Australasian College for Emergency Medicine

Recommendations for Health Service Credentialing – EM Ultrasonography

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Document Review

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Version	Date	Pages revised / Brief Explanation of Revision
V1	August 2019	Approved by Council of Education
V2	September 2020	Content updates
V3	October 2021	Content updates
V4	December 2022	Updated title
V5	March 2023	Reference to Recognition of Prior Learning in Section 3
V6	August 2023	Updates to Section 8 Maintenance requirement

1. Purpose and background

This document is a policy of the Australasian College for Emergency Medicine (ACEM). This policy details the credentialing process that ACEM recommends to health authorities for Specialist Emergency Physicians, FACEM trainees and ACEM certificate, diploma and advanced diploma holders and trainees who wish to perform focused emergency medicine ultrasound on resuscitation and trauma patients and for procedural guidance.

ACEM does not credential practitioners to perform emergency medicine ultrasonography. This is the responsibility of each health authority and the recommended structure for their credentialing pathway is outlined in this policy. Where a credentialing structure is not set up within a given health authority, it would be reasonable for clinicians to follow a similar structure in their advanced ultrasound training as detailed in the Australasian Society For Ultrasound In Medicine (ASUM) CCPU or DDU modules or equivalent. ACEM recognises that the possession of these qualifications (or equivalent) should imply minimum competency in the relevant areas.

Emergency Sonologists will often encounter cases where core applications (EFAST, AAA, Lung, FELS, Procedural Guidance) are insufficient or unsuited to advance the clinical assessment or management of a patient. If the skills and training of the emergency physician allows, they should be actively encouraged to extend their scope of practice. The basic pathway to competency should be of a similar structure to that of core applications (theory and introductory phase, supervised practice, experience and exit assessment of competence).

In this document, the term sonologist is used to include practitioners who have successfully completed this credentialing process or equivalent (e.g. CCPU). In the case of focused echo, higher echocardiography training (such as PTEeXAM, ASCeXAM, PGDipEcho, PGCert / Dip. of Clinical Ultrasound, DDU) is considered appropriate.

2. Related documents

G25 Guidelines for Ultrasound Education Programs

P21 *Policy on use of focused ultrasound in emergency departments*

3. Terminology

ACEM/the College

means the Australasian College for Emergency Medicine.

College member

means a person admitted as a member of the College pursuant to the provisions of the ACEM Constitution and associated regulations.

Governing body

means the ACEM Board, the Council of Advocacy, Practice and Partnerships (CAPP), or the Council of Education (COE).

FACEM

Fellow of the Australasian College for Emergency Medicine

Trainee

means trainees enrolled in and undertaking the FACEM Training Program and, for the purposes of this policy, also includes Emergency Medicine Certificate, Emergency Medicine Diploma, Emergency Medicine Advanced Diploma and Diploma of Pre-Hospital and Retrieval Medicine (DipPHRM) trainees, and Specialist International Medical Graduates (SIMGs) undertaking College requirements for the purpose of attaining eligibility for election to Fellowship of the College.

AAA

Abdominal aortic aneurysm

ASCeXAM

Examination of Special Competence in Adult Echocardiography (US National Board of Echocardiography)

CCPU

Certificate in Clinician Performed Ultrasound (Australasian Society for Ultrasound in Medicine)

CLUS

Clinical Lead in Ultrasound

CPR

Cardiopulmonary resuscitation

DDU

Diploma of diagnostic ultrasound (Australasian Society for Ultrasound in Medicine).

EFAST

Extended focused assessment with sonography for trauma

FELS

Focused echocardiography in life support

PGCert/Dip of Clinical Ultrasound

Post graduate certificate or diploma of clinical ultrasound (University of Melbourne)

PGDip Echo

Post graduate diploma of echocardiography (University of Melbourne)

PTEeXAM

Perioperative Transesophageal Echocardiography exam (US National Board of Echocardiography)

4. Policy

ACEM supports measures to ensure that focused ultrasound examinations are available in a timely fashion for emergency department patients 24 hours per day. This should be almost immediate in the context of cardiac arrest, peri-arrest, or time-critical illness. Focused echocardiography should be rapidly available in the setting of a patient in cardiac arrest or with haemodynamic compromise.

Focused ultrasounds are limited, goal directed examinations performed to answer specific clinical questions. These examinations are not comprehensive and do not replace sonography offered by diagnostic imaging departments or those performed in dedicated echocardiography units.

Emergency medicine practitioners including trainees providing emergency ultrasound services should have completed appropriate training and have extensive hands-on experience. For each ultrasound modality that they wish to perform and interpret, they should have successfully completed a credentialing process and must continue to fulfill ongoing skills maintenance requirements.

5. Procedures and actions

The credentialing process requires candidates to:

- complete an appropriate instructional educational program that addresses the criteria described in *G25 Guidelines for Ultrasound Education Programs*;
- perform and record a requisite number of accurate proctored emergency department ultrasounds; and
- pass a summative assessment.

Once credentialed, emergency department sonologists must meet ongoing maintenance requirements.

It is recommended that those who have already completed equivalent requirements and who currently practice EFAST, AAA, Lung, FELS or Procedural Guidance should be considered competent in the relevant skill/s. These practitioners should meet relevant continuing professional development requirements.

For FACEMS who are practicing Focused Emergency Department ultrasound, but have never completed any form of credentialing process, it is recommended that they undergo a Summative assessment in each modality that they are practicing in, as outlined in the *Recommended Process for Recognition of Prior Learning*. This should be overseen by the CLUS and/or other FACEMS with qualifications in that modality. If the practitioner does not pass the summative assessment, then they may repeat the process after an agreed period of ED POCUS re-training.

6. Educational program

6.1 Content

The educational program should substantively cover the topics as outlined in *G25 Guidelines on Minimum Criteria for Ultrasound Workshops*.

6.2 Format

It is recognised that it may be challenging to ensure that candidates meet the requirements of these educational programs in a single sitting. Therefore, the use of alternate teaching/learning strategies is to be encouraged, such as online lectures or alternatives for the theoretical components of these educational programs.

Candidates may also achieve the minimum educational requirements asynchronously, while ensuring that the minimum time and educational requirements are achieved.

6.3 Practical component

It is recognised that it may be challenging to ensure that candidates meet the requirements of these educational programs in a single sitting. Therefore, the use of alternate teaching/learning strategies is to be encouraged, such as online lectures or alternatives for the theoretical components of these educational programs.

Candidates may also achieve the minimum educational requirements asynchronously, while ensuring that the minimum time and educational requirements are achieved.

7. Experience Phase

Proctored and logged examinations are an essential part of the credentialing process.

A proctored examination consists of an examination that is directly supervised, in real time, by a qualified supervisor. A confirmatory study should not be required. For each modality, **at least** two directly supervised formative assessments must be completed prior to a final, summative assessment.

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

All ultrasound examinations must be documented in an appropriately secure logbook. The entry should include the clinical details, the date and type of ultrasound examination performed, the findings and the 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. In the case where an examination was not directly supervised there should be confirmatory evidence of the accuracy of the examination. This may be via an additional/alternate study or by clear clinical evidence. Ideally, all logbook scans will be directly proctored, or the images reviewed at a later date by one of the trainee's supervisors.

Minimum numbers of ultrasound examinations for each module are detailed below.

7.1 Extended Focused Assessment with Sonography for Trauma (EFAST)

A minimum of 25 accurate examinations must be performed. At least 50% of these examinations must be clinically indicated and at least five should be positive for either intraperitoneal, pleural, pericardial fluid, or pneumothorax.

7.2 Abdominal Aorta (AAA)

A minimum of 15 accurate examinations of the aorta must be performed. At least 50% of these examinations must be clinically indicated and at least three should demonstrate an aneurysm.

7.3 Basic Lung

A minimum of 25 accurate examinations of the lung must be performed. At least 50% of these examinations must be clinically indicated and at least five should demonstrate significant pathology e.g. pneumothorax, effusion, pneumonia, interstitial syndrome.

7.4 Focused Echo in Life Support (FELS)

A minimum of 25 accurate examinations of the heart must be performed.

At least thirteen (ie. >50%) should be clinically indicated. Five (5) of these should be in critical care situations (i.e. shock/peri arrest/cardiac arrest) and all five of these scans must be reviewed by a sonologist credentialed in FELS. This may occur later using recorded images / loops. For any scans not reviewed by a supervisor, the findings should be compared with other studies or clinical data and noted whether the findings were accurate.

At least five examinations should be performed under the direct supervision of a sonologist credentialed in FELS, or cardiac sonographer.

Evidence of review of clinical images/loops from a further 25 cases should be provided. Ideally, this review should be undertaken with a supervisor to ensure that the candidate has viewed and correctly interpreted cases with appropriate pathology. The cases that demonstrate the required pathology are available on the ACEM Ultrasound resources page.

Of the minimum 50 FELS examinations (25 performed and 25 reviewed), there must be at least two (2) cases each of pericardial effusion, right heart failure / massive pulmonary embolism, hypovolemia or distributive shock and left ventricular failure.

7.5 Procedural guidance

A minimum of 25 successful needle guided procedures must be performed. Ideally, this will include a mix of procedures including peripheral vascular access, central vascular access, arterial lines, pleural or peritoneal aspiration and nerve blocks.

A minimum of three directly supervised procedures must be performed for both in-plane and out-of-plane needle guidance (total of six). It should be noted that although only six directly supervised procedures are required for credentialing, this is due to limited access to trainers and more are encouraged. Up to three of the "directly supervised" procedures can be on simulators if necessary. This is due to the acknowledged difficulty of getting the supervisor, appropriate patient and trainee together at the same time in the clinical environment.

The assessment requirements include two formative and one summative assessment, which can also count towards the six supervised scans. These assessments must be completed on patients.

Proficiency in in-plane and out of plane guidance is to be encouraged initially on phantoms or simulators, then performing peripheral procedures before undertaking central procedures. The use of simulators is encouraged early in the experiential phase to assist with psychomotor skill acquisition in a safe environment where a supervisor is readily at hand for instruction and feedback. The trainee and supervisor should ensure that a range of needle guidance procedures have been performed, ie. not just 25 peripheral IV cannulations.

7.6 Logbook cases

Up to 50% of logbook cases can be completed in a non-clinical environment including a refresher educational program. All scans performed in a non-clinical environment must be directly supervised by one of the practitioners described in "Sonologist" (section 10 below) and/or a suitably qualified sonographer, and educational feedback provided to the candidate.

8. Proctored Scanning

An emergency medicine physician credentialed in ultrasound, qualified sonographer, echocardiographer, radiologist, or other qualified clinician, will observe the trainee performing the ultrasound examination.

They will give feedback to the trainee as appropriate including, but not limited to, ultrasound technique including image optimisation strategies, relevant anatomy and artifacts, machine capabilities and maintenance and appropriate labeling and storage of images.

These proctored scans are an essential part of the experiential phase of learning and ideally should occur for as many of the logbook scans as possible. They are used to identify any knowledge and skills that the trainee requires more understanding of and practice in. Some of the proctored scans can also be used as formative assessments. There should be a minimum of two formative assessments completed for each modality, however it is recognised that for many trainees, more than two formative assessments will be required to ensure they are well prepared for their final summative assessment in that modality.

9. Demonstration of competence (i.e. summative assessments)

The final summative assessments and credentialing process must be overseen by a clinician who is themselves credentialed in that modality. This will most likely be the CLUS. 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. The candidate must demonstrate the ability to:

- acquire adequate ultrasound images of all the appropriate anatomical structures;
- identify any relevant artefacts or pathology present during real time scanning and/or on recorded scans and/or hard copies of scans;
- recognise an inadequate scan;
- demonstrate an understanding of the indications and limitations of ultrasound examination for the condition in question;
- demonstrate appropriate machine care, image labeling and documentation of their findings; and
- integrate their findings into the overall clinical picture and generate appropriate treatment recommendations if appropriate.

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 views successful completion of the Certificate in Clinician Performed Ultrasound (CCPU) as appropriate demonstration of competence.

10. Maintenance requirements

To maintain his/her credentials, it is recommended that the emergency medicine sonologist 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 each module that they are credentialed in, it is recommended that the emergency medicine sonologist perform or supervise a minimum number of scans per two-year cycle. If evidence is required for scope of practice, it is recommended that the following are logged:
- EFAST – 25 EFAST examinations
- AAA – 15 aorta scans
- Lung – 25 Lung scans
- FELS – 25 FELS scans
- Procedural guidance – 25 successful needle guidance procedures.

In cases where the sonologist is more experienced, the quality and consistency of their work should be able to be demonstrated. Sonographic examinations should consistently demonstrate reported pathology and minimum image sets and reports documented and recorded. These examinations should be open to independent scrutiny by a sonologist of similar qualification for the purposes of quality assurance. It is suggested that these, more advanced sonologists perform at least 50 focused ultrasound examinations per year.

11. Documentation

Documentation of the ultrasound examination in the patient's medical record should be entitled appropriately, for example, as an "EFAST", "focused Echocardiography in Life Support (FELS)" or a "focused ED Ultrasound for Aortic Aneurysm". The notes should describe the views obtained, the adequacy of those views and indicate whether the findings were normal, abnormal or indeterminate. If the study was inadequate, this must be clearly stated, as such studies should not be used to make clinical decisions.

12. Definitions

Sonologist

A practitioner who has successfully completed this credentialing process or has successfully completed the Certificate in Clinician Performed Ultrasound (CCPU), or who possesses DDU (Diploma of Diagnostic Ultrasound), FRANZCR (Fellow of the Royal Australian and New Zealand College of Radiology) or equivalent, or qualifications such as the Postgraduate Certificate in Clinician Performed Ultrasound. In the case of focused

echo, higher echocardiography training (such as PTEeXAM, ASCeXAM, PGDipEcho, PGCert / Dip of Clinical Ultrasound, DDU) is acknowledged as appropriate.

Focused ultrasound

Limited, goal directed examinations used to answer specific clinical questions. These examinations are not comprehensive and do not replace sonography offered by diagnostic imaging departments.

Proctored studies

Ultrasound examinations that are directly supervised by a sonologist or registered sonographer practising in the relevant area. Alternatively, the ultrasound examinations are recorded or printed, and the images are then reviewed by the above-mentioned qualified practitioners at a later time, with feedback to the candidate to allow reflective practice.

EFAST examination (Extended Focused Assessment with Sonography for Trauma)

An ultrasound examination to detect the presence of hemoperitoneum, hemothorax, pneumothorax or hemopericardium. The examination involves a minimum of six views including:

- Right Upper Quadrant including the hepato-renal interface (Morison's pouch), liver tip and the right diaphragm/lung base.
- Left Upper Quadrant including the inferolateral tip of spleen, between the spleen and the diaphragm,
  spleno-renal interface and left diaphragm/lung base.
- The pelvis, with assessment in longitudinal and transverse planes.
- Subxiphoid or intercostal views of the pericardium.
- The left parasternal views to detect lung sliding at the least dependent point of the chest.
- The right parasternal views to detect lung sliding at the least dependent point of the chest.

A FAST examination may also be carried out for the presence of haemoperitoneum in the appropriate clinical scenario such as concern for a possible ruptured ectopic. These scans can be included in the EFAST requirement and would negate the need for subxiphoid and left and right parasternal views in this setting.

Focused Abdominal Aorta scan (AAA)

An assessment of the aorta in both transverse and longitudinal planes such that the aorta is visualised from the epigastrium to the aortic bifurcation. The study should include measurement of the maximum aortic diameter, in two planes. Typically, this would involve a record of three transverse views (proximal, mid and distal/bifurcation) and a longitudinal image. When measurements are taken, they should be from outer wall to outer wall. More images should be taken to demonstrate any pathology (such as AAA or aortic dissection) in both transverse and longitudinal and ideally will include clips.

Lung scan

A scan that includes labelled loops or images (if cineloop not available or data an issue) of both sides of the thorax. Minimum records will be dependent upon the pathology that is being demonstrated but would usually include two to four zones bilaterally. These should be labelled as per local protocol.

Focused Echocardiography in Life Support examination (FELS)

Directed towards following the cardiac arrest/peri arrest scenario. Views may include subcostal, parasternal long axis, parasternal short axis, apical 4 chamber, and will be dictated by the clinical scenario and patient factors. It is recognised that in many patients, not all views will be of good quality. In addition, some echocardiographic windows may be inaccessible due to other factors such as contemporaneous procedures (e.g. CPR).

Information to be obtained in the arrest/haemodynamic compromise setting:

- Detection of pericardial effusion
- Assessment of left ventricular (LV) size and systolic function (as a 2D qualitative assessment)
- Assessment of right ventricular (RV) size and systolic function
- Gross estimate of fluid status (may require integration with other imaging e.g. lung/IVC)

The above findings are integrated with other clinical information, to consider causes of haemodynamic instability, for example hypovolemia, cardiogenic shock, tamponade, massive pulmonary embolism. Notably this examination is not comprehensive and does not evaluate valves, spectral doppler or diastolic function. It should not be used in lieu of comprehensive echocardiography, where clinically indicated.

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