SUPPLEMENT

Details on Determining Reference Standard in the Lesion Detectability Analysis

Since the pathological results for most liver lesions were not obtainable, two additional imaging studies composed of routine-dose CT or MRI – one within 1 year prior to SDCT and the other within 1 year after LDCT, were used to define the reference standard in each case. The time between these additional imaging studies was 488 ± 179 days (range, 175–1088 days). Lesions with changes in size depending on the imaging studies were excluded because differences in size between SDCT and LDCT images could disturb lesion detectability. Lesions smaller than 3 mm in diameter were also excluded from the analysis because their detectability may suffer from partial volume averaging. Finally, 99 lesions in 34 patients were confirmed as true positives.

Supplementary Table 1. Prespecified Equivalence Margins Used in the Equivalence Test for Quantitative Measures

	Liver	Muscle	Aorta
Image noise, HU	2.017	2.257	2.782
SNR	2.118	1.160	3.205
CNR	4.693	3.409	6.790

CNR = contrast-to-noise ratio, HU = Hounsfield unit, SNR = signal-to-noise ratio

Supplementary Table 2. Patient Characteristics of the Cohort Assessed for Lesion Conspicuity in Qualitative Image Quality Analysis

	Standard Dose	Lower Dose	*P*
Total number	45		N/A
Age, years*†	64 ± 9 (46–86)		N/A
Sex, male:female	25:20		N/A
Study interval, days*	223 ± 87 (56–365)		N/A
Body weight, kg*	63 ± 11 (44–87)	63 ± 12 (37–90)	0.687
Effective diameter, cm*‡	25.1 ± 2.6 (20.2–32.0)	25.3 ± 2.8 (19.2–32.8)	0.079
Scan length, cm*	58.5 ± 3.9 (51.7–68.2)	58.8 ± 3.9 (50.6–69.3)	0.280
Underlying oncologic disease			
Colorectal adenocarcinoma	43		N/A
Rectal NET or GIST	1		N/A
Colon polyps	1		N/A

Unless otherwise specified, the data are the number of patients. *Values represent mean ± standard deviation (range), †Age was recorded at the time of the lower-dose study, ‡Effective diameter = geometric mean of AP and LAT, where AP is the anteroposterior dimension and LAT is the lateral dimension of the body cross-section. GIST = gastrointestinal stromal tumor, NET = neuroendocrine tumor, N/A = non-applicable

Supplementary Table 3. Patient Characteristics of the Cohort for Lesion Detectability Analysis

	Standard Dose	Lower Dose	*P*
Total number	84		N/A
Age, years*†	63 ± 12 (28–85)		N/A
Sex, male:female	49:35		N/A
Study interval, days*	218 ± 90 (45–365)		N/A
Body weight, kg*	63 ± 10 (44–89)	63 ± 11 (37–93)	0.706
Effective diameter, cm*‡	25.5 ± 2.6 (20.2–33.0)	25.5 ± 2.7 (19.2–33.4)	0.935
Scan length, cm*	58.6 ± 3.6 (51.7–68.2)	58.8 ± 3.5 (50.6–67.1)	0.525
Underlying oncologic disease			
Colorectal adenocarcinoma	79		N/A
Rectal NET or GIST	3		N/A
Small bowel NET	1		N/A
Cutaneous malignant melanoma	1		N/A
Focal liver lesions per patient			
n = 1	11		N/A
n = 2	6		N/A
n = 3	5		N/A
n = 4	4		N/A
n = 5	5		N/A
n = 6	2		N/A
n = 8	1		N/A

Unless otherwise specified, the data are the number of patients. *Values are the mean ± standard deviation (range), †Age was recorded at the time of the lower-dose study, ‡Effective diameter = geometric mean of AP and LAT, where AP is the anteroposterior dimension and LAT is the lateral dimension of the body cross-section. GIST = gastrointestinal stromal tumor, NET = neuroendocrine tumor, N/A = non-applicable

Supplementary Table 4. Radiation Exposure of the Cohort Assessed for Lesion Conspicuity in Qualitative Image Quality Analysis

	Standard Dose	Lower Dose	Dose Reduction		*P*
			Absolute	Relative, %	
SSDE, mGy	10.1 ± 1.6 (6.7–12.9)	6.6 ± 1.1 (4.8–10.2)	3.5 ± 0.9 (1.9–5.1)	34.4 ± 5.4 (16.3–45.2)	< 0.001
DLP, mGy·cm	413.1 ± 118.6 (202.8–697.1)	273.3 ± 86.7 (140.5–568.1)	139.4 ± 48.0 (43.6–235.7)	33.7 ± 7.0 (15.3–51.6)	< 0.001
CTDIvol, mGy	6.9 ± 1.7 (3.9–10.5)	4.6 ± 1.2 (2.7–9.1)	2.4 ± 0.7 (1.1–3.7)	33.8 ± 6.3 (13.3–48.14)	< 0.001

Data are presented as the mean ± standard deviation (range). CTDIvol = CT dose index volume, DLP = dose-length product, SSDE = size-specific dose estimate

Supplementary Table 5. Radiation Exposure of the Cohort for Lesion Detectability Analysis

	Standard Dose	Lower Dose	Dose Reduction		*P*
			Absolute	Relative, %	
SSDE, mGy	10.3 ± 1.7 (6.7–16.4)	6.6 ± 1.1 (4.8–10.8)	3.6 ± 0.9 (1.7–5.5)	34.9 ± 5.6 (16.3–47.6)	< 0.001
DLP, mGy·cm	425.5 ± 125.0 (202.8–917.9)	276.8 ± 86.9 (140.5–667.5)	148.9 ± 56.3 (40.8–296.6)	34.6 ± 7.8 (14.9–51.6)	< 0.001
CTDIvol, mGy	7.2 ± 1.8 (3.9–14.9)	4.7 ± 1.3 (2.7–9.9)	2.5 ± 0.9 (1.0–4.9)	34.8 ± 6.6 (13.3–50.1)	< 0.001

Data are presented as the mean ± standard deviation (range). CTDIvol = CT dose index volume, DLP = dose-length product, SSDE = size-specific dose estimate