



CERTIFICATION EXAMINATIONS BLUEPRINT

CARDIAC SONOGRAPHER

October 2016

This Blueprint applies to the examination that will take place in 2017. It may be modified prior to future examinations, in which case notice will be provided.

INTRODUCTION

As part of the requirements to qualify for the Canadian Registered Cardiac Sonographer (CRCS) credential, candidates are required to successfully complete both the Core Sonographic Skills Examination and the Cardiac Sonographer Examination.

The content of this blueprint is based on the National Competency Profile (NCP) Version 5.0 for the Cardiac Sonographer and was revalidated in 2016. This examination blueprint identifies the competencies upon which questions will be based. Numbers and letters that appear in the blueprint refer to the corresponding competencies in the NCP.

This blueprint also identifies the total number of questions in each examination and the approximate distribution of those questions among the examinable competencies.

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CARDIAC EXAMINATION CONSISTS OF 180 MULTIPLE-CHOICE ITEMS. TIME ALLOWED: 180 MINUTES		
2.2 Professional judgement		1-3%
g	Identify and respond to urgent sonographic findings.	
2.3 Professional conduct		1-3%
k	Recognize, respond to and disclose adverse events.	
3.2 Assistance with clinical procedures.		1-3%
a	Assist in interventional procedures.	
b	Assist in contrast-enhanced procedures.	
c	Assist in transesophageal echocardiography	
3.3 Related techniques and procedures.		4-6%
d	Perform provocative maneuvers.	
e	Perform stress echocardiography.	
f	Set up 3-lead electrocardiogram (ECG).	
4.2 Use of equipment.		21-25%
c	Perform sonographic examinations using pulsed wave Doppler.	
d	Perform sonographic examinations using colour Doppler.	
f	Perform sonographic examinations using continuous wave Doppler.	
g	Perform sonographic examinations using tissue Doppler.	
h	Orient and manipulate transducer.	
j	Use and optimize harmonic imaging.	
k	Perform sonographic examinations using 3-D imaging.	
m	Identify artifacts and adjust instrument controls to optimize image.	
n	Measure structures.	
o	Measure M-mode tracings.	
p	Measure Doppler waveforms.	
q	Perform calculations manually.	
5.1 Examination planning.		11-13%
a	Interpret history, signs & symptoms and other relevant information.	
c	Modify scope of examination based on clinical history.	
d	Formulate sonographic scanning strategies.	
e	Integrate knowledge of anatomy and disease processes.	
5.2 Integration of relevant, available diagnostic data.		7-9%
a	Correlate results from laboratory tests	
c	Correlate results from radiography.	
d	Correlate results from angiography.	
e	Correlate results from computerized tomography.	
f	Correlate results from nuclear medicine studies.	
g	Correlate results from magnetic resonance studies.	
m	Correlate results from ECG studies.	
n	Correlate results from Holter monitoring.	
o	Correlate results from stress ECG studies.	
q	Correlate results from auscultation.	

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5.3 Image quality		10-12%
a	Adjust patient positioning to advantage.	
b	Use breathing techniques to advantage .	
c	Evaluate images for orientation, identification, and labeling.	
d	Evaluate images for quality.	
e	Modify scope of examination based on sonographic findings.	
f	Evaluate completeness of examination.	
5.4 Technical analysis.		11-13%
a	Differentiate artifact from anatomic and pathologic findings.	
b	Differentiate normal variants from pathology.	
c	Use spatial reasoning to interpret images.	
d	Identify and prioritize differential findings.	
e	Formulate impression based on findings.	
7.7 Cardiac sonography.		22-26%
a	Perform sonographic examination of structures of interest using techniques listed in Appendix 1.7.	
b	Recognize sonographic appearance of normal structures	
c	Differentiate sonographic appearance of normal structures from anomalous and pathologic conditions.	

APPENDIX 1.7

The table below applies to Specific Competency 7.7.a, and lists the techniques the Cardiac Sonographer should be able to utilize when examining the structures and characteristics noted.

STRUCTURE / CHARACTERISTIC	TECHNIQUE											
	2-D real time assessment	measure (2D)	M-mode assessment	measure - M-mode	pulsed wave Doppler assessment	measure - pulsed wave Doppler	continuous wave Doppler assessment	measure - continuous wave Doppler	colour Doppler assessment	measure - colour Doppler	tissue Doppler assessment	measure - tissue Doppler
Aorta, arch & branches	C	C			C	A	C	C	C			
Aorta, ascending	C	C			C	A	C	C	C			
Aorta, descending	C	C			C	C	C	C	C			
Aorta, root	C	C	C	C	C	C	C	C	C			
Appendages	A											
Atrium, left	C	C	C	C					C			
Atrium, right	C	C							C			
Cardiac position	C											
Chest & thorax (adjacent, extra-cardiac)	C											
Coronary vessels	A	A							A			
Hepatic veins	C				C	A			C			
Outflow tracts	C	C			C	C	C	C	C			
Pulmonary artery	C	S			C	C	C	C	C			
Pulmonary artery, bifurcation	C				A	A	A	A	C			
Pulmonary veins	C				C	C			C			
Septum, inter-atrial	C				C	C	C	C	C			
Septum, inter-ventricular	C	C	C	C	C	C	C	C	C			
Normal situs	C											
Valve, aortic	C		C	C	C	C	C	C	C	C		
Valve, mitral	C	S	C	A	C	C	C	C	C	C		
Valve, pulmonic	C				C	C	C	C	C	A		
Valve, tricuspid	C				C	C	C	C	C	C		
Valve, tricuspid (annulus)	C		C	C								
Vena cava, inferior	C	C	C	C	C		C		C			
Vena cava, superior	A								A			
Ventricle, left	C	C	C	C					C		C	C
Ventricle, right	C	C	C	C					C		C	C
Wall layers (endo, myo, pericardium)	C	C	C	C								
Wall segments	C	C	C									
Wall segments (strain)	A										A	A