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ADULT CT COLONOGRAPHY PROTOCOLS

Indications (include, but are not limited to)
- Screening examination in individuals who are at average or moderate risk for developing colorectal carcinoma.
- Surveillance examination in patients with a history of previous colonic neoplasm.
- Diagnostic examination in symptomatic patients, particularly in the setting of incomplete or contraindicated routine colonoscopy, including, but not limited to, those with the following:
  - Abdominal pain
  - Diarrhea
  - Constipation
  - Gastrointestinal bleeding
  - Anemia
  - Intestinal obstruction
  - Weight loss
- For reference, see ACR–SAR–SCBT-MR PRACTICE PARAMETER FOR THE PERFORMANCE OF COMPUTED TOMOGRAPHY (CT) COLONOGRAPHY IN ADULTS.

Diagnostic Tasks (include but are not limited to)
- The primary task of CT colonography is to characterize colorectal findings, primarily to detect and characterize colorectal cancer and the precursor to colorectal cancers, polyps.
- Extracolonic structures should be evaluated at the time of the review of the colon.
- For reference, see ACR–SAR–SCBT-MR PRACTICE PARAMETER FOR THE PERFORMANCE OF COMPUTED TOMOGRAPHY (CT) COLONOGRAPHY IN ADULTS.

Key Elements
- Prior to the scan, bowel cleansing and colorectal distention through insufflation are required and should be performed per radiologist guidance. Proper exam preparation will have a high impact on the diagnostic quality of virtual colonography.
- Scanning should be performed at end expiration and breath hold should not exceed 25 seconds.
- A section thickness of 1–1.25 mm with a reconstruction interval of ≤ 1 mm is optimal for interrogation of the study on a 3D workstation.
- Optimally a 16-detector row (or greater) scanner is necessary to meet these requirements.
- Patient positioning is especially important when using tube current modulation.
- Automatic Exposure Control (AEC): Each manufacturer has unique nomenclature and operating characteristics for their AEC system(s). Users must become familiar with how the AEC systems on their scanners operate. *See Singh et al. Automatic Exposure Control in CT: Applications and Limitations. JACR 2011;8(6):446-449.*
- A separate workstation capable of 2-D and 3-D data display as well as prone and supine data side-by-side for interactive interrogation is required for post-analysis and interpretation.

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Contrast

Oral Tagging: When feasible, the use of tagging with water-soluble contrast alone or in combination with low-volume barium is recommended.

Intravenous: Diagnostic CT colonography may occasionally require intravenous (IV) contrast to characterize intracolonic or extracolonic structures or to address a second medical indication, as directed by a radiologist. When IV contrast is used, the radiation dose on the contrast-enhanced series should be similar to a standard abdominal pelvic CT. The second series acquired in a supine orientation is typically used for this.

Intravenous contrast enhancement, if used, should be performed as directed by the supervising radiologist using appropriate injection protocols and in accordance with the ACR-SPR Practice Guideline for the Use of Intravascular Contrast Media and the ACR Manual on Contrast Media

Scan mode & Patient Positioning

- Complete anatomic imaging of the colon and rectum should be obtained in at least 2 patient positions (usually supine and prone.) If the patient is unable to tolerate prone positioning, a right and left lateral decubitus can be substituted. Additional imaging (eg, in right or left decubitus position) is appropriate when imaging in 2 positions fails to adequately display the colonic lumen and acquisition of additional data is likely to result in a diagnostic study. Any additional imaging should be limited to the segment of interest to minimize additional radiation dose.
- Arms are preferably raised above the head if patient is able.
- Scanning should be performed in helical mode.

CT Localizer Radiograph

- Center the patient within the gantry; this is critical for proper functioning of AEC systems.
- Best practice recommends reviewing the CT localizer images for adequate colonic distention. Repeat the CT localizer radiograph after additional insufflation, if necessary.
- The CT localizer radiograph should be repeated after patient repositioning, including changes in patient orientation, table height, and arm placement.
- If the patient is not sufficiently centered in the vertical direction, substantial magnification or minification can affect the accuracy of the AEC system estimate of patient size resulting in suboptimal exam dose and image quality. Confirmation of vertical patient centering should be performed using a lateral CT localizer, whenever feasible.
- Users need to know whether the order in which the CT localizer radiographs are acquired will affect the technique factors, and hence radiation dose, in subsequent scans. In most scanners, only the CT localizer radiograph acquired immediately preceding the scan is used for AEC technique calculations (whether anterior-posterior/posterior-anterior or lateral). In other scanners, both the anterior-posterior/posterior-anterior and lateral CT localizer radiographs are considered, if both are present. The orientation in which the CT localizer radiograph was acquired (anterior-posterior vs. posterior-anterior vs. lateral) will affect the AEC technique on some scanners. Thus, AEC settings may need to be adjusted based on the orientation of the CT localizer radiograph to achieve consistent levels of image quality or noise. Users should consult with the CT manufacturer to determine optimal settings for their scanner.

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Scan Range
- Scan from the diaphragm inferiorly to the ischium ensuring the entire colon and rectum are included in the data acquisition.

Suspension of Respiration
- Each series should be obtained at end expiration to minimize pressure effects of inflated lungs on the transverse colon.

Additional Image Reconstructions
- Thin slice images (≤ 1mm) should be sent to a workstation for post processing and analysis for CT colonography. Abnormalities should be interrogated with coronal and sagittal planar MPRs, multiple endoluminal views, and axial MIPS generated at the workstation from the thin slice data.
- Diagnostic examinations performed with indications secondary to CT colonography should provide axial and MPR images per radiologist guidance.

Radiation Dose Management
- AEC should be used whenever possible.
- Pay careful attention to the values selected to define the desired level of image quality (eg, Noise Index, Quality Reference mAs, Standard Deviation).
- Each manufacturer will have recommendations unique to their systems and system features. Be sure to work with your CT equipment manufacturer and a qualified medical physicist to ensure safe and appropriate operation of AEC systems.
- If more than one CT localizer radiograph is acquired, AEC systems from different manufacturers can differ with respect to which one is used to determine mA and/or kV settings. Please refer to individual manufacturer protocol instructions.
- The recommended acquisition settings provided below may not be appropriate for every patient. The system display of expected tube current modulation should be reviewed after acquiring the CT localizer radiographs. If the tube current is at the minimum or maximum values during a portion of the study, users should consider adjusting rotation time, pitch, or kVp as recommended by the CT equipment manufacturer and a qualified medical physicist, whenever feasible.

Approximate Volume CT Dose Index (CTDIvol) Values
- Approximate values for CTDIvol for each series (ie, prone/supine) are listed for three different patient sizes:

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Average Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

The approximate CTDIvol values are for reference only and represent a dose to the CT Dose Index phantom under very specific conditions. The CTDIvol displayed on the scanner for a patient of a given size should be similar, but not necessarily an exact match, to those listed in the above table. Larger patients than those indicated will require higher CTDIvol values. The provided values are all based on the 32 cm diameter "body" CTDI phantom.

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It is essential that users recognize that the CTDIvol values reported on the scan console prior to acquiring CT localizer radiographs on a particular patient do not represent the CTDIvol that will be delivered during that patient's scan. CT systems rely on the CT localizer radiograph to 1) estimate the patient's size, 2) determine the tube current settings for each tube angle and table position that will yield the requested level of image quality, and 3) calculate the average CTDIvol for the patient over the prescribed scan range. Until the CT localizer radiograph is acquired, the reported CTDIvol is not patient-specific, but is based on a generic patient size.

The CTDIvol values provided here are approximate, and are intended only to provide reference ranges for the user to consider. They are for a routine adult CT Colonography for the general indictations given at the beginning of this document. Other indications or diagnostic tasks may have different image quality and dose requirements, and hence reasonable ranges of CTDIvol may differ according to those requirements.

In this document, a small patient is approximately 50-70 kg (110-155 lbs), an average patient approximately 70-90 kg (155-200 lbs), and a large patient 90-120 kg (200-265 lbs). However, weight is not a perfect indication of patient size. A person's height, gender and distribution of weight across the body also must be considered. The thickness of the body over the area to be scanned is the best indication of patient size. Body mass index (BMI) may also be considered:

- Underweight = BMI <18.5
- Normal weight = BMI of 18.5–24.9
- Overweight = BMI of 25–29.9
- Obesity = BMI of 30 or greater

It is recognized that the median (50th percentile) patient size for adults in the USA is larger than 70 kg. However, the 70 kg patient represents the "Reference Man", as defined by the International Commission on Radiation Protection (ICRP), upon which AEC systems and tissue weighting factors (used for effective dose estimation) are based.

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INDEX OF ADULT CT COLONOGRAPY PROTOCOLS (by manufacturer)

The disclaimer found on page 1 is an integral part of this document.

ADULT ROUTINE CT COLONOGRAPY (Selected GE scanners) with Auto/Smart mA   (**Back to INDEX**)

SCOUT: AP if automatic exposure control is used. PA if manual mA is used. Lateral scout optional, but recommended to ensure accurate vertical (AP) centering. If two Scouts are obtained, the second one must cover the entire intended scan range, as it is used to determine mA settings.

GE	Revolution CT	Discovery CT750 HD	EVO	Optima CT660	LightSpeed VCT
Scan Type	Helical	Helical	Helical	Helical	Helical
Rotation Time (s)	0.35	0.4	0.4	0.5	0.4
Collimation, mm (Detector Configuration)	40 (64x0.625 mm)	40 (64x0.625 mm)	40 (64x0.625 mm)	40 (64x0.625 mm)	40 (64x0.625 mm)
Pitch	1.375	1.375	1.375	1.375	1.375
Table Feed/Interval (mm)	55	55	55	55	55
kV	120	120	120	120	120
Auto-mA	30-470	30-420	30-420	30-420	30-420
Noise Index (NI)* [Prone / Supine]	22 / 41	28 / 68	25 / 60	25 / 60	25 / 60
SFOV	Large	Large	Large	Large	Large

RECON 1 Primary (Prone)

	Revolution CT	Discovery CT750 HD	EVO	Optima CT660	LightSpeed VCT
Plane	Axial	Axial	Axial	Axial	Axial
Algorithm	Stnd	Stnd	Stnd	Stnd	Stnd
Recon Mode	Plus	Plus	Plus	Plus	Plus
Thickness (mm)*	5	5	5	5	5
Interval (mm)	3	3	3	3	3
ASiR Setup**	SS40	SS40	SS40	SS40	SS40

RECON 2 (Prone)

	Revolution CT	Discovery CT750 HD	EVO	Optima CT660	LightSpeed VCT
Plane	Axial	Axial	Axial	Axial	Axial
Algorithm	Stnd	Stnd	Stnd	Stnd	Stnd
Recon Mode	Plus, IQ Enhance	Plus, IQ Enhance	Plus, IQ Enhance	Plus, IQ Enhance	Plus, IQ Enhance
Thickness (mm)*	1.25	1.25	1.25	1.25	1.25
Interval (mm)	0.625	0.625	0.625	0.625	0.625
ASiR Setup**	None	None	None	None	None

RECON 1 Primary (Supine)

	Revolution CT	Discovery CT750 HD	EVO	Optima CT660	LightSpeed VCT
Plane	Axial	Axial	Axial	Axial	Axial
Algorithm	Stnd	Stnd	Stnd	Stnd	Stnd
Recon Mode	Plus, IQ Enhance	Plus, IQ Enhance	Plus, IQ Enhance	Plus, IQ Enhance	Plus, IQ Enhance
Thickness (mm)*	1.25	1.25	1.25	1.25	1.25
Interval (mm)	0.625	0.625	0.625	0.625	0.625
ASiR Setup**	None	None	None	None	None

*The Noise Index value and the primary (RECON 1) image reconstruction thickness both strongly impact CTDIvol and patient dose. See: Kanal KM et al. Impact of Operator-Selected Image Noise Index and Reconstruction Slice Thickness on Patient Radiation Dose in 64-MDCT. *AJR* 2007; 189: 219-225. Note that the NI and primary reconstruction thickness are different for Prone and Supine imaging and scanners should be programmed accordingly.

**Protocols using Auto/Smart mA have the dose reduction guidance value set to 0% and ASiR applied. Not all GE scanners have the dose reduction guidance feature. The same dose savings can be realized with a corresponding increase in NI and manual application of ASiR when the dose reduction guidance value is set to zero.

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (Selected GE scanners) with manual mA   (**Back to INDEX**)

SCOUT: AP if automatic exposure control is used. PA if manual mA is used. Lateral scout optional, but recommended to ensure accurate vertical (AP) centering. If two Scouts are obtained, the second one must cover the entire intended scan range, as it is used to determine mA settings.

GE	Revolution CT	Discovery CT750 HD	EVO	Optima CT660
Scan Type	Helical	Helical	Helical	Helical
Rotation Time (s)	0.5	0.5	0.6	0.6
Collimation, mm (Detector Configuration)	40 (64x0.625 mm)	40 (64x0.625 mm)	40 (64x0.625 mm)	40 (64x0.625 mm)
7Pitch	1.375	1.375	0.984	0.984
Table Feed/Interval (mm)	55	55	39.37	39.37
kV*	120	120	120	120
mA*	100	120	60	70
Noise Index (NI)	NA	NA	NA	NA
SFOV	Large	Large	Large	Large
ASiR	50% ASIRV	50% ASIR	50% ASIRV	50% ASIR

RECON 1

Plane	Axial	Axial	Axial	Axial
Algorithm	Stnd	Stnd Plus	Stnd Plus	Stnd Plus
Recon Mode	Full	Full	Full	Full
Thickness (mm)	1.25	1.25	1.25	1.25
Interval (mm)	1.25	1.25	1.25	1.25

* For standard sized patient, defined as 5'7", 155 pounds. For small patients, mA may be reduced by as much as 50%; for large patients, mA may be increased by 50-100%.

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (Selected GE scanners) with manual mA

SCOUT: AP if automatic exposure control is used. PA if manual mA is used. Lateral scout optional, but recommended to ensure accurate vertical (AP) centering. If two Scouts are obtained, the second one must cover the entire intended scan range, as it is used to determine mA settings.

GE	Optima CT 540	Optima CT 520	LightSpeed VCT
Scan Type	Helical	Helical	Helical
Rotation Time (s)	0.5	0.8	0.5
Collimation, mm (Detector Configuration)	10 (16x0.625 mm)	10 (16x0.625 mm)	40 (64x0.625 mm)
Pitch	1.375	1.375	1.375
Table Feed/Interval (mm)	13.75	13.75	55
kV*	120	120	120
mA*	120	75	100
Noise Index (NI)	NA	NA	NA
SFOV	Large	Large	Large
ASiR	NA	NA	50% ASIR

RECON 1

Plane	Axial	Axial	Axial
Algorithm	Std	Std	Stnd Plus
Recon Mode	Full	Full	Full
Thickness (mm)	1.25	1.25	1.25
Interval (mm)	1.25	1.25	1.25

* For standard sized patient, defined as 5'7", 155 pounds. For small patients, mA may be reduced by as much as 50%; for large patients, mA may be increased by 50-100%.

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (selected HITACHI scanners) (Back to INDEX)

SCANOGRAM: PA (CXR4) and Lateral, scan from above diaphragm to below ischium. 120 kVp, 25mA.

HITACHI	CXR4	ECLOS 16	Supria 16	SCENARIA 64
Scan Type	Volume	Volume	Volume	Volume
Rotation Time (s)	0.8	0.8	0.75	0.75
Detector Configuration	2.5 mm x 4	1.25 mm x 16	1.25 mm x 16	0.625 mm x 64
Pitch	1.25	1.1	1.1	0.8
Speed (mm/rot)	12.5	21.25	21.25	33.125
kV	120	120	120	120
mA or mA Range	125	100-350	100 - 350	100-600
Adaptive mA/IntelliEC	YES	SD 21.5	SD 17.5	SD 21.5
SFOV	500	500	500	500

RECON 1

Series Description	Abdomen Pelvis	Abdomen Pelvis	Abdomen Pelvis	Abdomen Pelvis
Type	Axial	Axial	Axial	Axial
Algorithm	Abd STD 4	Abd STD 32	Abd STD 32	Abd STD 32
Thickness (mm)	5	5	5	5
Interval (mm)	5	5	5	5

RECON 2: To be sent to TeraRecon or other 3D Workstation

Series Description	Thins	Thins	Thins	Thins for MPR
Type	Axial	Axial	Axial	Axial
Algorithm	Abd STD 4	Abd STD 32	Abd STD 32	Abd STD 32
Thickness (mm)	2.5	1.25	1.25	0.625
Interval (mm)	1.25	0.625	0.625	0.313

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (selected NEUSOFT scanners)   (**Back to INDEX**)

SURVIEW: PA & LAT, 500mm (Adjust to cover: Top of liver through pubic symphysis)

NEUSOFT	NeuViz 16	NeuViz 64	NeuViz 128
Rotation Time (s)	0.6	0.5	0.5
Detector Configuration (mm)	16 x 0.75 (16 mm)	64 x 0.625 mm (20 mm)*	128 x 0.625mm (40 mm)*
Pitch	1.2	1.3	1.3
O-DOSE	N/A	ON	ON
DoseRight	ON	N/A	N/A
ClearView	N/A	40%	40%
kV	120	120	120
Effective mAs	100	100	100

RECON Supine

Type	Axial	Axial	Axial
Filter	SB	F20	F20
Slice (mm)	1.0	1.0	1.0
Increment (mm)	0.5	0.5	0.5

RECON Prone

Type	Axial	Axial	Axial
Filter	SB	F20	F20
Slice (mm)	1.0	1.0	1.0
Increment (mm)	0.5	0.5	0.5

* Indicates that a z-axis "flying focal spot" technique is used to obtain twice as many projections as detector rows. Simultaneous x-y deflection is also incorporated.

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (selected PHILIPS scanners)

SURVIEW: Frontal, 50 cm starting at mid-sternum (feet first) or pubic symphysis (head first). If two Surviews are obtained, the first one must cover the entire intended scan range, as it is used to determine mA settings.

PHILIPS	Brilliance 16 slice	Brilliance 64 channel with iPatient	Ingenuity CT with iPatient	Brilliance iCT SP with iPatient	Brilliance iCT with iPatient	IQon Spectral CT
Scan Type	Helical	Helical	Helical	Helical	Helical	Helical
Rotation Time (s)	0.5	0.5	0.4	0.4	0.4	0.33
Collimation	16 x 0.75mm	64 x 0.625mm	64 x 0.625mm	64 x 0.625mm	128 x 0.625mm	64 x 0.625mm
kVp	120	120	120	120	120	120
Manual mAs/slice	100	100	100	100	100	80
DoseRight ACS*	DRI NA	DRI=14	DRI=14	DRI=14	DRI=14	DRI = 14
Pitch	0.93	0.9	1.17	1.17	1.0	1.17
FOV (mm)	180-360	180-360	180-360	180-360	180-360	180-360

RECON 1

	Brilliance 16 slice	Brilliance 64 channel	Ingenuity CT	Brilliance iCT SP	Brilliance iCT	IQon Spectral CT
Type	Axial	Axial	Axial	Axial	Axial	Axial
Filter	B	B	B	B	B	B
Thickness (mm)	1	1	1	1	1	1
Increment (mm)	0.8	0.5	0.5	0.5	0.5	0.5

*Dose Right Index (DRI) is available on scanner models with the iPatient interface.

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (selected PHILIPS scanners) with iDose/IMR

SURVIEW: Frontal, 50 cm starting at mid-sternum (feet first) or pubic symphysis (head first). If two Surviews are obtained, the first one must cover the entire intended scan range, as it is used to determine mA settings.

PHILIPS	Brilliance 64 channel with iPatient	Ingenuity CT with iPatient	Brilliance iCT SP with iPatient	Brilliance iCT with iPatient	IQon Spectral CT
Scan Type	Helical	Helical	Helical	Helical	Helical
Rotation Time (s)	0.5	0.4	0.4	0.4	0.33
Collimation	64 x 0.625mm	64 x 0.625mm	64 x 0.625mm	128 x 0.625mm	64 x 0.625mm
kVp	120	120	120	120	120
Manual mAs/slice	45	45	45	45	45
DoseRight ACS*	DRI=7	DRI=7	DRI=7	DRI=7	DRI=7
Pitch	0.9	1.17	1.17	1.0	1.17
FOV (mm)	180-360	180-360	180-360	180-360	180-360

RECON 1

Type	Axial	Axial	Axial	Axial	Axial
Filter / Image Definition**	B	B / Routine	B / Routine	B / Routine	B / Routine
Iterative Reconstruction**	iDose:5	iDose:5 / IMR:1	iDose:5 / IMR:1	iDose:5 / IMR:1	iDose:5 / IMR:1
Thickness (mm)	1	1	1	1	1
Increment (mm)	0.5	0.5	0.5	0.5	0.5

*Dose Right Index (DRI) is available on scanner models with the iPatient interface.
**Use Filter setting for iDose and Image Definition for IMR.

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (selected SIEMENS scanners)

TOPOGRAM: AP, 512 or 768 mm. Scan from above diaphragm to below ischium. If two Topograms are obtained, both will be used to determine mA settings.

SIEMENS	Emotion 16/ Scope Power	Perspective 64/ Perspective 128	Sensation 64	Definition DS
Rotation Time (s)	0.8	0.6	0.6	0.6
Detector Configuration (mm)	16 x 0.6 mm	32 x 0.6 mm/ 64 x 0.6 mm	32x0.6 mm	32 x 0.6 mm ^{FS} (64 x 0.6)
Pitch [Supine / Prone]	1.5	1.3/1.4	1.4	0.9 / 1.4*
CARE Dose4D	ON	ON	OFF	ON
CARE kV	-	-	-	ON (Semi)
kV	130	130	120	120
Quality ref. mAs [Supine / Prone]	50/30*	50/30*	50/30*	55/30*

RECON Supine

	Emotion 16/ Scope Power	Perspective 64/ Perspective 128	Sensation 64	Definition DS
Type	Axial	Axial	Axial	Axial
Kernel	B20s	B20s	B20f	B20f
Slice (mm)	1.0	1.0	1.0	1.0
Increment (mm)	0.7	0.7	0.7	0.7

RECON Prone

	Emotion 16/ Scope Power	Perspective 64/ Perspective 128	Sensation 64	Definition DS
Type	Axial	Axial	Axial	Axial
Kernel	B10s	B10s	B20f	B10f
Slice (mm)	1.0	1.0	1.0	1.0
Increment (mm)	0.7	0.7	0.7	0.7

*Supine & Prone values respectively – ensure that the tomogram is repeated after patient is moved into the prone position, following the supine acquisition.
^{FS} Optimized double z-sampling through periodic motion of the Focal Spot

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (selected SIEMENS scanners, continued)

TOPOGRAM: AP, 512 or 768 mm. Scan from above diaphragm to below ischium. If two Topograms are obtained, both will be used to determine mA settings.

SIEMENS	Definition AS+/ Edge (128-slice)	Definition Flash (Dual source 128-slice)	Drive (Dual source 128-slice)	Drive (Dual source 128-slice) LD	Force (Dual source 192-slice)	Force (Dual source 192-slice) LD
Rotation time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Detector Configuration	64 x 0.6 mm FS (128 x 0.6)	64 x 0.6 mm FS (128 x 0.6)	64 x 0.6 mm FS (128 x 0.6)	64 x 0.6 mm FS (128 x 0.6)	96 x 0.6 mm FS (192 x 0.6)	96 x 0.6 mm FS (192 x 0.6)
Pitch [Supine / Prone]	0.9 / 1.4*	0.9 / 1.4*	0.9 / 1.4*	0.9 / 1.4*	0.9 / 1.4*	0.9 / 1.4*
CARE Dose4D	ON	ON	ON	ON	ON	ON
CARE kV	ON (Semi)	ON (Semi)	ON (Semi)	ON (Semi)	ON (Semi)	ON (Semi)
kV	120	120	120	Sn140	120	Sn150
Quality ref. mAs [Supine / Prone]	55/30*	55/30*	55/30*	66/36*	55/30*	79/43*
RECON Supine						
Kernel	B20f	B20f	B20f	B20f	Br40	Br40
Slice (mm)	1.0	1.0	1.0	1.0	1.0	1.0
Position increment (mm)	0.7	0.7	0.7	0.7	0.7	0.7
RECON Prone						
Kernel	B10f	B10f	B10f	B10f	Br36	Br36
Slice (mm)	1.0	1.0	1.0	1.0	1.0	1.0
Position increment (mm)	0.7	0.7	0.7	0.7	0.7	0.7

*Supine & Prone values respectively – ensure that the tomogram is repeated after patient is moved into the prone position, following the supine acquisition.
FS Optimized double z-sampling through periodic motion of the Focal Spot
LD Low dose protocol utilizing the Selective Photon Shield (SPS) – Tin filtration (Sn)

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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ADULT ROUTINE CT COLONOGRAPY (selected TOSHIBA scanners)   (**Back to INDEX**)

SCANOGRAM: Dual scanogram: PA and LAT; diaphragm to below ischium. Both scanograms are used for tube current modulation.

Toshiba	Aq Lightning / RXL	Aq PRIME 40	Aq 64	Aq PRIME 80/160	Aq ONE 320 / 640 / ViSION / GENESIS
Scan Type	Helical	Helical	Helical	Helical	Helical
Rotation Time (s)	0.5 (or fastest available)	0.5	0.5	0.5	0.5
Detector Configuration	16 x 1.0	40 x 1.0	64 x 0.5	80 x 0.5	80 x 0.5
Pitch	Standard (0.938)	Standard (0.825)	Standard (0.828)	Standard (0.813)	Standard (0.813)
Speed (mm/rot)	30	66	53	65	65
kV	120	120	120	120	120
mA	30-300	40-500	40-500	40-500	40-500
^{SURE}Exposure	Low Dose (SD 15)	Low Dose (SD 15)	Low Dose (SD 15)	Low Dose (SD 15)	Low Dose (SD 15)
Iterative Reconstruction	AIDR 3D	AIDR 3D	AIDR 3D	AIDR 3D	AIDR 3D or FIRST
SFOV (mm)	400 mm (L)	400 mm (L)	400 mm (L)	400 mm (L)	400 mm (L)

RECON 1

Type	Axial	Axial	Axial	Axial	Axial
^{SURE}IQ Setting*	Body Std Axial	Body Std Axial	Body Std Axial	Body Std Axial	Body Std Axial
Thickness (mm)	5	5	5	5	5
Interval (mm)	5	5	5	5	5

RECON 2

Type	Axial	Axial	Axial	Axial	Axial
^{SURE}IQ Setting*	Body Std Volume	Body Std Volume	Body Std Volume	Body Std Volume	Body Std Volume
Thickness (mm)	1.0	1.0	0.5	0.5	0.5
Interval (mm)	0.8	0.8	0.3	0.3	0.3

*The ^{SURE}IQ setting determines the reconstruction FC as well as other post-processing and reconstruction options, such as AIDR. The ^{SURE}IQ settings listed in this document refer to the manufacturer's default settings.

	Approx. Weight (kg)	Approx. Weight (lbs)	Approx. CTDIvol (mGy)
Small Patient	50-70	110-155	2-4
Avg. Patient	70-90	155-200	3-6
Large Patient	90-120	200-265	5-9

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