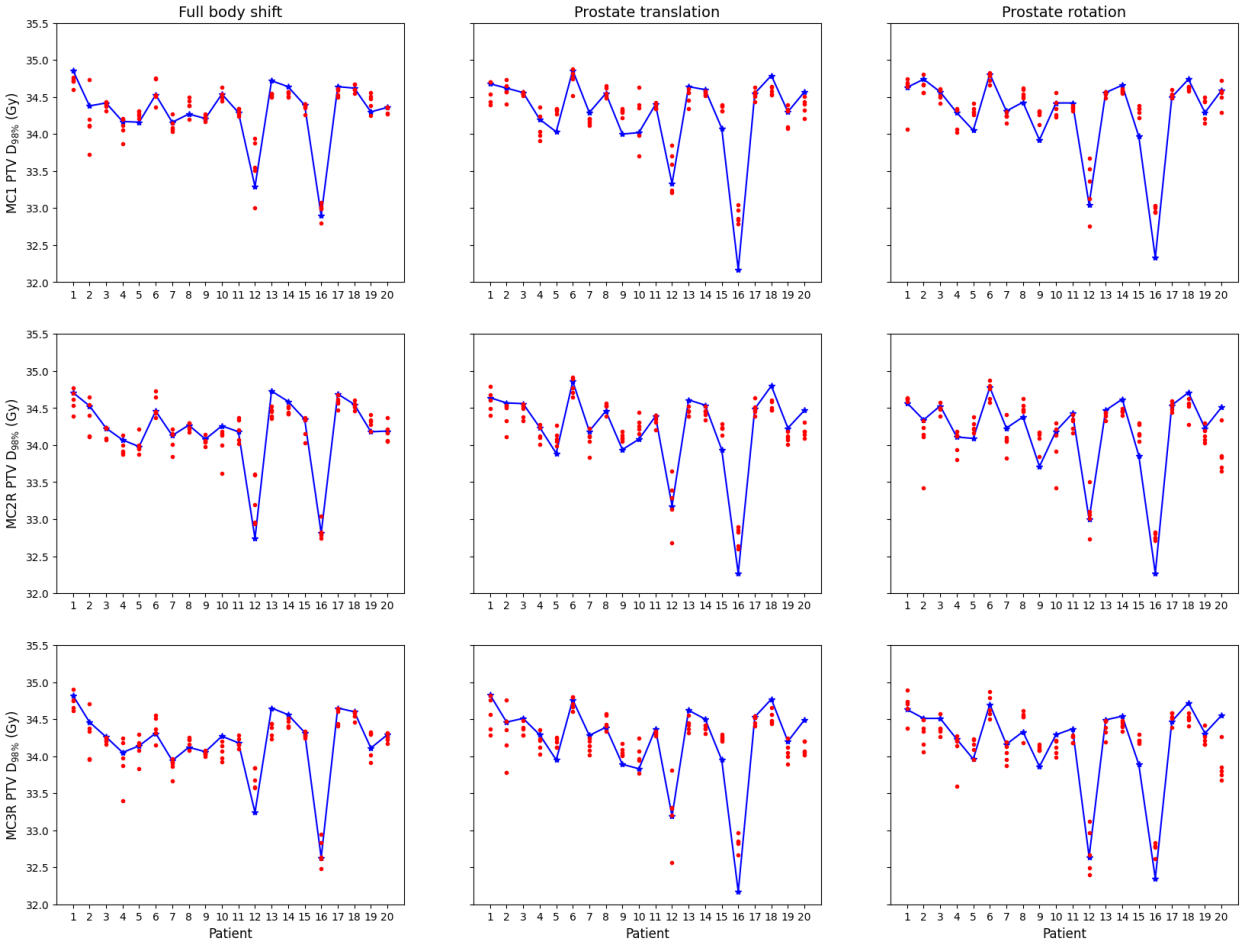

Figure S1. Plots showing the obtained PTV $D_{98\%}$ values for each of the 20 patients for the three modes of anatomical variation. The red dots indicate the five fraction values per patient. The blue dots show the values after dose accumulation. Each row shows plans obtained with a single MC statistical uncertainty. Each column shows the result for one of the modes of daily variation.