



The SonoSim Ultrasound Training Solution in Accordance with RCEM's PoCUS Curriculum

In 2009, the Royal College of Emergency Medicine (RCEM) released their [Core Level 1 Ultrasound Curriculum](#). These guidelines provide a framework for training students in a variety of emergency medicine skills, including the four main clinical applications: Focused Assessment with Sonography in Trauma (FAST), Assessment of the Abdominal Aorta for Aneurysm (AAA), Focused Echocardiography in Life Support (ELS), and Ultrasound Guided Vascular Access (VA).

The award-winning, patented SonoSim Ultrasound Training Solution matches these industry recommendations through an ecosystem of cloud-based courses, knowledge assessments, interactive SonoSimulator® scanning cases, performance tracking, and access to real-patient pathology.

Ultrasound Physics		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Basic principles of real time and Doppler ultrasound including colour flow and power Doppler	<i>Fundamentals of Ultrasound: Imaging Modes, Doppler-Mode Imaging</i>	All SonoSim Cases
Recognition and explanation of common artefacts	<i>Fundamentals of Ultrasound: Imaging Artifacts</i>	
Basic components of an ultrasound system	<i>Fundamentals of Ultrasound: Ultrasound System Operation</i>	
Use of ultrasound controls		
Types of transducer and the production of ultrasound, with an emphasis on operator controlled variables	<i>Fundamentals of Ultrasound: Basic Ultrasound Physics</i>	
Interaction of ultrasound with tissue including biological effects		
Know the frequencies used in medical ultrasound and the effect on image quality and penetration		
Safety issues in ultrasound	<i>Fundamentals of Ultrasound: Infection Control & Biosafety</i>	--
Skills		
Can operate the key machine controls	<i>Fundamentals of Ultrasound: Ultrasound System Operation</i>	All SonoSim Cases
Image manipulation and storage		
Transducer changing	<i>Fundamentals of Ultrasound: Basic Ultrasound Physics</i>	
Behaviour		
Safe practice	<i>Fundamentals of Ultrasound: Infection Control & Biosafety</i>	--
Limitations of own skills	All SonoSim Courses	All SonoSim Cases

Not Covered for Ultrasound Physics, Skills: Image recording systems

Sectional and Ultrasonic Anatomy		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Kidneys, liver, spleen, retro-peritoneal structures (aorta, IVC), recto-vesical, vesico-uterine and recto-uterine pouches	<i>Aorta/IVC Anatomy & Physiology: All Lessons</i> <i>Bladder Anatomy & Physiology: All Lessons</i> <i>Female Pelvis Anatomy & Physiology: All Lessons</i> <i>Liver Anatomy & Physiology: All Lessons</i> <i>Renal Anatomy & Physiology: All Lessons</i> <i>Spleen Anatomy & Physiology: All Lessons</i>	<i>Aorta/IVC Anatomy & Physiology Cases</i> <i>Bladder Anatomy & Physiology Cases</i> <i>Female Pelvis Anatomy & Physiology Cases</i> <i>Liver Anatomy & Physiology Cases</i> <i>Renal Anatomy & Physiology Cases</i> <i>Spleen Anatomy & Physiology Cases</i>
Heart and pericardium	<i>Heart Anatomy & Physiology: All Cases</i>	<i>Heart Anatomy & Physiology Cases</i>
Vessels: internal jugular veins, carotid arteries, femoral veins and arteries, antecubital and basilic veins	<i>Arm-Arterial Anatomy & Physiology: All Lessons</i> <i>Arm-Venous Anatomy & Physiology: All Lessons</i> <i>Cerebrovascular Anatomy & Physiology: All Lessons</i> <i>Leg-Arterial Anatomy & Physiology: All Lessons</i> <i>Leg-Venous Anatomy & Physiology: All Lessons</i>	<i>Arm-Arterial Anatomy & Physiology Cases</i> <i>Arm-Venous Anatomy & Physiology Cases</i> <i>Cerebrovascular Anatomy & Physiology Cases</i> <i>Leg-Arterial Anatomy & Physiology Cases</i> <i>Leg-Venous Anatomy & Physiology Cases</i>
Behaviour		
Adheres to rule-in philosophy	<i>All SonoSim Courses</i>	<i>All SonoSim Cases</i>

Not Covered for Sectional and Ultrasonic Anatomy, Skills: Describe and sketch key anatomy

Pathology in Relation to Ultrasound		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Kidneys: trauma/free fluid	<i>eFAST: Anatomy, Sonographic Anatomy & Technique, Case Studies</i> <i>FAST: Anatomy, Sonographic Anatomy & Technique, Case Studies</i> <i>Renal Core Clinical: All Lessons</i>	<i>eFAST Cases</i> <i>FAST Cases</i> <i>Renal Core Clinical Cases</i> <i>SonoSim LiveScan® Critical Care & Trauma Care Scenarios</i>
Liver and spleen: trauma/free fluid	<i>eFAST: Anatomy, Sonographic Anatomy & Technique, Case Studies</i> <i>FAST: Anatomy, Sonographic Anatomy & Technique, Case Studies</i>	<i>eFAST Cases</i> <i>FAST Cases</i> <i>SonoSim LiveScan® Trauma Care Scenarios</i>
Retroperitoneal: presence or absence of abdominal aortic aneurysm (AAA)	<i>Aorta/IVC Core Clinical: Introduction, Clinical Considerations, Case Studies</i> <i>RUSH: Sonographic Technique, Case Studies</i>	<i>Aorta/IVC Core Clinical Cases</i> <i>RUSH Cases</i> <i>Vascular Challenge Cases</i> <i>SonoSim LiveScan® Critical Care Scenarios</i>
Vessels: vascular access	<i>Peripheral Venous Access: All Lessons</i> <i>Ultrasound-Guided Femoral Line Placement: All Lessons</i> <i>Ultrasound-Guided Internal Jugular Vein Cannulation: All Lessons</i> <i>Ultrasound-Guided Subclavian Vein Cannulation: All Lessons</i>	<i>Peripheral Venous Access Cases</i> <i>Ultrasound-Guided Femoral Line Placement Cases</i> <i>Ultrasound-Guided Internal Jugular Vein Cannulation Cases</i> <i>Ultrasound-Guided Subclavian Vein Cannulation Cases</i>

Pathology in Relation to Ultrasound (Cont.)		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Cardiac scan: trauma/pericardial tamponade, pericardial effusions, asystole	eFAST: Sonographic Anatomy & Technique, Case Studies FAST: Sonographic Anatomy & Technique, Case Studies RUSH: Sonographic Technique, Case Studies	eFAST Cases RUSH Cases Pericardiocentesis Cases SonoSim LiveScan® Cardiac Resuscitation, Critical Care, & Trauma Care Scenarios
Behaviour		
Adheres to rule-in philosophy	All SonoSim Courses	All SonoSim Cases

Not Covered for Pathology in Relation to Ultrasound, Skills: Describe and sketch key pathologies

Not Covered for Administration and Governance, Knowledge: Image recording, storing and filing, reporting medico-legal aspects (outlining the responsibility to practice within specific levels of competence and the requirements for training), consent, the value and role of departmental protocols, the resource implications of ultrasound

Not Covered for Administration and Governance, Skills: Integrate EMUS into departmental clinical governance system

Not Covered for Administration and Governance, Behaviour: Adheres to rule-in philosophy

Focused Assessment using Sonography in Trauma (FAST)		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Use focused ultrasound to assist in bedside emergency department decisions	eFAST: All Lessons FAST: All Lessons	eFAST Cases FAST Cases
Four areas to scan	eFAST: Anatomy , Sonographic Anatomy & Technique FAST: Anatomy, Sonographic Anatomy & Technique	
How to position the patient	eFAST: Sonographic Anatomy & Technique	
Obtaining better views	FAST: Sonographic Anatomy & Technique	
Key indications	eFAST: Indications FAST: Introduction	
Recognise the limitations of a scan and be able to explain these limitations to patients/carers	eFAST: Introduction	
Recognise patients requiring formal specialist sonographic assessment	FAST: Introduction, Role of FAST	
Incorporate ultrasound findings with the rest of the clinical assessment	eFAST: Case Studies FAST: Case Studies	
Appearances of pleural and pericardial fluid	eFAST: Sonographic Anatomy & Technique, Imaging Tips & Pitfalls, Case Studies FAST: Sonographic Anatomy & Technique, Imaging Tips & Pitfalls, Case Studies	
Appearances of fluid in Morison's pouch, spleno-renal recess, and pelvis	eFAST: Sonographic Anatomy & Technique, Case Studies FAST: Sonographic Anatomy & Technique, Case Studies	

Focused Assessment using Sonography in Trauma (FAST) (Cont.)		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Understands common aortic artefacts	Fundamentals of Ultrasound: Imaging Artifacts	Aorta/IVC Anatomy & Physiology Cases Aorta/IVC Core Clinical Cases RUSH Cases Vascular Challenge Cases SonoSim LiveScan® Critical Care Scenarios
Skills		
Can obtain adequate images	All SonoSim Courses	All SonoSim Cases
Can interpret accurately in the clinical setting		
Behaviours		
Safe practice	Fundamentals of Ultrasound: Infection Control & Biosafety	--
Limitations of own skills	All SonoSim Courses	All SonoSim Cases
Adheres to rule-in philosophy		

Assessment of the Abdominal Aorta		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Use focused ultrasound to assist in bedside emergency department decisions	<i>Aorta/IVC Core Clinical: All Lessons</i> <i>RUSH: All Lessons</i>	--
Recognise the limitations of a scan and be able to explain these limitations to patients/carers	<i>Aorta/IVC Core Clinical: Clinical Considerations</i>	
How to position the patient	<i>Aorta/IVC Anatomy & Physiology: Sonographic Technique</i>	<i>Aorta/IVC Anatomy & Physiology Cases</i> <i>Aorta/IVC Core Clinical Cases</i> <i>RUSH Cases</i> <i>Vascular Challenge Cases</i> <i>SonoSim LiveScan® Critical Care Scenarios</i>
Knows anatomy	<i>Aorta/IVC Anatomy & Physiology: Anatomy</i> <i>Aorta/IVC Core Clinical: Anatomy</i>	
Key indications	<i>Aorta/IVC Core Clinical: Introduction, Clinical Considerations</i>	<i>Aorta/IVC Core Clinical Cases</i> <i>RUSH Cases</i> <i>Vascular Challenge Cases</i> <i>SonoSim LiveScan® Critical Care Scenarios</i>
Can measure diameter	<i>Aorta/IVC Core Clinical: Case Studies</i>	<i>Aorta/IVC Anatomy & Physiology Cases</i> <i>Aorta/IVC Core Clinical Cases</i> <i>RUSH Cases</i> <i>Vascular Challenge Cases</i> <i>SonoSim LiveScan® Critical Care Scenarios</i>

Assessment of the Abdominal Aorta (Cont.)		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
Knowledge		
Incorporate ultrasound findings with the rest of the clinical assessment	Aorta/IVC Core Clinical: Introduction	Aorta/IVC Anatomy & Physiology Cases Aorta/IVC Core Clinical Cases RUSH Cases Vascular Challenge Cases SonoSim LiveScan® Critical Care Scenarios
Understands common aortic artefacts	Fundamentals of Ultrasound: Imaging Artifacts	
Knows the views to obtain	Aorta/IVC Anatomy & Physiology: Sonographic Anatomy, Sonographic Technique Aorta/IVC Core Clinical: Anatomy, Imaging Technique	
Knows normal limits	Aorta/IVC Core Clinical: Anatomy	
Distinguishes aorta from IVC	Aorta/IVC Anatomy & Physiology: Anatomy, Sonographic Anatomy, Sonographic Technique Aorta/IVC Core Clinical: Sonographic Anatomy, Sonographic Technique	
Recognises different types of aneurysm	Aorta/IVC Core Clinical: Case Studies	Aorta/IVC Core Clinical Cases Vascular Challenge Cases SonoSim LiveScan® Critical Care Scenarios
Understands when to use	Aorta/IVC Core Clinical: Introduction, Clinical Considerations	Aorta/IVC Core Clinical Cases RUSH Cases Vascular Challenge Cases SonoSim LiveScan® Critical Care Scenarios
Can identify SMA and coeliac axis	Aorta/IVC Anatomy & Physiology: Sonographic Anatomy	Aorta/IVC Anatomy & Physiology Cases Aorta/IVC Core Clinical Cases Vascular Challenge Cases
Knows leaks/bleeding cannot be seen	Aorta/IVC Core Clinical: Clinical Considerations	--
Skills		
Can obtain adequate images	All SonoSim Courses	All SonoSim Cases
Can interpret accurately in the clinical setting		
Behaviours		
Safe practice	Fundamentals of Ultrasound: Infection Control & Biosafety	--
Limitations of own skills	All SonoSim Courses	All SonoSim Cases
Adheres to rule-in philosophy		

Vascular Access Competency		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
	Knowledge	
Knows vascular anatomy	Arm-Arterial Anatomy & Physiology: Anatomy, Sonographic Anatomy Arm-Venous Anatomy & Physiology: Anatomy, Sonographic Anatomy Cerebrovascular Anatomy & Physiology: Anatomy, Sonographic Anatomy Leg-Arterial Anatomy & Physiology: Anatomy, Sonographic Anatomy Leg-Venous Anatomy & Physiology: Anatomy, Sonographic Anatomy	Arm-Arterial Anatomy & Physiology Cases Arm-Venous Anatomy & Physiology Cases Cerebrovascular Anatomy & Physiology Cases Leg-Arterial Anatomy & Physiology Cases Leg-Venous Anatomy & Physiology Cases Vascular Challenge Cases
Can locate IJV, femoral vein, and basilic veins	Arm-Arterial Anatomy & Physiology: Sonographic Technique Cerebrovascular Anatomy & Physiology: Sonographic Technique Leg-Venous Anatomy & Physiology: Sonographic Technique	Arm-Arterial Anatomy & Physiology Cases Cerebrovascular Anatomy & Physiology Cases Leg-Venous Anatomy & Physiology Cases Vascular Challenge Cases
Can describe use of ultrasound to assist or to guide cannulation	Peripheral Venous Access: All Lessons Ultrasound-Guided Femoral Line Placement: All Lessons Ultrasound-Guided Internal Jugular Vein Cannulation: All Lessons	Peripheral Venous Access Cases Ultrasound-Guided Femoral Line Placement Cases Ultrasound-Guided Internal Jugular Vein Cannulation Cases
Understands parallelism and angle of approach	Peripheral Venous Access: Sonographic Technique Ultrasound-Guided Femoral Line Placement: Procedure Steps Ultrasound-Guided Internal Jugular Vein Cannulation: Procedure Steps	
	Skills	
Can obtain adequate images	All SonoSim Courses	All SonoSim Cases
Can cannulate using ultrasound guidance	Peripheral Venous Access: All Lessons Ultrasound-Guided Femoral Line Placement: Procedure Steps: All Lessons Ultrasound-Guided Internal Jugular Vein Cannulation: All Lessons	Peripheral Venous Access Cases Ultrasound-Guided Femoral Line Placement Cases Ultrasound-Guided Internal Jugular Vein Cannulation Cases
Can use sterile probe covers	Introduction to Ultrasound-Guided Procedures: Procedure Preparation	--
Can avoid risk of air embolism	Ultrasound-Guided Femoral Line Placement: Procedure Preparation Ultrasound-Guided Internal Jugular Vein Cannulation: Procedure Preparation	
Can avoid significant bleeding	Ultrasound-Guided Femoral Line Placement: Introduction	
Can conduct without unnecessary discomfort to the patient	Peripheral Venous Access: Procedure Preparation Ultrasound-Guided Femoral Line Placement: Procedure Preparation Ultrasound-Guided Internal Jugular Vein Cannulation: Procedure Preparation	
	Behaviours	
Safe practice	Fundamentals of Ultrasound: Infection Control & Biosafety Introduction to Ultrasound-Guided Procedures: Procedure Preparation	--
Limitations of own skills	All SonoSim Courses	All SonoSim Cases
Adheres to rule-in philosophy		

Echo in Life Support (ELS)		
Curriculum Requirement	SonoSim Courses	SonoSimulator® Cases
	Knowledge	
Limited echocardiogram in the setting of non-shockable cardiac arrest rhythms (PEA and asystole)	<i>eFAST</i> : All Lessons <i>FAST</i> : All Lessons <i>RUSH</i> : All Lessons <i>FoCUS Part I & II</i> : All Lessons <i>Resuscitative TEE</i> : All Lessons	<i>eFAST Cases</i> <i>FAST Cases</i> <i>RUSH Cases</i> <i>FoCUS Part I & II Cases</i> <i>Resuscitative TEE Cases</i>
Detecting wall motion	<i>RUSH</i> : Sonographic Anatomy, Sonographic Technique <i>FoCUS Part I</i> : Case Studies <i>Resuscitative TEE</i> : Echocardiographic Anatomy, Echocardiographic Technique	<i>RUSH Cases</i> <i>FoCUS Part I & II Cases</i> <i>SonoSim LiveScan® Critical Care Scenarios</i>
Views used - sub-xiphoid view first, augmented by a further view – the para-sternal long axis view	<i>eFAST</i> : Sonographic Anatomy & Technique <i>FAST</i> : Sonographic Anatomy & Technique	<i>eFAST Cases</i> <i>FAST Cases</i>
Visualisation of the inferior vena cava (IVC) for assessment of diameter of collapsibility	<i>Aorta/IVC Core Clinical</i> : IVC Evaluation & CVP <i>RUSH</i> : Sonographic Anatomy, Sonographic Technique <i>FoCUS Part I</i> : Pulmonary Artery Pressure Measurements <i>FoCUS Part II</i> : Valvular Regurgitation	<i>Aorta/IVC Core Clinical Cases</i> <i>RUSH Cases</i> <i>FoCUS Part I & II Cases</i>
	Skills	
Can obtain adequate images	<i>All SonoSim Courses</i>	<i>All SonoSim Cases</i>
Can interpret accurately in the clinical setting		
	Behaviours	
Safe practice	<i>Fundamentals of Ultrasound</i> : Infection Control & Biosafety <i>Introduction to Ultrasound-Guided Procedures</i> : Procedure Preparation	--
Limitations of own skills	<i>All SonoSim Courses</i>	<i>All SonoSim Cases</i>
Adheres to rule-in philosophy		

Not Covered for Echo in Life Support (ELS), Knowledge: Knows the treatable causes of PEA (cardiac tamponade, hypovolaemia, and pulmonary embolism)