



Credentialling Workbook for Extended Focused Assessment with Sonography for Trauma (EFAST)

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Introduction

The Extended Focused Assessment with Sonography for Trauma (EFAST) is an ultrasound examination to detect the presence of hemoperitoneum, haemothorax, pneumothorax or hemopericardium. The examination involves a minimum of six views.

The basic pathway to competency follows a structure of: theory and introductory phase, supervised practice, experience and exit assessment of competence, the details of which can be found in this booklet.

The credentialing process requires candidates to:

- Complete an appropriate instructional educational program
- Perform and record a requisite number of supervised and logged emergency department ultrasounds
 - A minimum of 25 accurate examinations must be performed
 - At least 50% of these examinations must be clinically indicated
 - At least five should be positive for either intraperitoneal, pleural, pericardial fluid, or pneumothorax
 - There should be a minimum of two formative assessments completed
- Pass a summative assessment
- Once credentialed, meet ongoing maintenance requirements
 - At least three hours of ultrasound training per year
 - Perform or supervise a minimum of 25 EFAST examinations per two-year cycle and maintain a logbook to prove this for audit purpose

Credentiailling in Extended Focused Assessment with Sonography for Trauma (EFAST) Unit Completion form



1. Personal Details

Family name:

Given names:

Email Address:

2. Educational Program

- ☐ Introduction to ED POCUS course certificate
- ☐ USS physics course certificate
- ☐ EFAST theory course certificate
- ☐ EFAST practical course component met, and certificate provided

3. Experience phase

- ☐ I have used a logbook and the scans have been reviewed by a credentialed scanner/supervisor
- ☐ My logbook contains: 25 accurate EFAST scans, including scans used for assessments
- ☐ 50% of these scans are clinically indicated
- ☐ There are at least 5 positive scans for either intraperitoneal, pleural, pericardial fluid or pneumothorax
- ☐ The above requirements are clearly labelled and identifiable within my logbook.

4. Demonstration of Competence

- ☐ I have completed 2 formative assessments and 1 summative assessment
- ☐ Assessments are not completed on the same date
- ☐ All assessments are signed by both my supervisor and me.

5. Maintenance Requirement

- ☐ I acknowledge that to maintain these credentials I will undertake at least three hours of ultrasound training per year
- ☐ I acknowledge that to maintain these credentials I must perform or supervise a minimum of 25 EFAST examinations per two-year cycle and maintain a logbook to prove this for audit purposes

Instructional Educational Program for EFAST

1. **Basic Ultrasound Knowledge:** A formal course should include education on the Physics of Ultrasound and Instrumentation. Online Ultrasound Courses that provide this basic knowledge include the Australasian College for Emergency Medicine (ACEM) Ultrasound Course modules. Anyone can access these modules by creating an ACEM login. The Introduction to POCUS and Physics course can be found at [Course: Ultrasound \(acem.org.au\)](https://elearning.acem.org.au/course/view.php?id=951) or <https://elearning.acem.org.au/course/view.php?id=951>
 - a. **Physics:** Piezoelectric effect; Wave characteristics – cycle, frequency, period, wavelength, amplitude; Echogenicity; Image resolution; Attenuation; Doppler effect; Impedance; Artefacts; Bio-effects
 - b. **Instrumentation:** Transducer types and selection; Transducer manipulation; Image labelling; Focu; Gain; Time gain compensation; Orientation; Scan planes; Image measurement; Infection control; Machine care and maintenance

2. **EFAST Theory:** A formal course should instruct on normal anatomy, views obtained, possible EFAST findings, clinical algorithms and integration, limitations/pitfalls and reporting. ACEM also provides an EFAST learning module [Course: Ultrasound \(acem.org.au\)](https://elearning.acem.org.au/course/view.php?id=951) or <https://elearning.acem.org.au/course/view.php?id=951>
 - a. **Anatomy:** Liver. Spleen, Kidneys, Diaphragm, Lung bases, Bladder, Uterus and cervix, Prostate, Heart and pericardium, Ribs and pleural line
 - b. **Views:** Right upper quadrant/Morison's pouch / liver tip / diaphragm and right lung base; Left upper quadrant/spleno-renal area / inferolateral tip of spleen / diaphragm and left lung base; Pelvic; Subxiphoid or other cardiac views; Lung – left and right parasternal clips at least dependent point on the chest for lung sliding
 - c. **Findings:** Haemoperitoneum, Haemopericardium, Haemothorax, Pneumothorax, Limitations / pitfalls, Reporting
 - d. **Integration into clinical practice and algorithms:** Blunt versus penetrating injury

3. **EFAST Practical ultrasound sessions.** It is essential that practical ultrasound sessions include:
 - a. Demonstration of correct application protocol for emergency indication.
 - b. Minimum time – two hours
 - c. Maximum student:instructor ratio – 5:1
 - d. Live ultrasound models for scanning sessions, preferably including both normal subjects and patients with demonstrable pathology. Patients or professional-grade simulators are preferable for abnormal anatomy. However, they may not always be readily available. In such cases, ultrasound cineloops showing the same pathology may be substituted.

Starship				E-FAST		E-Fast is a limited trauma ultrasound that aims to detect: 1. Intra-abdominal free fluid 2. Pericardial effusion 3. Major haemothorax 4. Pneumothorax A normal E-FAST does not exclude significant intra-abdominal injury (25% of intra-abdominal injuries in Children do not have haemoperitoneum)		Patient details					
Mechanism of Trauma						Pulse		BP		RR		Sats	
Examination Findings													
Probe Position		Views		Notes		Findings				Notes			
				1. RUQ Fluid collects in Morison's Pouch Look above diaphragm for HTX Head down tilt will increase RUQ fluid Sensitivity for haemoperitoneum is 88% for children requiring blood transfusion or operative intervention (much lower in less severely injured ~66%)		Right Upper Quadrant		Normal		Inadequate		Positive	
				2. LUQ Fluid can collect around the entire spleen Look above the diaphragm for HTX Needs to be 200-250mL blood before eFAST +ve		Right Haemothorax		Normal		Inadequate		Positive	
				3. Subcostal Tamponade is a clinical diagnosis. Look for fluid in the pericardial space. Pericardial fat pads may give the appearance of pericardial fluid. Fluid must have a depth of >5mm; traces of pericardial fluid are normal		Left Upper Quadrant		Normal		Inadequate		Positive	
				4. Long. Pelvis Look for free fluid behind and above the bladder In the female, fluid collects initially in the Pouch of Douglas		Left Haemothorax		Normal		Inadequate		Positive	
				5. Trans. Pelvis A small amount of pelvis free fluid is normal in children (4%)		Subcostal		Normal		Inadequate		Positive	
Preparation 1. Patient data entry, label images 2. Probe: curvilinear or phased array 3. Pre-set: abdominal or eFAST 4. Position: supine, Trendelenburg patient; right side if able; lights dim if possible 5. Image optimisation: depth, Res/Gen/Pen, gain, TGC				6.&7. Long. Lung Sliding sign and comet tail artefact are normal; loss of these indicate PTX. Pleuradhesion, large bullae, COPD and non-ventilation (eg endobronchial intubation) can simulate PTX. Lung USS is more sensitive than CXR for detecting PTX (88% sens., 99% spec.).		Pelvis		Normal		Inadequate		Positive	
						Right Lung Pneumothorax		Normal		Inadequate		Positive	
						Left Lung Pneumothorax							
										May need to switch to lung preset to see sliding			
Conclusions (Note: E-FAST findings must be consistent with clinical suspicion: integrate history, examination, investigations and USS findings). Unlike adults there is no algorithm that necessitates CT scan or disposition to theatre if positive. Consult with Paediatric Surgical service.													
Clinician		Signature		Date		Time		Resource adapted from Ultrasound Village					

Logbook requirements

Patients must be informed that the ultrasound examination is being performed for credentialing purposes and verbal or written consent obtained.

Ultrasound examinations must be documented in an appropriately secure logbook. The entry should include:

- Clinical details
- Date and type of ultrasound examination performed
- Findings
- Candidate's interpretation of those findings
- The findings and interpretation should subsequently be compared to other clinical data and a notation made as to whether the scan findings were accurate.
- Where the scan was not supervised there should be confirmatory evidence of the accuracy of the examination (via additional studies or clear clinical evidence).
- All logbook scans should be either directly proctored, or the images reviewed at a later date by one of the trainee's supervisors.

We encourage you to perform as many of your logbook scans as possible with a credentialed clinician in order to gain feedback.

A logbook template can be found on the CED Credentialing page under "Credentialing Resources"

Assessments

For each modality, at least two directly supervised formative assessments must be completed prior to a final summative assessment. Assessments forms can be found on the next page or on the CED Ultrasound website.

The final summative assessments and credentialing process must be overseen by a clinician who is themselves credentialed in that modality. They will observe the candidate performing the ultrasound examination and will not give any feedback during this examination. This may be undertaken simultaneously as a Direct Observations of Procedural Skill (DOPS) assessment for FACEM Trainees.

Once the examination requirements are satisfied, the emergency medicine practitioner will be credentialed for the appropriate ultrasound module. The emergency medicine sonologist may then document the results of his/her ultrasound scans in the medical record and incorporate the results into clinical decisions. ACEM has a formal link with the Australasian Society for Ultrasound Medicine. ACEM accepts successful completion of the Certificate in Clinician Performed Ultrasound (CCPU) as appropriate demonstration of competence.

CED POCUS Competence Assessment Form



E-Fast Ultrasound

Candidate: _____

Assessor: _____

Date: _____

Assessment type: Formative (feedback & teaching given during assessment for education) ☐

Summative (prompting allowed but teaching not given during assessment) ☐

To pass the summative assessment, the candidate must pass all components listed

Prepare patient

Position
Informed

Competent	Prompted	Fail

Prepare Environment

Lights dimmed if possible

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Probe & Preset Selection

Can change transducer
Selects appropriate transducer
Selects appropriate preset

Data Entry

Enter patient details

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Image Acquisition

Optimisation (depth, freq, focus, gain)

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RUQ

Identifies Liver
Rt Kidney
Morrison's pouch
Diaphragm
Lung
Bowel

LUQ

Identifies Spleen
Lt Kidney
Splenorenal recess
Diaphragm
Lung

PELVIS

Identifies Bladder
Iliac vessels
Prostate / Uterus
Rectum
Scans TS & LS

Describes Where abdominal free fluid collects
Where pleural fluid collects
Appearance of fresh and clotted blood

PERICARDIUM / SUBCOSTAL

- Identifies* Liver
Right Ventricle
Left Ventricle
Septum
Pericardium
- Describes* Where pericardial fluid collects
Appearance of fresh and clotted blood

Competent	Prompted	Fail

LUNG

- Identifies* Rib
Pleura
Comet tail artefact & b lines (if present)
Sliding sign
Able to differentiate lung sliding & cardiac motion on left chest
Able to use M mode & explain its role & limitations
- Describes* Appearance of PTx
Assessment of PTx size
Where pleural fluid collects, and appearance of fresh and clotted blood

Artefacts

- Identifies & explains the basis of common artefacts

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Record Keeping

- Labels & stores appropriate images
Documents any pathology identified
Completes report
Each view adequate / inadequate
Documents focussed scan only
Describe findings briefly
Integrates ultrasound findings with clinical assessment and explains how the findings might change management

Machine Maintenance

- Cleans / disinfects ultrasound probe
Stores machine and probes safely and correctly

For Formative Assessment Only:

Feedback of particularly good areas: _____

Agreed actions for development _____

Examiner Signature: _____ Candidate Signature: _____

Examiner Name: _____ Candidate Name: _____

Date: _____



Credentialling Certificate in Focused Ultrasound

Has met the requirements for
Credentialling in Extended Focused
Assessment with Sonography for Trauma
(EFAST) as outlined in the ACEM Policy on
Credentialling for Emergency Medicine
Ultrasound (P733)

Kylie Salt (Clinical Lead in US, CED, Starship
Children's Hospital, Auckland, NZ)

Date

Credentialling Maintenance

To maintain his/her credentials, the emergency medicine sonologist should undertake at least three hours of ultrasound training per year. This may include:

- 1:1 training with a qualified Sonographer Educator in ED (SEED);
- attending or presenting at an ultrasound webinar/workshop or conference;
- teaching on an accredited course;
- participation in ultrasound quality assurance and retrospective image review; and
- reading Ultrasound journals or textbooks.

For the EFAST module, the emergency medicine sonologist must perform or supervise a minimum of 25 scans per two-year cycle. It is recommended these are logged in a logbook for audit purposes. An example logbook could contain the following columns:

- Date
- Case for 14 years and under?
- Supervised scan? (Did you supervise this scan, rather than personally perform?)
- Trainee's name (if supervised scan)
- Clinical Indication (indicate the symptoms or condition that substantiates the necessity for further investigation by an ultrasound scan)
- Positive?
- Interpretation and Clinical Findings
- Comparison with further imaging or clinical outcome