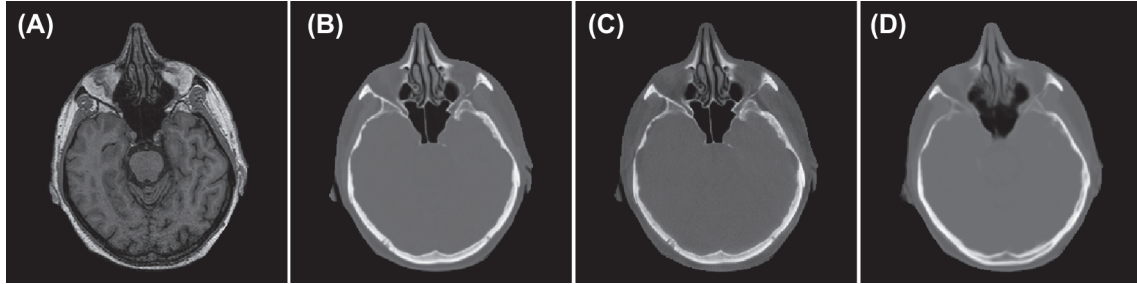
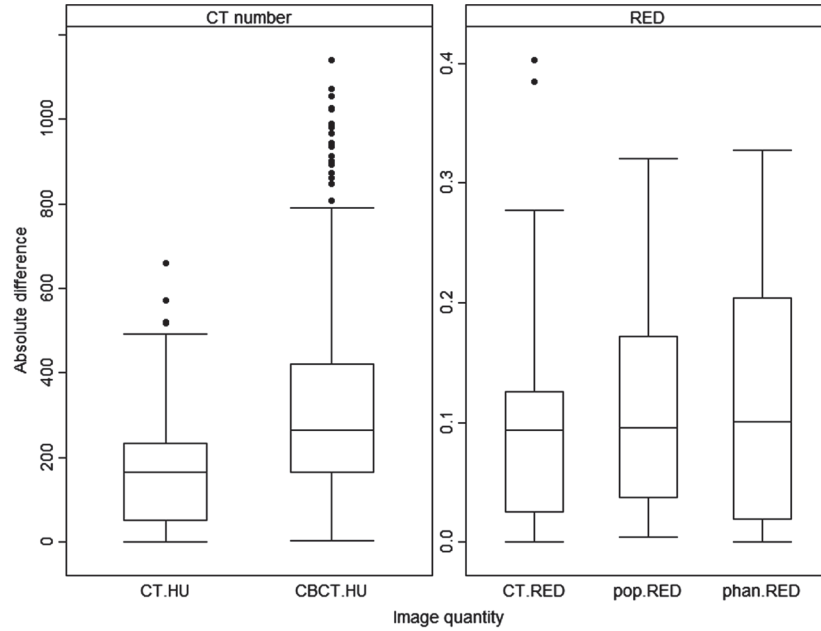


Supplementary material for Edmund et al., Cone beam CT guided treatment delivery and planning verification for magnetic resonance imaging only radiotherapy of the brain, Acta Oncol, 2015; 54: 1496–1500.



Supplementary Figure 1. The image dataset for each of the six patients. An axial slice of patient one is shown. A: The T1W MRI of the patient which serves as a basis for the pCT conversion. B: The standard CT reference of the patient. C: The CBCT of the patient obtained at the accelerator for setup before the treatment. D: The pseudo CT (pCT) created from MRI using a patch based approach.



Supplementary Figure 2. Boxplots of the binned absolute errors of pCT for patient 5. Left: The absolute errors in HU for the CT (CT.HU) and CBCT (CBCT.HU). Right: The absolute error in RED for the CT (CT.RED), population based CBCT (pop.RED) and phantom based CBCT (phan.CBCT). Horizontal lines = median values, box = first and third quartiles, vertical lines = 1.5 times the interquartile range and closed circles = values > 1.5 times the interquartile range (outliers). Corresponding medians and p-values can be inspected in Table 1.

Supplementary Table I. Patient registration differences using different reference modalities. Column 1: Direction of the transformation matrix. Columns 2 and 4: mean and standard deviation of the six patients' registration differences with MRI (Δ MRI) and pCT (Δ pCT) as compared to the reference CT, respectively. Columns 3 and 5: p-value of a two-tailed pairwise paired t-test (pooled standard deviation and p adjusted values) for MRI and pCT, respectively. The CT reference value was set to zero in all directions.

Direction	Δ MRI	p-value	Δ pCT	p-value
AP [mm]	-0.1 ± 0.3	>0.2	0.1 ± 0.4	>0.4
CC [mm]	0.0 ± 0.4	>0.7	-0.2 ± 0.3	>0.6
LR [mm]	0.0 ± 0.2	1	0.0 ± 0.2	1
Pitch [°]	-0.1 ± 0.6	1	0.0 ± 0.2	1
Roll [°]	-0.1 ± 0.2	1	0.0 ± 0.1	1
Jaw [°]	0.0 ± 0.2	1	0.0 ± 0.1	1