COLLEGE OF PHYSICIANS AND SURGEONS OF BRITISH COLUMBIA

Diagnostic Accreditation Program

ACCREDITATION STANDARDS

Echocardiography

Diagnostic Accreditation Program
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Introduction

In addition to the general standards, the discipline-specific standards for echocardiography provides additional mandatory requirements and best practices.

Patient preparation

No.		Description	Risk	Reference	Change
					Revised
EC2.0		**ECHOCARDIOGRAPHY PATIENT PREPARATION** *Guidance: See also global modality GM2.0 for additional requirements.*			
EC2.1		**Pre-examination information is collected and assessed prior to commencing the examination.**			
EC2.1.1	**M**	Patient height and weight are accurately measured and documented.	H	US/EC-AC-24	
EC2.1.2	**M**	Patient heart rate and heart rhythm are measured and documented.	H	US/EC-AC-24	
EC2.1.3	**B**	Patient blood pressure is measured and documented.		US/EC-AC-24	New

Imaging procedures

No.		Description	Risk	Reference	Change
					Revised
EC3.0		**ECHOCARDIOGRAPHY IMAGING STANDARD OPERATING PROCEDURES/PROTOCOLS** *Guidance: See also global modality GM3.0 for additional requirements.*			
EC3.1		**There is a comprehensive process in place for protocol adoption and development.** *Guidance: See also global modality GM3.1.*			
EC3.1.1	**M**	Protocols are reviewed every one to three years by qualified individuals.	M	US/EC-AC-24	
EC3.2		**Protocols contain all the information necessary to perform the examination.**			
EC3.2.1	**M**	Protocol information includes, but is not limited to, clearly specified measurements and imaging views.	M	US/EC-AC-24	
EC3.3		**Examinations are performed following established protocols.**			
EC3.3.1	**M**	Protocols are readily available to staff performing the examination.	H	US/EC-AC-24	
EC3.3.2	**M**	Probes are cleaned and disinfected between patients. *Guidance: Probes that only contact intact skin require cleaning and low-level disinfection.*	C		
EC3.3.3	**M**	TTE probes are covered, whenever appropriate. *Guidance: Probes are covered during sterile interventional procedures and for cases with a risk of infection.*	H		
EC3.3.4	**M**	If there is evidence of contamination, probe cleaning/disinfection is performed according to TEE reprocessing requirements (high-level disinfection).	H		
EC3.3.5	**M**	There is an established protocol for the use of gel in the performance of the ultrasound examination that minimizes the transmission of pathogens. *Guidance: The protocol must include clear directions on the use and storage of both sterile and non-sterile gels. IPAC Canada has published gel recommendations that should be used to develop the facility's protocol. The IPAC Canada guidelines can be accessed at https://ipac-canada.org/photos/custom/Members/pdf/21May_Medical_Gels_Position%20Statement_Final.pdf.*	M		Revised

No.		Description	Risk	Reference	Change
EC3.3.6	**B**	Sonographers adhere to the as low as reasonably achievable (ALARA) principle.		US/EC-AC-24	
EC3.3.7	**M**	There are protocols for the pediatric population, where applicable.	M	US/EC-AC-24	

Transesophageal echocardiography (TEE)

No.		Description	Risk	Reference	Change
					Revised
EC6.0		**TRANSESOPHAGEAL ECHOCARDIOGRAPHY**			
EC6.1		**Transesophageal echocardiography is performed in an environment designed to ensure patient safety.** *Guidance: See also global modality GM5.0 for additional requirements.*			Revised
EC6.1.1	**M**	Appropriately qualified supplementary staff (e.g. nurses with critical care nursing experience) are present and actively participate in the tasks of medication infusion, patient monitoring and patient recovery. *Guidance: In addition to the performing physician, qualified staff are available before, during and after the examination.*	H	US/EC-AC-24	
EC6.1.2	**M**	The room is large enough to accommodate emergency management monitoring equipment.	H	US/EC-AC-24	
EC6.1.3	**M**	There is an emergency crash cart immediately accessible.	H	US/EC-AC-24	Revised
EC6.1.4	**M**	An emergency drug tray is available in the room.	H	US/EC-AC-24	
EC6.1.5	**M**	The contents of the emergency drug tray include, but are not limited to nitroglycerine, in tablet or aerosol spray.	H	US/EC-AC-24	
EC6.1.6	**M**	The contents of the emergency drug tray include, but are not limited to, epinephrine.	H	US/EC-AC-24	
EC6.1.7	**M**	The contents of the emergency drug tray include, but are not limited to, atropine.	H	US/EC-AC-24	
EC6.1.8	**M**	The contents of the emergency drug tray include, but are not limited to, intravenous supplies.	H	US/EC-AC-24	
EC6.1.9	**M**	The contents of the emergency drug tray include, but are not limited to, parenteral antihistamine.	H	US/EC-AC-24	
EC6.1.10	**M**	The contents of the emergency drug tray include, but are not limited to, parenteral antiemetic.	H	US/EC-AC-24	
EC6.1.11	**M**	The contents of the emergency drug tray include, but are not limited to, short-acting bronchodilator (e.g. salbutamol) either in a metered-dose inhaler with a spacer device or as a solution with a nebulizer administration unit, ventolin nebules or as a discus device.	H	US/EC-AC-24	

Interpretation and reports

No.		Description	Risk	Reference	Change
					Revised
EC8.0		**ECHOCARDIOGRAPHY INTERPRETATION AND REPORTS** *Guidance: See also global modality GM8.0 for additional requirements.*			
EC8.1		**Reports are comprehensive and include appropriate patient and relevant clinical information.**			
EC8.1.1	**M**	Reports include the patient's height and weight.	M	US/EC-AC-24	
EC8.1.3	**B**	Reports include an indication of the study quality (e.g. good, fair, poor).		US/EC-AC-24	
EC8.1.4	**M**	There is a process to clearly identify sonographer's technical impressions (e.g. paper or electronic worksheets) from the physician's diagnostic report. *Guidance: Processes to clearly identify the sonographer's technical impressions from the physician's diagnostic report may include, but are not limited to* • *visible disclaimers, stating that it is a sonographer observation only and is not a diagnostic report, or* • *access control restrictions for electronic worksheets.*	M	US/EC-AC-24	Revised
EC8.1.5	**B**	Standardized measurements and structures not well visualized are noted.		US/EC-AC-24	New
EC8.1.6	**B**	Reports include the patient's heart rate and heart rhythm.		US/EC-AC-24	New
EC8.1.7	**B**	Reports include the patient's blood pressure.		US/EC-AC-24	New
EC8.4		**Standardized reporting is used for echocardiography final reports.**			Revised
EC8.4.1	**M**	The report includes a description of the left ventricle and left atrium.	M	ASE-Report	
EC8.4.2	**M**	The report includes a description of the right ventricle and right atrium.	M	ASE-Report	
EC8.4.3	**M**	The report includes a description of the aortic valve, mitral valve, tricuspid valve and pulmonic valve.	M	ASE-Report	
EC8.4.4	**M**	The report includes a description of the pericardium and aorta.	M	ASE-Report	
EC8.4.5	**M**	The report includes a description of the pulmonary artery.	M	ASE-Report	Revised
EC8.4.6	**M**	The report includes a description of the inferior vena cava.	M	ASE-Report	
EC8.4.7	**B**	The report includes a description of the pulmonary veins.		ASE-Report	

No.		Description	Risk	Reference	Change
EC8.4.8	**M**	The report includes a description of the interatrial septum and interventricular septum.	M	ASE-Report	Revised
EC8.4.9	**M**	The report includes a description of pericardial effusion if it is present.	M	US/EC-AC-24	

Equipment

No.		Description	Risk	Reference	Change
					Revised
EC11.0		**ECHOCARDIOGRAPHY IMAGING EQUIPMENT AND ANCILLARY SUPPLIES**			
EC11.1		**The imaging service ensures that equipment is capable of achieving the desired image quality and complies with the requirements of the examination.**			
EC11.1.1	**M**	Echocardiography systems are equipped with a range of imaging modes appropriate for the examinations performed.	H	US/EC-AC-24	Revised
EC11.1.5	**M**	Echocardiography systems are equipped with a range of ultrasound transducer probes and probe frequencies appropriate for the examinations performed.	H	US/EC-AC-24	Revised
EC11.1.6	**M**	Echocardiography systems are equipped with pediatric TEE transducers small enough to be used in a safe and prudent manner in infants and children appropriate for their body weight. *Guidance: Pediatric TEE transducers may also be needed for imaging small body weight adults.*	H	US/EC-AC-24	Revised

Acceptance testing

No.		Description	Risk	Reference	Change
					Revised
EC12.0		**ACCEPTANCE TESTING OF ECHOCARDIOGRAPHY SYSTEMS** *Guidance: See also equipment and supplies DES2.0 for additional requirements.*			
EC12.1		**Acceptance testing is performed after purchase and prior to clinical use of echocardiography systems.**			Revised
EC12.1.1	**M**	Acceptance testing of echocardiography systems includes a physical and mechanical inspection of the system and probes.	H	ACR-APPM-US	Revised
EC12.1.2	**M**	Acceptance testing of the echocardiography systems includes electrical leakage current testing of probes. *Guidance: Results can be documented as pass/fail or a value.*	H	US/EC-AC-24	Revised
EC12.1.3	**M**	Acceptance testing of the echocardiography systems includes a uniformity assessment of the system and probes. *Guidance: Uniformity is assessed by scanning a homogenous region of a tissue-mimicking phantom (the region should have a texture similar to liver parenchyma and be free of targets).*	H	ACR-APPM-US	Revised
EC12.1.4	**M**	Acceptance testing of the echocardiography systems includes evaluation of geometric accuracy. *Guidance: Geometric accuracy is the comparison of a measured distance to a known distance. This evaluation requires a phantom with test targets (typically filament targets) measured along the vertical and horizontal axis.*	H	ACR-APPM-US	Revised
EC12.1.5	**M**	Acceptance testing of the echocardiography systems includes evaluation of system sensitivity. *Guidance: System sensitivity is the determination of the weakest echo signal detected and clearly displayed. Sensitivity can be expressed as a maximum visualization depth or a quantitative measure of signal-to-noise ratio (SNR). The assessment requires a phantom with test targets of known depths.*	H	ACR-APPM-US	Revised

No.		Description	Risk	Reference	Change
EC12.1.6	**B**	Acceptance testing of echocardiography systems includes evaluation of spatial and contrast resolution of the system. *Guidance: Spatial and contrast resolution can be assessed using a phantom with targets of differing size and echogenic properties. At a minimum, lateral and axial resolution must be assessed using a phantom and filament targets distributed axially and laterally. To assess contrast resolution, targets with differing echogenic properties must be used.*		ACR-APPM-US	Revised
EC12.1.7	**M**	Acceptance testing of the echocardiography systems includes a quantitative assessment of each probe for lens delamination, probe element damage and cable integrity. *Guidance: Quantitative assessment of the transducer's lens, matching layer, acoustic array, cable and connector can be performed using a commercially available computerized test device that measures element sensitivity (volts p-p), capacitance (pF), pulse width (ns), center frequency (MHz), and fractional bandwidth (%). The device is used to acceptance test new or recently repaired transducers and also aids in transducer repair or replacement decision-making by differentiating between system problems and transducer problems. Identifying transducer defects early helps ensure clinical image quality is optimized and may significantly reduce repair costs.*	H	US/EC-AC-24	Revised
EC12.1.8	**B**	For systems with harmonic imaging, acceptance testing of echocardiography systems is repeated in both modes.		US/EC-AC-24	Revised
EC12.1.9	**B**	For systems with colour, pulsed or doppler imaging, acceptance testing of echocardiography systems includes a qualitative evaluation of these imaging modes.		US/EC-AC-24	Revised

Quality assurance

No.		Description	Risk	Reference	Change
					Revised
EC13.0		**QUALITY CONTROL TESTING OF ECHOCARDIOGRAPHY SYSTEMS** *Guidance: See also equipment and supplies DES3.0 for additional requirements.*			
EC13.1		**Daily quality control procedures are established and used to monitor performance of echocardiography systems.**			Revised
EC13.1.1	**M**	Daily quality control testing of echocardiography systems includes a documented visual inspection of the ultrasound system and transducers. *Guidance: A visual inspection includes an assessment of:* *I. surface smoothness* *II. wear and tear of the coating* *III. burrs or cracks* *IV. sharp edges* *V. holes or other degradation* *VI. cable integrity/strain relief* *VII. alignment and functionality, if applicable*	M	ACR-APPM-US	Revised
EC13.1.2	**M**	Electrical leakage current testing is performed on TEE probes before each patient use. *Guidance: Electrical leakage current testing does not have to be conducted immediately prior to performing the examination. Leakage testing can be included as part of the probe reprocessing process.*	C	US/EC-AC-24	
EC13.3		**Annual quality control procedures are established and used to monitor performance of echocardiography systems.**			Revised
EC13.3.1	**M**	Annual quality control testing of echocardiography systems includes a physical and mechanical inspection of the system and probes.	M	ACR-APPM-US	Revised
EC13.3.2	**M**	Annual quality control testing of echocardiography systems includes electrical leakage current testing of all probes. *Guidance: Electrical leakage current testing is also to be performed after probe repair. Results can be documented as pass/fail or a value.*	M	US/EC-AC-24	Revised

No.		Description	Risk	Reference	Change
EC13.3.3	**M**	Annual quality control testing of echocardiography systems includes a uniformity assessment of the system and each probe.	M	ACR-APPM-US	Revised
EC13.3.4	**B**	Annual quality control testing of echocardiography systems includes evaluation of geometric accuracy.		ACR-APPM-US	Revised
EC13.3.5	**B**	Annual quality control testing of echocardiography systems includes evaluation of system sensitivity.		ACR-APPM-US	Revised
EC13.3.6	**B**	Annual quality control testing of echocardiography systems includes evaluation of contrast resolution.		ACR-APPM-US	Revised
EC13.3.7	**B**	Annual quality control testing of echocardiography systems includes evaluation of spatial resolution.		ACR-APPM-US	Revised
EC13.3.8	**M**	Annual quality control testing of echocardiography systems includes an assessment of each probe for lens delamination, element damage and cable integrity. *Guidance: An assessment is also performed after probe repair.*	M	US/EC-AC-24	Revised
EC13.3.9	**B**	For systems with colour, pulsed or Doppler imaging, annual quality control testing of echocardiography systems includes a qualitative evaluation of these imaging mode capabilities.		US/EC-AC-24	Revised

References

Abbreviation	Reference
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