PHILIPS

Protocol

Table of Contents

Click on your desired protocol to go directly to that section

Philips: Brilliance iCT, 6000 iCT Protocol

This patient preparation protocol aligns with the 2016 SCCT Guidelines for the performance and acquisition of coronary computed tomographic angiography.[1]

Patient Preparation

The referring physician or provider should review the patient's history and screen them prior to the CCTA for any contraindications such as contrast allergies, pregnancy, renal impairment, and clinical instabilities (acute myocardial infarction, heart failure, and severe hypotension).[1]

Note: Cleerly is unable to analyze coronary artery bypass grafts. If a CABG study is submitted, Cleerly will reject the scan. However, pacemakers and stents are acceptable for analysis.

If a patient cannot cooperate with scan preparation, acquisition, and/or breath-hold instructions then it is best advised to forgo the CCTA scan. It is pertinent that the patient collaborates with CT technologists to achieve a high quality scan.

Patients should be informed of the preparation at the time of scheduling their CCTA. It is recommended that patients discontinue solid foods at least 3–4 hours before their scan to reduce nausea and a potential spike in heart rate, however water and clear fluids are acceptable and encouraged to consume. The patient should discontinue caffeine or stimulants 12 hours before the scan as this can decrease the ability to lower and stabilize the heart rate. The patient may continue to take routine medications under the direction of their physician. Since Nitroglycerin may be administered, it is important to discontinue the use of erectile dysfunction medication 72 hours before the scan (24 hours for sildenafil) and 24 hours post scan.[1]

The 2016 SCCT guidelines for the performance and acquisition of CCTAs recommends the use of Nitroglycerin and beta-blockers to enhance image quality. Cleerly recommends a Nitroglycerin dose of 0.8 mg, as it falls within guideline parameters and represents an optimal range to achieve consistent coronary vasodilation for improved visualization. A best practice is to wait 5 minutes post Nitroglycerin administration to ensure proper vasodilation. Beta-blockers can be prescribed by the patient's referring physician or upon arrival at the discretion of a qualified medical professional. The guidelines recommend to pre-medicate patients with 50 mg metoprolol by mouth 12 hours before the scan and another 50–100 mg metoprolol by mouth 1 hour before the scan. Slow-release forms of beta-blockers should not be used. Supplement IV beta-blockers can be administered to help reduce the patient's heart rate immediately prior to the exam. If Supplemental IV beta-blockers are called for, then it is common practice to administer 5 mg of IV metoprolol followed by 5 minutes of monitoring. If the target heart rate is not reached and the patient's vitals allow for it, this process can be repeated for a total dose of up to 20–25 mg.[1]

Even if the patient's heart rate is within the target threshold, it is common practice to

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

administer a small dose of beta-blockers to stabilize and to avoid an elevated heart rate due to contrast administration.[1]

It is essential to educate and instruct the patient of what to expect during the scan such as breathing instructions, IV contrast administration, and scan duration. Convey clear expectations for the patient. For example, explain what the patient can expect before, during, and after the scan and the purpose of beta-blockers and Nitroglycerin. Brief the patient on potential side effects of the contrast and medication. By informing the patient this can drastically reduce anxiety thus help produce excellent image quality.

Guidelines Suggested ECG-Gated Acquisition

- Prospective gating should be utilized if the heart rate is at, or below, the target heart rate and if there is minimal variance (< 4 bpm).
- Retrospective gating should be utilized if the heart rate is greater than the target heart rate and/or if there is significant variance (> 4 bpm).

Rotation Time	Target Heart Rate
0.35 seconds	≤ 60 bpm
< 0.30 seconds	≤ 65 bpm

Series 1 - Surview (Dual)	BMI ≤ 30	BMI > 30
Frontal kV	100	120
Frontal mA	30	40
Lateral kV	100	120
Lateral mA	30	40
Surview Length	300	300
Surview FOV	500	500

Bolus Tracking - Spiral Auto Start (SAS)	BMI ≤ 30	BMI > 30
mA	40	40
Post Injection Delay(s)	7.0	7.0
Cycle Time(s)	1.0	1.0
Enhancement Threshold (HU)	110	110
Post Threshold Delay(s)	Minimum	Minimum
ROI Placement	Ascending Aorta	Ascending Aorta

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Retrospective

Retrospective	BMI ≤ 30	BMI > 30
Scan Type	Cardiac	Cardiac
Collimation	Auto	Auto
Pitch	0.16	0.16
Rotation Time(s)	0.27	0.27
Resolution	Standard	Standard
DoseRight	Yes	Yes
DoseRight Index (DRI)*	35	35
Cardiac DoseRight (ECG Modulation)	Yes	Yes
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Tolerance	3–5	3–5
Auto Pitch/Rotation Time Based on Heart Rate	No	No

Result Parameters for Retrospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4 or IMR - Level 2	iDose - Level 4 or IMR - Level 2
Filter	XCB and XCC	XCB and XCC
Single Cycle Recon	No	No
Phases	40%, 50%, 70%, 75%, 80%	40%, 50%, 70%, 75%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Prospective

Prospective	BMI ≤ 30	BMI > 30
Scan Type	Step & Shoot	Step & Shoot
Resolution	Standard	Standard
Collimation	Auto	Auto
Pitch	N/A	N/A
Rotation Time(s)	0.27	0.27
Number of Cycles	2	2
DoseRight	Yes	Yes
DoseRight Index (DRI)*	21	21
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Target	75%	75%
Phase Tolerance	5	5

Result Parameters for Prospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4 or IMR - Level 2	iDose - Level 4 or IMR - Level 2
Filter	XCB and XCC	XCB and XCC
Edge Correction	No	No
Phases	70%, 72%, 75%, 78%, 80%	70%, 72%, 75%, 78%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Contrast Protocol

kVp	Iodine Concentration (mg/mL)	Volume (mL) @ Standard Injection Rate (mL/s)	Large Habitus Volume (mL) @ Standard Injection Rate (mL/s)	Saline Chaser
100	320	**65–70 mL** @ 5.0–5.5 mL/s		40 mL
	350	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
	370	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
120	320	**78–85 mL** @ 6.0–6.5 mL/s	**90–97 mL** @ 7.0–7.5 mL/s	40 mL
	350	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL
	370	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL

Formula: (scan delay time + acquisition time) x flow rate = contrast volume[1]

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Philips: Brilliance iCT SP, iCT SP Protocol

This patient preparation protocol aligns with the 2016 SCCT Guidelines for the performance and acquisition of coronary computed tomographic angiography.[1]

Patient Preparation

The referring physician or provider should review the patient's history and screen them prior to the CCTA for any contraindications such as contrast allergies, pregnancy, renal impairment, and clinical instabilities (acute myocardial infarction, heart failure, and severe hypotension).[1]

Note: Cleerly is unable to analyze coronary artery bypass grafts. If a CABG study is submitted, Cleerly will reject the scan. However, pacemakers and stents are acceptable for analysis.

If a patient cannot cooperate with scan preparation, acquisition, and/or breath-hold instructions then it is best advised to forgo the CCTA scan. It is pertinent that the patient collaborates with CT technologists to achieve a high quality scan.

Patients should be informed of the preparation at the time of scheduling their CCTA. It is recommended that patients discontinue solid foods at least 3–4 hours before their scan to reduce nausea and a potential spike in heart rate, however water and clear fluids are acceptable and encouraged to consume. The patient should discontinue caffeine or stimulants 12 hours before the scan as this can decrease the ability to lower and stabilize the heart rate. The patient may continue to take routine medications under the direction of their physician. Since Nitroglycerin may be administered, it is important to discontinue the use of erectile dysfunction medication 72 hours before the scan (24 hours for sildenafil) and 24 hours post scan.[1]

The 2016 SCCT guidelines for the performance and acquisition of CCTAs recommends the use of Nitroglycerin and beta-blockers to enhance image quality. Cleerly recommends a Nitroglycerin dose of 0.8 mg, as it falls within guideline parameters and represents an optimal range to achieve consistent coronary vasodilation for improved visualization. A best practice is to wait 5 minutes post Nitroglycerin administration to ensure proper vasodilation. Beta-blockers can be prescribed by the patient's referring physician or upon arrival at the discretion of a qualified medical professional. The guidelines recommend to pre-medicate patients with 50 mg metoprolol by mouth 12 hours before the scan and another 50–100 mg metoprolol by mouth 1 hour before the scan. Slow-release forms of beta-blockers should not be used. Supplement IV beta-blockers can be administered to help reduce the patient's heart rate immediately prior to the exam. If Supplemental IV beta-blockers are called for, then it is common practice to administer 5 mg of IV metoprolol followed by 5 minutes of monitoring. If the target heart rate is not reached and the patient's vitals allow for it, this process can be repeated for a total dose of up to 20–25 mg.[1]

Even if the patient's heart rate is within the target threshold, it is common practice to

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

administer a small dose of beta-blockers to stabilize and to avoid an elevated heart rate due to contrast administration.[1]

It is essential to educate and instruct the patient of what to expect during the scan such as breathing instructions, IV contrast administration, and scan duration. Convey clear expectations for the patient. For example, explain what the patient can expect before, during, and after the scan and the purpose of beta-blockers and Nitroglycerin. Brief the patient on potential side effects of the contrast and medication. By informing the patient this can drastically reduce anxiety thus help produce excellent image quality.

Guidelines Suggested ECG-Gated Acquisition

- Prospective gating should be utilized if the heart rate is at, or below, the target heart rate and if there is minimal variance (< 4 bpm).
- Retrospective gating should be utilized if the heart rate is greater than the target heart rate and/or if there is significant variance (> 4 bpm).

Rotation Time	Target Heart Rate
0.35 seconds	≤ 60 bpm
< 0.30 seconds	≤ 65 bpm

Series 1 - Surview (Dual)	BMI ≤ 30	BMI > 30
Frontal kV	100	120
Frontal mA	30	40
Lateral kV	100	120
Lateral mA	30	40
Surview Length	300	300
Surview FOV	500	500

Bolus Tracking - Spiral Auto Start (SAS)	BMI ≤ 30	BMI > 30
mA	40	40
Post Injection Delay(s)	7.0	7.0
Cycle Time(s)	1.0	1.0
Enhancement Threshold (HU)	110	110
Post Threshold Delay(s)	Minimum	Minimum
ROI Placement	Ascending Aorta	Ascending Aorta

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Retrospective

Retrospective	BMI ≤ 30	BMI > 30
Scan Type	Cardiac	Cardiac
Collimation	Auto	Auto
Pitch	0.16	0.16
Rotation Time(s)	0.27	0.27
Resolution	Standard	Standard
DoseRight	Yes	Yes
DoseRight Index (DRI)*	35	35
Cardiac DoseRight (ECG Modulation)	Yes	Yes
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Tolerance	3–5	3–5
Auto Pitch/Rotation Time Based on Heart Rate	No	No

Result Parameters for Retrospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4 or IMR - Level 2	iDose - Level 4 or IMR - Level 2
Filter	XCB and XCC	XCB and XCC
Single Cycle Recon	No	No
Phases	40%, 50%, 70%, 75%, 80%	40%, 50%, 70%, 75%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Prospective

Prospective	BMI ≤ 30	BMI > 30
Scan Type	Step & Shoot	Step & Shoot
Resolution	Standard	Standard
Collimation	Auto	Auto
Pitch	N/A	N/A
Rotation Time(s)	0.27	0.27
Number of Cycles	4	4
DoseRight	Yes	Yes
DoseRight Index (DRI)*	21	21
	Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.	
kVp	100	120
	If calcified plaque is present, then use 120 kVp.	
Handle Irregularities On Line	Yes	Yes
Phase Target	75%	75%
Phase Tolerance	5	5

Result Parameters for Prospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4 or IMR - Level 2	iDose - Level 4 or IMR - Level 2
Filter	XCB and XCC	XCB and XCC
Edge Correction	No	No
Phases	70%, 72%, 75%, 78%, 80%	70%, 72%, 75%, 78%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Contrast Protocol

kVp	Iodine Concentration (mg/mL)	Volume (mL) @ Standard Injection Rate (mL/s)	Large Habitus Volume (mL) @ Standard Injection Rate (mL/s)	Saline Chaser
100	320	**65–70 mL** @ 5.0–5.5 mL/s		40 mL
	350	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
	370	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
120	320	**78–85 mL** @ 6.0–6.5 mL/s	**90–97 mL** @ 7.0–7.5 mL/s	40 mL
	350	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL
	370	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL

Formula: (scan delay time + acquisition time) x flow rate = contrast volume[1]

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Philips: CT5300 Protocol

This patient preparation protocol aligns with the 2016 SCCT Guidelines for the performance and acquisition of coronary computed tomographic angiography.[1]

Patient Preparation

The referring physician or provider should review the patient's history and screen them prior to the CCTA for any contraindications such as contrast allergies, pregnancy, renal impairment, and clinical instabilities (acute myocardial infarction, heart failure, and severe hypotension).[1]

Note: Cleerly is unable to analyze coronary artery bypass grafts. If a CABG study is submitted, Cleerly will reject the scan. However, pacemakers and stents are acceptable for analysis.

If a patient cannot cooperate with scan preparation, acquisition, and/or breath-hold instructions then it is best advised to forgo the CCTA scan. It is pertinent that the patient collaborates with CT technologists to achieve a high quality scan.

Patients should be informed of the preparation at the time of scheduling their CCTA. It is recommended that patients discontinue solid foods at least 3–4 hours before their scan to reduce nausea and a potential spike in heart rate, however water and clear fluids are acceptable and encouraged to consume. The patient should discontinue caffeine or stimulants 12 hours before the scan as this can decrease the ability to lower and stabilize the heart rate. The patient may continue to take routine medications under the direction of their physician. Since Nitroglycerin may be administered, it is important to discontinue the use of erectile dysfunction medication 72 hours before the scan (24 hours for sildenafil) and 24 hours post scan.[1]

The 2016 SCCT guidelines for the performance and acquisition of CCTAs recommends the use of Nitroglycerin and beta-blockers to enhance image quality. Cleerly recommends a Nitroglycerin dose of 0.8 mg, as it falls within guideline parameters and represents an optimal range to achieve consistent coronary vasodilation for improved visualization. A best practice is to wait 5 minutes post Nitroglycerin administration to ensure proper vasodilation. Beta-blockers can be prescribed by the patient's referring physician or upon arrival at the discretion of a qualified medical professional. The guidelines recommend to pre-medicate patients with 50 mg metoprolol by mouth 12 hours before the scan and another 50–100 mg metoprolol by mouth 1 hour before the scan. Slow-release forms of beta-blockers should not be used. Supplement IV beta-blockers can be administered to help reduce the patient's heart rate immediately prior to the exam. If Supplemental IV beta-blockers are called for, then it is common practice to administer 5 mg of IV metoprolol followed by 5 minutes of monitoring. If the target heart rate is not reached and the patient's vitals allow for it, this process can be repeated for a total dose of up to 20–25 mg.[1]

Even if the patient's heart rate is within the target threshold, it is common practice to

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

administer a small dose of beta-blockers to stabilize and to avoid an elevated heart rate due to contrast administration.[1]

It is essential to educate and instruct the patient of what to expect during the scan such as breathing instructions, IV contrast administration, and scan duration. Convey clear expectations for the patient. For example, explain what the patient can expect before, during, and after the scan and the purpose of beta-blockers and Nitroglycerin. Brief the patient on potential side effects of the contrast and medication. By informing the patient this can drastically reduce anxiety thus help produce excellent image quality.

Guidelines Suggested ECG-Gated Acquisition

- Prospective gating should be utilized if the heart rate is at, or below, the target heart rate and if there is minimal variance (< 4 bpm).
- Retrospective gating should be utilized if the heart rate is greater than the target heart rate and/or if there is significant variance (> 4 bpm).

Rotation Time	Target Heart Rate
0.35 seconds	≤ 60 bpm
< 0.30 seconds	≤ 65 bpm

Series 1 - Surview (Dual)	BMI ≤ 30	BMI > 30
Frontal kV	100	120
Frontal mA	30	40
Lateral kV	100	120
Lateral mA	30	40
Surview Length	300	300
Surview FOV	500	500

Bolus Tracking - Spiral Auto Start (SAS)	BMI ≤ 30	BMI > 30
mA	40	40
Post Injection Delay(s)	7.0	7.0
Cycle Time(s)	1.0	1.0
Enhancement Threshold (HU)	110	110
Post Threshold Delay(s)	Minimum	Minimum
ROI Placement	Ascending Aorta	Ascending Aorta

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Retrospective

Retrospective	BMI ≤ 30	BMI > 30
Scan Type	Cardiac	Cardiac
Collimation	64 x 0.625	64 x 0.625
Pitch	0.15	0.15
Rotation Time(s)	0.35	0.35
Resolution	Standard	Standard
DoseRight	Yes	Yes
DoseRight Index (DRI)*	37	37
Cardiac Dose Right (ECG Modulation)	Yes	Yes
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Tolerance	20	20
Phase Target	60%	60%
Auto Pitch/Rotation Time Based on Heart Rate	No	No

Result Parameters for Retrospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4 or Precise Image - Standard (optional)	iDose - Level 4 or Precise Image - Standard (optional)
Filter	CB and CC	CB and CC
Single Cycle Recon	No	No
Phases	40%, 50%, 70%, 75%, 80%	40%, 50%, 70%, 75%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Prospective

Prospective	BMI ≤ 30	BMI > 30
Scan Type	Step & Shoot	Step & Shoot
Resolution	Standard	Standard
Collimation	64 x 0.625	64 x 0.625
Planning Type	Cardiac	Cardiac
Rotation Time(s)	0.35	0.35
Number of Cycles	4	4
mAs	133	133
DoseRight Index (DRI)*	22	22
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Target	75%	75%
Phase Tolerance	5	5

Result Parameters for Prospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4	iDose - Level 4
Filter	CB and CC	CB and CC
Edge Correction	No	No
Phases	70%, 72%, 75%, 78%, 80%	70%, 72%, 75%, 78%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Contrast Protocol

kVp	Iodine Concentration (mg/mL)	Volume (mL) @ Standard Injection Rate (mL/s)	Large Habitus Volume (mL) @ Standard Injection Rate (mL/s)	Saline Chaser
100	320	**65–70 mL** @ 5.0–5.5 mL/s		40 mL
	350	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
	370	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
120	320	**78–85 mL** @ 6.0–6.5 mL/s	**90–97 mL** @ 7.0–7.5 mL/s	40 mL
	350	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL
	370	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL

Formula: (scan delay time + acquisition time) x flow rate = contrast volume[1]

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Philips: Incisive - CT5100 Protocol

This patient preparation protocol aligns with the 2016 SCCT Guidelines for the performance and acquisition of coronary computed tomographic angiography.[1]

Patient Preparation

The referring physician or provider should review the patient's history and screen them prior to the CCTA for any contraindications such as contrast allergies, pregnancy, renal impairment, and clinical instabilities (acute myocardial infarction, heart failure, and severe hypotension).[1]

Note: Cleerly is unable to analyze coronary artery bypass grafts. If a CABG study is submitted, Cleerly will reject the scan. However, pacemakers and stents are acceptable for analysis.

If a patient cannot cooperate with scan preparation, acquisition, and/or breath-hold instructions then it is best advised to forgo the CCTA scan. It is pertinent that the patient collaborates with CT technologists to achieve a high quality scan.

Patients should be informed of the preparation at the time of scheduling their CCTA. It is recommended that patients discontinue solid foods at least 3–4 hours before their scan to reduce nausea and a potential spike in heart rate, however water and clear fluids are acceptable and encouraged to consume. The patient should discontinue caffeine or stimulants 12 hours before the scan as this can decrease the ability to lower and stabilize the heart rate. The patient may continue to take routine medications under the direction of their physician. Since Nitroglycerin may be administered, it is important to discontinue the use of erectile dysfunction medication 72 hours before the scan (24 hours for sildenafil) and 24 hours post scan.[1]

The 2016 SCCT guidelines for the performance and acquisition of CCTAs recommends the use of Nitroglycerin and beta-blockers to enhance image quality. Cleerly recommends a Nitroglycerin dose of 0.8 mg, as it falls within guideline parameters and represents an optimal range to achieve consistent coronary vasodilation for improved visualization. A best practice is to wait 5 minutes post Nitroglycerin administration to ensure proper vasodilation. Beta-blockers can be prescribed by the patient's referring physician or upon arrival at the discretion of a qualified medical professional. The guidelines recommend to pre-medicate patients with 50 mg metoprolol by mouth 12 hours before the scan and another 50–100 mg metoprolol by mouth 1 hour before the scan. Slow-release forms of beta-blockers should not be used. Supplement IV beta-blockers can be administered to help reduce the patient's heart rate immediately prior to the exam. If Supplemental IV beta-blockers are called for, then it is common practice to administer 5 mg of IV metoprolol followed by 5 minutes of monitoring. If the target heart rate is not reached and the patient's vitals allow for it, this process can be repeated for a total dose of up to 20–25 mg.[1]

Even if the patient's heart rate is within the target threshold, it is common practice to

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

administer a small dose of beta-blockers to stabilize and to avoid an elevated heart rate due to contrast administration.[1]

It is essential to educate and instruct the patient of what to expect during the scan such as breathing instructions, IV contrast administration, and scan duration. Convey clear expectations for the patient. For example, explain what the patient can expect before, during, and after the scan and the purpose of beta-blockers and Nitroglycerin. Brief the patient on potential side effects of the contrast and medication. By informing the patient this can drastically reduce anxiety thus help produce excellent image quality.

Guidelines Suggested ECG-Gated Acquisition

- Prospective gating should be utilized if the heart rate is at, or below, the target heart rate and if there is minimal variance (< 4 bpm).
- Retrospective gating should be utilized if the heart rate is greater than the target heart rate and/or if there is significant variance (> 4 bpm).

Rotation Time	Target Heart Rate
0.35 seconds	≤ 60 bpm
< 0.30 seconds	≤ 65 bpm

Series 1 - Surview (Dual)	BMI ≤ 30	BMI > 30
Frontal kV	100	120
Frontal mA	30	40
Lateral kV	100	120
Lateral mA	30	40
Surview Length	300	300
Surview FOV	500	500

Bolus Tracking - Spiral Auto Start (SAS)	BMI ≤ 30	BMI > 30
mA	40	40
Post Injection Delay(s)	7.0	7.0
Cycle Time(s)	1.0	1.0
Enhancement Threshold (HU)	110	110
Post Threshold Delay(s)	Minimum	Minimum
ROI Placement	Ascending Aorta	Ascending Aorta

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Retrospective

Retrospective	BMI ≤ 30	BMI > 30
Scan Type	Cardiac	Cardiac
Collimation	64 x 0.625	64 x 0.625
Pitch	0.15	0.15
Rotation Time(s)	0.35	0.35
Resolution	Standard	Standard
DoseRight	Yes	Yes
DoseRight Index (DRI)*	37	37
Cardiac DoseRight (ECG Modulation)	Yes	Yes
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Tolerance	20	20
Phase Target	60%	60%
Auto Pitch/Rotation Time Based on Heart Rate	No	No

Result Parameters for Retrospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4	iDose - Level 4
Filter	CB and CC	CB and CC
Single Cycle Recon	No	No
Phases	40%, 50%, 70%, 75%, 80%	40%, 50%, 70%, 75%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Prospective

Prospective	BMI ≤ 30	BMI > 30
Scan Type	Step & Shoot	Step & Shoot
Resolution	Standard	Standard
Collimation	64 x 0.625	64 x 0.625
Planning Type	Cardiac	Cardiac
Rotation Time(s)	0.35	0.35
Number of Cycles	4	4
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
mAs	133	133
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Target	75%	75%
Phase Tolerance	5	5

Result Parameters for Prospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4	iDose - Level 4
Filter	CB and CC	CB and CC
Edge Correction	No	No
Phases	70%, 72%, 75%, 78%, 80%	70%, 72%, 75%, 78%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Contrast Protocol

kVp	Iodine Concentration (mg/mL)	Volume (mL) @ Standard Injection Rate (mL/s)	Large Habitus Volume (mL) @ Standard Injection Rate (mL/s)	Saline Chaser
100	320	**65–70 mL** @ 5.0–5.5 mL/s		40 mL
	350	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
	370	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
120	320	**78–85 mL** @ 6.0–6.5 mL/s	**90–97 mL** @ 7.0–7.5 mL/s	40 mL
	350	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL
	370	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL

Formula: (scan delay time + acquisition time) x flow rate = contrast volume[1]

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Philips: iQon Protocol

This patient preparation protocol aligns with the 2016 SCCT Guidelines for the performance and acquisition of coronary computed tomographic angiography.[1]

Patient Preparation

The referring physician or provider should review the patient's history and screen them prior to the CCTA for any contraindications such as contrast allergies, pregnancy, renal impairment, and clinical instabilities (acute myocardial infarction, heart failure, and severe hypotension).[1]

Note: Cleerly is unable to analyze coronary artery bypass grafts. If a CABG study is submitted, Cleerly will reject the scan. However, pacemakers and stents are acceptable for analysis.

If a patient cannot cooperate with scan preparation, acquisition, and/or breath-hold instructions then it is best advised to forgo the CCTA scan. It is pertinent that the patient collaborates with CT technologists to achieve a high quality scan.

Patients should be informed of the preparation at the time of scheduling their CCTA. It is recommended that patients discontinue solid foods at least 3–4 hours before their scan to reduce nausea and a potential spike in heart rate, however water and clear fluids are acceptable and encouraged to consume. The patient should discontinue caffeine or stimulants 12 hours before the scan as this can decrease the ability to lower and stabilize the heart rate. The patient may continue to take routine medications under the direction of their physician. Since Nitroglycerin may be administered, it is important to discontinue the use of erectile dysfunction medication 72 hours before the scan (24 hours for sildenafil) and 24 hours post scan.[1]

The 2016 SCCT guidelines for the performance and acquisition of CCTAs recommends the use of Nitroglycerin and beta-blockers to enhance image quality. Cleerly recommends a Nitroglycerin dose of 0.8 mg, as it falls within guideline parameters and represents an optimal range to achieve consistent coronary vasodilation for improved visualization. A best practice is to wait 5 minutes post Nitroglycerin administration to ensure proper vasodilation. Beta-blockers can be prescribed by the patient's referring physician or upon arrival at the discretion of a qualified medical professional. The guidelines recommend to pre-medicate patients with 50 mg metoprolol by mouth 12 hours before the scan and another 50–100 mg metoprolol by mouth 1 hour before the scan. Slow-release forms of beta-blockers should not be used. Supplement IV beta-blockers can be administered to help reduce the patient's heart rate immediately prior to the exam. If Supplemental IV beta-blockers are called for, then it is common practice to administer 5 mg of IV metoprolol followed by 5 minutes of monitoring. If the target heart rate is not reached and the patient's vitals allow for it, this process can be repeated for a total dose of up to 20–25 mg.[1]

Even if the patient's heart rate is within the target threshold, it is common practice to

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

administer a small dose of beta-blockers to stabilize and to avoid an elevated heart rate due to contrast administration.[1]

It is essential to educate and instruct the patient of what to expect during the scan such as breathing instructions, IV contrast administration, and scan duration. Convey clear expectations for the patient. For example, explain what the patient can expect before, during, and after the scan and the purpose of beta-blockers and Nitroglycerin. Brief the patient on potential side effects of the contrast and medication. By informing the patient this can drastically reduce anxiety thus help produce excellent image quality.

Guidelines Suggested ECG-Gated Acquisition

- Prospective gating should be utilized if the heart rate is at, or below, the target heart rate and if there is minimal variance (< 4 bpm).
- Retrospective gating should be utilized if the heart rate is greater than the target heart rate and/or if there is significant variance (> 4 bpm).

Rotation Time	Target Heart Rate
0.35 seconds	≤ 60 bpm
< 0.30 seconds	≤ 65 bpm

Series 1 - Surview (Dual)	BMI ≤ 30	BMI > 30
Frontal kV	100	120
Frontal mA	30	40
Lateral kV	100	120
Lateral mA	30	40
Surview Length	300	300
Surview FOV	500	500

Bolus Tracking - Spiral Auto Start (SAS)	BMI ≤ 30	BMI > 30
mA	40	40
Post Injection Delay(s)	7.0	7.0
Cycle Time(s)	1.0	1.0
Enhancement Threshold (HU)	110	110
Post Threshold Delay(s)	Minimum	Minimum
ROI Placement	Ascending Aorta	Ascending Aorta

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Retrospective

Retrospective	BMI ≤ 30	BMI > 30
Scan Type	Cardiac	Cardiac
Collimation	Auto	Auto
Pitch	0.16	0.16
Rotation Time(s)	0.27	0.27
Resolution	Standard	Standard
DoseRight	Yes	Yes
DoseRight Index (DRI)*	35	35
Cardiac DoseRight (ECG Modulation)	Yes	Yes
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Tolerance	3–5	3–5
Auto Pitch/Rotation Time Based on Heart Rate	No	No

Result Parameters for Retrospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4 or IMR - Level 2	iDose - Level 4 or IMR - Level 2
Filter	XCB and XCC	XCB and XCC
Single Cycle Recon	No	No
Phases	40%, 50%, 70%, 75%, 80%	40%, 50%, 70%, 75%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Prospective

Prospective	BMI ≤ 30	BMI > 30
Scan Type	Step & Shoot	Step & Shoot
Resolution	Standard	Standard
Collimation	Auto	Auto
Pitch	N/A	N/A
Rotation Time(s)	0.27	0.27
Number of Cycles	4	4
DoseRight	Yes	Yes
DoseRight Index (DRI)*	21	21
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Target	75%	75%
Phase Tolerance	5	5

Result Parameters for Prospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4	iDose - Level 4
Filter	XCB and XCC	XCB and XCC
Edge Correction	No	No
Phases	70%, 72%, 75%, 78%, 80%	70%, 72%, 75%, 78%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Contrast Protocol

kVp	Iodine Concentration (mg/mL)	Volume (mL) @ Standard Injection Rate (mL/s)	Large Habitus Volume (mL) @ Standard Injection Rate (mL/s)	Saline Chaser
100	320	**65–70 mL** @ 5.0–5.5 mL/s		40 mL
	350	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
	370	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
120	320	**78–85 mL** @ 6.0–6.5 mL/s	**90–97 mL** @ 7.0–7.5 mL/s	40 mL
	350	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL
	370	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL

Formula: (scan delay time + acquisition time) x flow rate = contrast volume[1]

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Philips: Spectral CT 7500 Protocol

This patient preparation protocol aligns with the 2016 SCCT Guidelines for the performance and acquisition of coronary computed tomographic angiography.[1]

Patient Preparation

The referring physician or provider should review the patient's history and screen them prior to the CCTA for any contraindications such as contrast allergies, pregnancy, renal impairment, and clinical instabilities (acute myocardial infarction, heart failure, and severe hypotension).[1]

Note: Cleerly is unable to analyze coronary artery bypass grafts. If a CABG study is submitted, Cleerly will reject the scan. However, pacemakers and stents are acceptable for analysis.

If a patient cannot cooperate with scan preparation, acquisition, and/or breath-hold instructions then it is best advised to forgo the CCTA scan. It is pertinent that the patient collaborates with CT technologists to achieve a high quality scan.

Patients should be informed of the preparation at the time of scheduling their CCTA. It is recommended that patients discontinue solid foods at least 3–4 hours before their scan to reduce nausea and a potential spike in heart rate, however water and clear fluids are acceptable and encouraged to consume. The patient should discontinue caffeine or stimulants 12 hours before the scan as this can decrease the ability to lower and stabilize the heart rate. The patient may continue to take routine medications under the direction of their physician. Since Nitroglycerin may be administered, it is important to discontinue the use of erectile dysfunction medication 72 hours before the scan (24 hours for sildenafil) and 24 hours post scan.[1]

The 2016 SCCT guidelines for the performance and acquisition of CCTAs recommends the use of Nitroglycerin and beta-blockers to enhance image quality. Cleerly recommends a Nitroglycerin dose of 0.8 mg, as it falls within guideline parameters and represents an optimal range to achieve consistent coronary vasodilation for improved visualization. A best practice is to wait 5 minutes post Nitroglycerin administration to ensure proper vasodilation. Beta-blockers can be prescribed by the patient's referring physician or upon arrival at the discretion of a qualified medical professional. The guidelines recommend to pre-medicate patients with 50 mg metoprolol by mouth 12 hours before the scan and another 50–100 mg metoprolol by mouth 1 hour before the scan. Slow-release forms of beta-blockers should not be used. Supplement IV beta-blockers can be administered to help reduce the patient's heart rate immediately prior to the exam. If supplemental IV beta-blockers are called for, then it is common practice to administer 5 mg of IV metoprolol followed by 5 minutes of monitoring. If the target heart rate is not reached and the patient's vitals allow for it, this process can be repeated for a total dose of up to 20–25 mg.[1]

Even if the patient's heart rate is within the target threshold, it is common practice to

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

administer a small dose of beta-blockers to stabilize and to avoid an elevated heart rate due to contrast administration.[1]

It is essential to educate and instruct the patient of what to expect during the scan such as breathing instructions, IV contrast administration, and scan duration. Convey clear expectations for the patient. For example, explain what the patient can expect before, during, and after the scan and the purpose of beta-blockers and Nitroglycerin. Brief the patient on potential side effects of the contrast and medication. By informing the patient this can drastically reduce anxiety thus help produce excellent image quality.

Guidelines Suggested ECG-Gated Acquisition

- Prospective gating should be utilized if the heart rate is at, or below, the target heart rate and if there is minimal variance (< 4 bpm).
- Retrospective gating should be utilized if the heart rate is greater than the target heart rate and/or if there is significant variance (> 4 bpm).

Rotation Time	Target Heart Rate
0.35 seconds	≤ 60 bpm
< 0.30 seconds	≤ 65 bpm

Series 1 - Surview (Dual)	BMI ≤ 30	BMI > 30
Frontal kV	100	120
Frontal mA	30	40
Lateral kV	100	120
Lateral mA	30	40
Surview Length	300	300
Surview FOV	500	500

Bolus Tracking - Spiral Auto Start (SAS)	BMI ≤ 30	BMI > 30
mA	40	40
Post Injection Delay(s)	7.0	7.0
Cycle Time(s)	1.0	1.0
Enhancement Threshold (HU)	110	110
Post Threshold Delay(s)	Minimum	Minimum
ROI Placement	Ascending Aorta	Ascending Aorta

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Retrospective

Retrospective	BMI ≤ 30	BMI > 30
Scan Type	Cardiac	Cardiac
Collimation	Auto	Auto
Pitch	0.16	0.16
Rotation Time(s)	0.27	0.27
Resolution	Standard	Standard
DoseRight	Yes	Yes
DoseRight Index (DRI)*	35	35
Cardiac DoseRight (ECG Modulation)	Yes	Yes
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Tolerance	3–5	3–5
Auto Pitch/Rotation Time Based on Heart Rate	No	No

Result Parameters for Retrospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4	iDose - Level 4
Filter	XCB and XCC	XCB and XCC
Single Cycle Recon	No	No
Phases	40%, 50%, 70%, 75%, 80%	40%, 50%, 70%, 75%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Prospective

Prospective	BMI ≤ 30	BMI > 30
Scan Type	Step & Shoot	Step & Shoot
Resolution	Standard	Standard
Collimation	Auto	Auto
Pitch	N/A	N/A
Rotation Time(s)	0.27	0.27
Number of Cycles	2	2
DoseRight	Yes	Yes
DoseRight Index (DRI)*	21	21
**Dose is site specific. Technique will need to be adjusted based on the recon algorithm and body habitus. Discuss with physician for optimizing.*		
kVp	100	120
If calcified plaque is present, then use 120 kVp.		
Handle Irregularities On Line	Yes	Yes
Phase Target	75%	75%
Phase Tolerance	5	5

Result Parameters for Prospective	BMI ≤ 30	BMI > 30
Slice Thickness	0.8 mm	0.8 mm
Slice Increment	0.4 mm	0.4 mm
FOV	≤ 180 mm	≤ 180 mm
Recon Mode	iDose - Level 4 or IMR - Level 2	iDose - Level 4 or IMR - Level 2
Filter	XCB and XCC	XCB and XCC
Edge Correction	No	No
Phases	70%, 72%, 75%, 78%, 80%	70%, 72%, 75%, 78%, 80%

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.

Contrast Protocol

kVp	Iodine Concentration (mg/mL)	Volume (mL) @ Standard Injection Rate (mL/s)	Large Habitus Volume (mL) @ Standard Injection Rate (mL/s)	Saline Chaser
100	320	**65–70 mL** @ 5.0–5.5 mL/s		40 mL
	350	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
	370	**55–60 mL** @ 4.0–4.5 mL/s		40 mL
120	320	**78–85 mL** @ 6.0–6.5 mL/s	**90–97 mL** @ 7.0–7.5 mL/s	40 mL
	350	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL
	370	**65–70 mL** @ 5.0–5.5 mL/s	**78–85 mL** @ 6.0–6.5 mL/s	40 mL

Formula: (scan delay time + acquisition time) x flow rate = contrast volume[1]

[1]Abbara S, Blanke P, Maroules CD, et al. SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: A report of the society of Cardiovascular Computed Tomography Guidelines Committee: Endorsed by the North American Society for Cardiovascular Imaging (NASCI). *J Cardiovasc Comput Tomogr*. 2016 Nov-Dec;10(6):435-449.