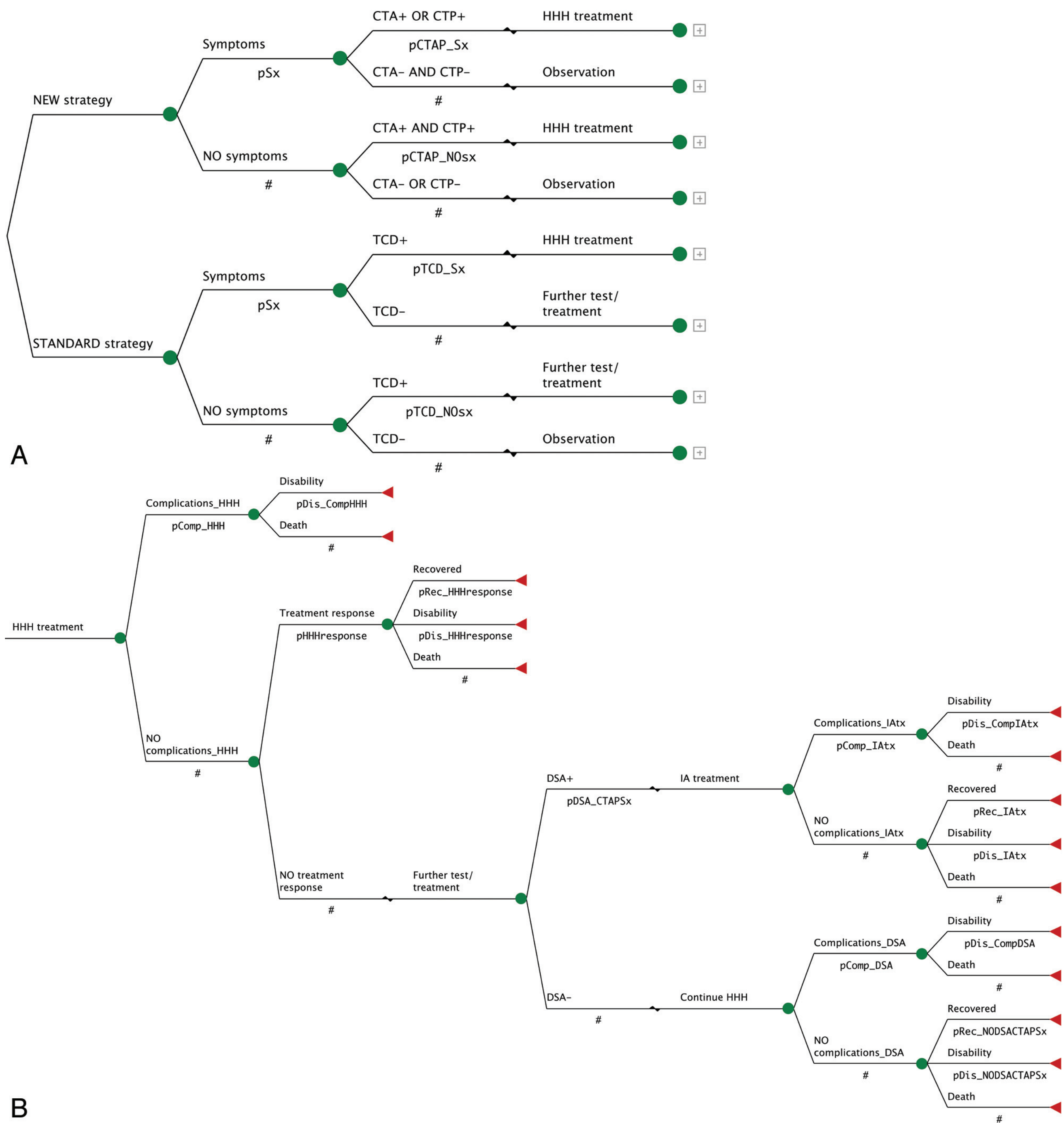
On-line Appendix: CTP Scanning Protocol and Postprocessing

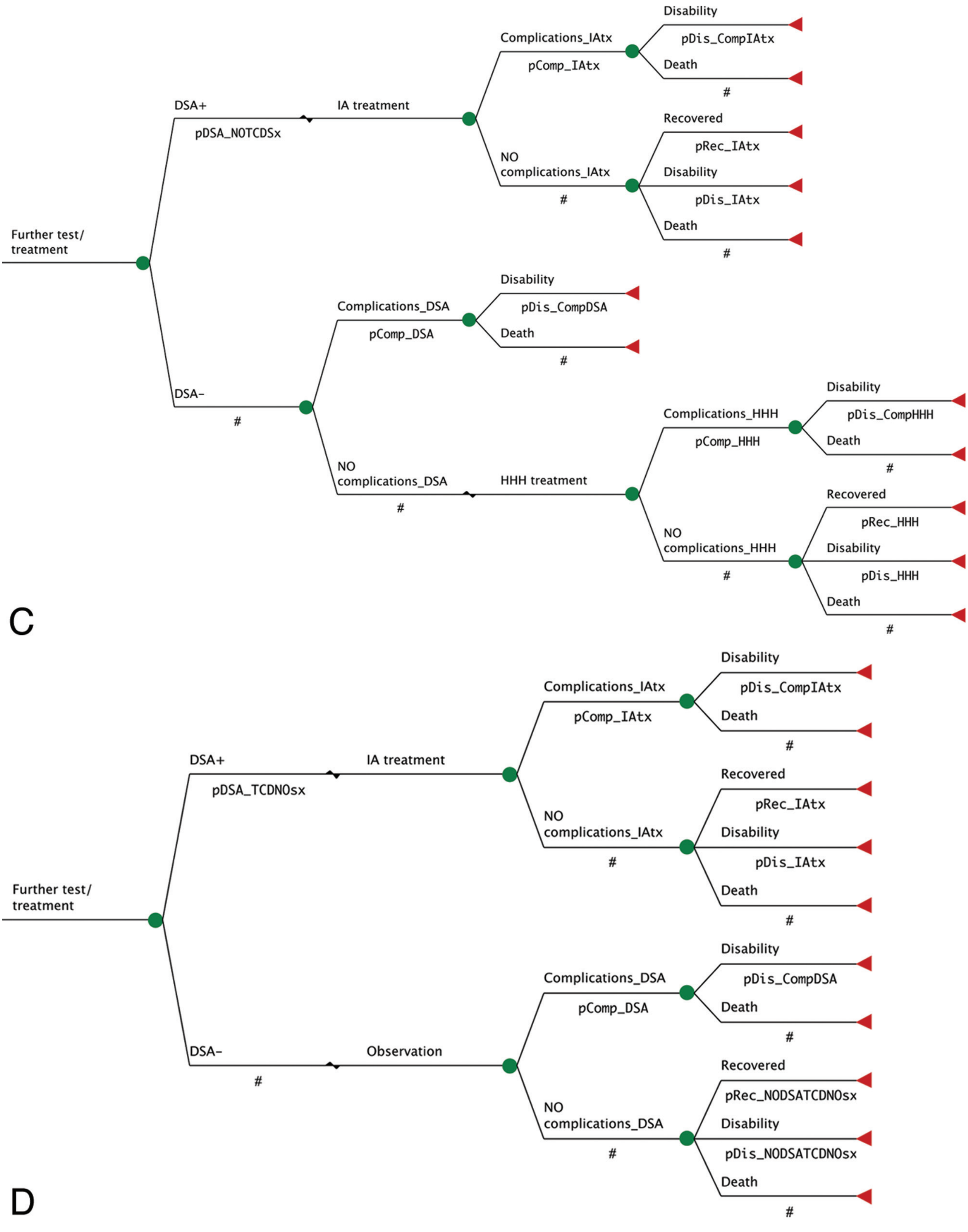
There is a standard scanning protocol for CTP at our institution by using LightSpeed or Pro-16 scanners (GE Healthcare, Milwaukee, Wisconsin) with a cine 4i scanning mode and 45-second acquisition at 1 rotation per second by using 80 kV-(peak) and 190 mA. A scanning volume of 2.0 cm was used, consisting of 4 sections at 5.0-mm thickness with its inferior extent selected at the level of the basal ganglia, above the orbits, to minimize radiation exposure to the lenses. Approximately 45 mL of nonionic iodinated contrast was administered intravenously at 5 mL/s by using a power injector with a 5-second delay.

Postprocessing of the acquired images into CBF, MTT, and CBV maps was performed on an Advantage Workstation (GE Healthcare) by using CTP software, Version 4.0 (GE Healthcare). This software uses a deconvolution method, which is considered most accurate for low-contrast-injection rates.[29] The postprocessing technique was standardized for all patients according to recommended guidelines,[30] with the arterial input function as the A2 segment of the anterior cerebral artery[31] and venous function as the superior sagittal sinus.

The perfusion maps were qualitatively evaluated by 2 neuroradiologists (with 10 and 7 years' experience) blinded to clinical and imaging data to determine the presence of perfusion deficits, defined as areas of decreased CBF and prolonged MTT, based on their radiologic evaluation as performed in clinical practice.[32] Focal perfusion abnormalities due to the primary hemorrhagic event and surgical intervention, as identified on the acquired images from the CTP dataset, were not included as perfusion deficits from DCI. After we reviewed the images independently, consensus judgment was determined.



ON-LINE FIG 1. *A*, Overview of the model structure. *B*, Branching design for the induced hypertensive treatment pathway for the new and standard imaging strategies. *C* and *D*, Branching design for the further test/treatment pathway in the standard imaging strategy in symptomatic and asymptomatic patients, respectively. All Observation branches in the model led directly to the health states (recovered, disability, and death). p indicates probability; Sx, symptomatic; CTAP, CTA and CTP; TCD, transcranial Doppler ultrasound; HHH, induced hypertension; Dis, disability; Comp, complication; Rec, recovered; DSA, digital subtraction angiography; IAtx, intra-arterial treatment.



ON-LINE FIG 1. Continued.

On-line Table 1: Input values (mean and standard error) and distributions for the parameters in the model[a]

Probabilities of Parameters	Distribution	Source	Mean	SE
Sx	Bootstrapped	SAH cohort	0.450	–
Patients with CTAP(+) and Sx	Bootstrapped	SAH cohort	0.800	–
Patients with TCD(+) and Sx	Bootstrapped	SAH cohort	0.640	–
Asx with CTAP(+)	Bootstrapped	SAH cohort	0.250	–
Patients with TCD(+) and Asx	Bootstrapped	SAH cohort	0.490	–
Patients recovered with CTAP(+) and Sx	β	SAH cohort/multinomial	0.785	0.017
Patients recovered with CTAP(−) and Asx	β	SAH cohort/multinomial	0.923	0.011
Patients disabled with CTAP(−) and Sx	β	SAH cohort/multinomial	0.164	0.015
Patients disabled with CTAP(−) and Asx	β	SAH cohort/multinomial	0.063	0.010
Patients recovered with DSA(−), TCD(+), and Sx	β	SAH cohort/multinomial	0.885	0.013
Patients recovered with DSA(−), TCD(+), and Asx	β	SAH cohort/multinomial	0.924	0.011
Patients recovered with TCD(−) and Asx	β	SAH cohort/multinomial	0.873	0.013
Patients disabled with DSA(−), TCD(+), and Sx	β	SAH cohort/multinomial	0.115	0.013
Patients disabled with DSA(−), TCD(+), and Asx	β	SAH cohort/multinomial	0.076	0.011
Patients disabled with TCD(−) and Asx	β	SAH cohort/multinomial	0.107	0.013
Patients with DSA(+), CTAP(+), and Sx	β	SAH cohort/multinomial	0.913	0.049
Patients with DSA(+), CTAP(+), and Asx	β	SAH cohort/multinomial	0.745	0.138
Patients with DSA(+), TCD(+), and Sx	β	SAH cohort/multinomial	0.583	0.085
Patients with DSA(+), TCD(−), and Sx	β	SAH cohort/multinomial	0.605	0.101
Patients with DSA(+), TCD(+), and Asx	β	SAH cohort/multinomial	0.218	0.069
Response to induced-hypertension treatment	β	Miller et al, 1995[33]	0.880	0.066
Complication from DSA	β	Willinsky et al, 2003[34]	0.005	0.001
Complication from IA therapy	β	Hoh et al, 2005[35]	0.050	0.009
Patients recovered with IA therapy	β	Schmidt et al, 2010[36]	0.910	0.033
Patients disabled with IA therapy	β	Kanamaru et al, 1998[37]	0.080	0.027
Patients recovered with induced hypertension	β	Miller et al, 1995[33]	0.880	0.066
Patients disabled with induced hypertension	β	Miller et al, 1995[33]	0.120	0.066
Patients disabled due to complication from induced hypertension	Uniform	Anecdotal	0.750	0.5, 1.0
Patients disabled due to complication from DSA	Uniform	Anecdotal	0.750	0.5, 1.0
Patients disabled due to complication from IA therapy	Uniform	Anecdotal	0.750	0.5, 1.0
Complication from induced hypertension	β	Miller et al, 1995[33]	0.050	0.025
Cost of CTAP	γ	2012 Medicare rates	650	65.0
Cost of DSA	γ	2012 Medicare rates	3096	309.6
Cost of TCD	γ	2012 Medicare rates	261	26.1
Cost of induced-hypertension treatment	γ	2012 Medicare rates	1835	183.5
Cost of IA therapy	γ	2012 Medicare rates	1626	162.6
Utility of recovered health state	β	Post et al, 2001[20]	0.80	0.080
Utility of disabled health state	β	Post et al, 2001[20]	0.22	0.022

Note:—Sx indicates symptomatic patient; Asx, asymptomatic patient; IA, intra-arterial.

[a] The sources for each input value are also included from the aneurysmal subarachnoid hemorrhage cohort data and literature.