



Cardiovascular Computed Tomography Examination Content Outline Summary

	Domain	Percentage
1	Performing Pre-Exam Tasks	14%
2	Performing In-Suite Exam Functions	16%
3	Interpreting and Managing CT Findings	55%
4	Performing Post-Scan Tasks and Reporting Findings	15%
Total		100%

Certification Board of Cardiovascular Computed Tomography

(Detailed Outline)

1.	Performing Pre-Exam Tasks 14%	Knowledge, skill and/or ability related to performing pre-exam tasks
1.A	Review prior focused medical history and clinical information	Knowledge of test relative and absolute contraindications Knowledge of proper breath holding techniques Knowledge of medications used in cardiovascular CT (such as beta blockers, calcium blockers, nitrates and ivabradine) Knowledge of informed consent Knowledge of diagnostic capabilities and limitations of the test Knowledge of cardiovascular tests and alternative options Knowledge of cardiovascular medicine as it pertains to cardiovascular CT, including calcium scoring Knowledge of appropriate use criteria and relevant guidelines Skill in communicating with patients, other physicians and other healthcare providers Ability to integrate information and modify the planned procedure as required Ability to identify critical information that might affect test indication, appropriateness, safety and performance
1.B	Evaluate clinical indications considering appropriate use criteria	
1.C	Educate referring physician and other health care providers	
1.D	Perform or direct pre-test counseling for patient	
1.E	Screen for contraindications	
1.F	Perform or direct pre-test patient preparation and test instructions	
2.	Performing In-Suite Exam Functions 16%	
2.A	Supervise patient (pre-test, intra-scan, post-test) treatment optimization	Knowledge of cardiovascular CT physics Knowledge of contrast resolution and signal-to-noise ratios Knowledge of contrast administration and contrast agents Knowledge of how pacemakers affect cardiac CT scanning Knowledge of pacemaker optimization options Knowledge of proper ECG gating techniques and trouble-shooting Knowledge of radiation dose reduction strategies Knowledge of scanner capabilities and limitations Knowledge of scanning protocol options Knowledge of signs, symptoms and management of adverse contrast reactions Knowledge of venous access and injection options, issues and complications Ability to articulate instructions to technologists Ability to assess scan artifacts and determine remedy Ability to identify poor quality scans and make adjustments in scanning reconstruction Ability to identify significance of and manage heart rate and arrhythmias Ability to recognize and manage cardiovascular or other clinical distress
2.B	Manage heart rate and recognize arrhythmias	
2.C	Adjust pacemaker settings as applicable for optimal scanning	
2.D	Select scanning protocol and troubleshoot scanning acquisition problems	
2.E	Perform scan quality assessment	
2.F	Practice radiation safety principles	
3.	Interpreting and Managing CT Findings 55%	
3.A	Check for scan artifacts	Knowledge of standard nomenclature for coronary segments and dominance Knowledge of various artifacts, their sources and their potential remedies (including artifacts related to bright structures, image processing artifacts and motion artifacts) Ability to adjust scan parameters for cardiac vein scanning Ability to apply proper acquisition modes (including LVADs) Ability to apply protocols pertinent to cardiac chambers Ability to apply protocols pertinent to cardiac function and assessment Ability to apply protocols pertinent to valvular evaluation Ability to assess pulmonary number, size, location and anomalies Ability to correctly recognize and categorize coronary stenoses, location, severity, significance and risk Ability to differentiate high risk from low risk coronary anomalies Ability to identify non diagnostic scans or segments Ability to interpret calcium score (including Agatston score, plaque volume, plaque mass, percentile)
3.B	Assess coronary anatomy	
3.C	Quantify coronary artery stenosis	
3.D	Assess coronary stents	
3.E	Assess coronary artery bypass grafts	
3.F	Assess chronic total occlusions	
3.G	Perform plaque characterizations (e.g., identify high risk plaque)	

3.H	Assess coronary anomalies		Ability to measure size and categorize pericardial thickness
3.I	Assess pulmonary veins		Ability to measure size and function of cardiac chambers
3.J	Assess cardiac veins		Ability to recognize and classify segmental and global cardiac function and pathology
3.K	Assess cardiac chambers		Ability to recognize aortic pathology
3.L	Assess cardiac function		Ability to recognize appendage pathology
3.M	Assess pericardium		Ability to recognize cardiac chamber pathologies
3.N	Assess native/artificial valves		Ability to recognize cardiac devices (including variety and impact on interpretation)
3.O	Assess myocardium		Ability to recognize cardiac vein pathology
3.P	Assess appendage		Ability to recognize congenital heart disease
3.Q	Assess septum (atrial/ventricular)		Ability to recognize coronary anomalies
3.R	Assess percutaneous valvuloplasty procedures (e.g., feasibility of, TAVR, etc.)		Ability to recognize high risk plaque features (such as high plaque volume, positive remodeling, spotty calcification, napkin ring sign, low attenuation plaque)
3.S	Assess congenital heart disease		Ability to recognize indications for cardiac vein assessment
3.T	Assess aorta		Ability to recognize indications for pulmonary vein assessment
3.U	Assess pulmonary artery		Ability to recognize mediastinal and hilar pathology
3.V	Assess vascular anomalies		Ability to recognize myocardium pathology (e.g., infarction, perfusion, aneurysm, masses, viability)
3.W	Assess common lung disease, pulmonary nodules/tumors and pleural effusions		Ability to recognize non coronary calcium (such as MAC)
3.X	Assess mediastinal and hilar pathology		Ability to recognize pathology related to device (e.g. pacemaker, ICD, hemodynamic support, etc.)
3.Y	Assess other non-vascular structures (e.g., bones, soft tissue)		Ability to recognize pathology of other non-vascular structures (such as bones, other soft tissue, etc.)
3.Z	Assess calcium scoring		Ability to recognize pleural effusions
4.	Performing Post-Scan Tasks and Reporting Findings	15%	Knowledge, skill and/or ability related to performing post-scan tasks and reporting findings
4.A	Supervise reconstruction protocols		Ability to recognize pulmonary nodules/tumors
4.B	Actively perform post-processing (i.e., manipulation and reformatting at workstation)		Ability to recognize pulmonary vein pathology
4.C	Evaluate and treat adverse contrast reactions and extravasations		Ability to recognize septum pathology
4.D	Evaluate and manage contrast-induced nephropathy		Ability to recognize the differences in scanning and interpreting bypasses of different types and locations