

Guideline: Ultrasound Credentialing in ED

Overview

- 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 physicians providing emergency ultrasound services should possess appropriate training and hands-on experience to perform and interpret focused ultrasound imaging.
- These guidelines have been developed to comply with the Australasian College of Emergency Medicine's (ACEM) guideline 'Credentialing for Emergency Medicine Ultrasonography'.

Purpose

This guideline outlines focused ultrasonography credentialing for Emergency Medicine trainees and Specialists and other doctors working in Middlemore Emergency Department (ED).



Note: This guideline must be read in conjunction with Ultrasound Probe Sterilisation Guideline.



Important:

Only Credentialed Staff are allowed to write a report in the clinical record.



Caution: The ultrasounds machines in the Emergency Department should not leave the department under any circumstances.

Scope of Use

This guideline is applicable to all Drs working within the ED using the ED Ultrasound machines.

Roles and Responsibilities

Sonologists : Drs who have successfully completed a credentialing process in ultrasound / ECHO

For example (Local credentialing process, CCPU, PG Cert/Dip CPU/DDU etc)

- a) Responsible for writing reports in the clinical record
- b) Teaching
- c) Quality and Audit
- d) Cleaning - low and high level cleaning

All users of the machines are responsible for cleaning the probes after use.

Health care assistants can be delegated to clean a probe if requiring a high level clean.

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Guideline

The Credentialing Process

1) Education Phase

Complete an appropriate instructional educational program which addresses the criteria described in ACEM G25 Guideline. (This also includes a physics course)
[https://acem.org.au/getmedia/82e09118-d4c6-4a8f-9bf6-2cd7905c455c/G25-Guidelines Ultrasound Workshops 240817 FINAL2.aspx](https://acem.org.au/getmedia/82e09118-d4c6-4a8f-9bf6-2cd7905c455c/G25-Guidelines%20Ultrasound%20Workshops%20240817%20FINAL2.aspx)

2) Experience Phase

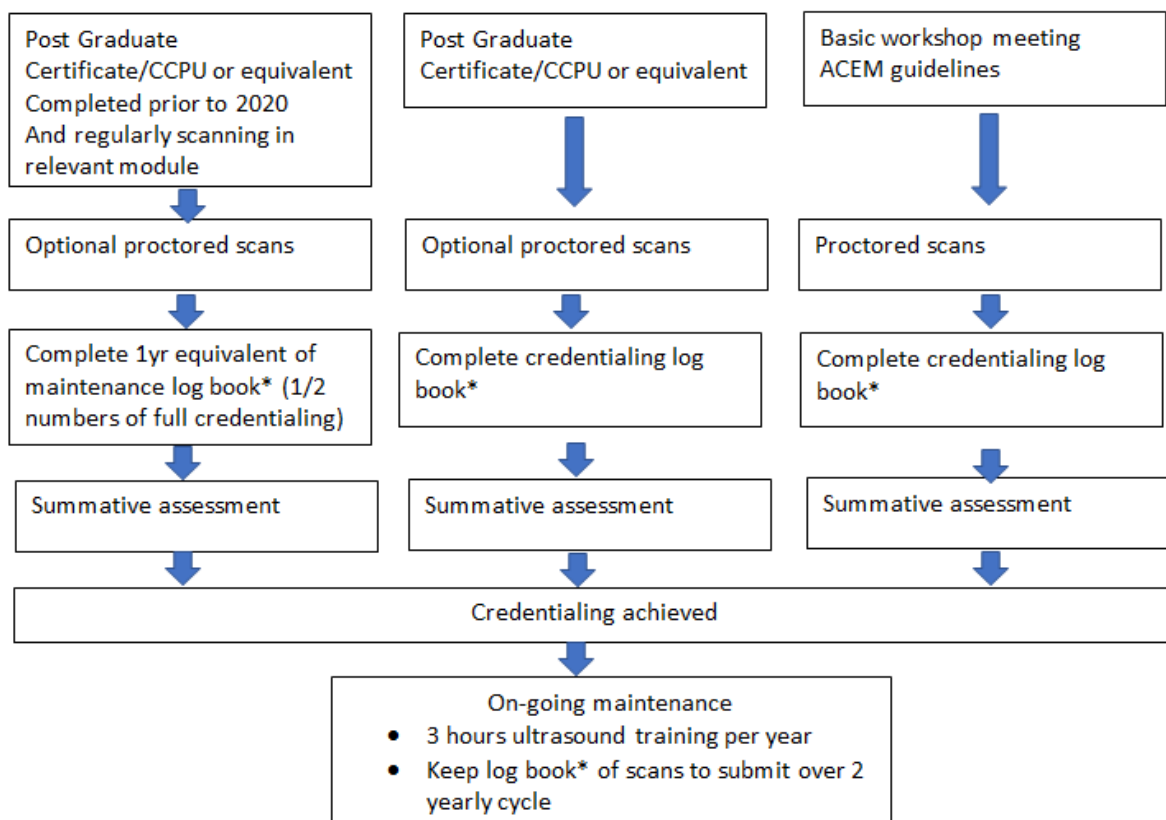
Perform and record a requisite number of accurate emergency department ultrasounds including 2 proctored formative assessments with feedback and teaching.

3) Examination Phase

Pass a summative assessment (Can be prompted but no teaching).

4) Maintenance Phase

Once credentialed, maintenance is required.



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Notes

- a) Informed consent is required for all ultrasound scans for the purposes of credentialing.
- b) Uncredentialed scans should be recorded as such and can only be used in clinical management if it is reviewed by a credentialed scanner.

References

- 1 ACEM G25 Guideline
[https://acem.org.au/getmedia/82e09118-d4c6-4a8f-9bf6-2cd7905c455c/G25-Guidelines Ultrasound Workshops 240817 FINAL2.aspx](https://acem.org.au/getmedia/82e09118-d4c6-4a8f-9bf6-2cd7905c455c/G25-Guidelines%20Ultrasound%20Workshops%20240817%20FINAL2.aspx)
- 2 UTEC Ultrasound Training
<https://aci.moodlesite.pukunui.net/course/view.php?id=55>

Definitions/Description

Terms and abbreviations used in this document are described below:

Term	Description
Proctored formative Assessment (Form found in ... Paanui /Emergency Department/Forms)	<ol style="list-style-type: none"> 1) An assessment directly supervised in real time 2) Assessed by a qualified supervisor 3) Function: Feedback and teaching 4) To be completed before the summative assessment
Summative Assessment (Form found in ... Paanui /Emergency Department/Forms)	<ol style="list-style-type: none"> 1) An assessment directly supervised in real time 2) Assessed by a qualified supervisor 3) Function: An assessment of competence 4) The candidate can be prompted but not instructed. <p>Assessment of competence to ...</p> <ul style="list-style-type: none"> • acquire adequate relevant ultrasound images • identify artefacts or pathology present in real time • Save and present scans and/or hard copies of scans; • recognise an inadequate scan • demonstrate an understanding of the indications and limitations of the US scan

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<p>Log Book</p> <p>(Logbook found in ... Paanui /Emergency Department/Forms)</p> <p>An alternative logbook ED Ultrasound Log Books</p>	<p>A Log of Patients you have scanned and includes</p> <ol style="list-style-type: none"> 1) Patients Details 2) Date 3) Type of ultrasound 4) Findings 5) The interpretation of those findings. 6) If the case is NOT directly supervised, confirmatory evidence of the accuracy of the data should be included via an additional study or by clear clinical evidence.
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Appendix A: Physics

Prior to starting credentialing in *any* of the applications, a solid understanding of the following must be achieved. This can be done by attending an ultrasound course or completing the online UTEC physics module: <https://aci.moodlesite.pukunui.net/course/view.php?id=55>

Physics

- Piezoelectric effect
- Wave characteristics – cycle, frequency, period, wavelength, amplitude
- Echogenicity
- Image resolution
- Attenuation
- Doppler effect
- Impedance
- Artefacts
- Bio-effects

Instrumentation

- Transducer types and selection
- Transducer manipulation
- Image labelling
- Focus
- Gain
- Time gain compensation
- Orientation
- Scan planes
- Image measurement
- Infection control
- Machine care and maintenance

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Appendix B: EFAST

EFAST EDUCATION PHASE

Prior to starting EFAST credentialing a solid understanding of the following must be achieved as well as 2 hours of supervised EFAST scanning. This can be done by attending an EFAST ultrasound course or completing the online UTEC EFAST module, attending department EFAST teaching and completing a 1 hour bedside teaching session with an ultrasound supervisor:

Anatomy

- Live
- Spleen
- Kidneys
- Pericardium
- Lung bases
- Bladder
- Uterus
- Ribs pleural line

EFAST Practical

- Right upper quadrant/Morison's pouch
- Left upper quadrant/spleno-renal area
- Subxiphoid
- Pelvic
- Diaphragm
- Lung

EFAST findings

- Haemoperitoneum
- Haemopericardium
- Haemothorax
- Pneumothorax
- Limitations / pitfalls
- Reporting

Integration into clinical practice and algorithms

- Blunt versus penetrating injury

EFAST EXPERIENCE PHASE

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. Once logbook completed and signed off a summative assessment must be completed.

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Appendix C: AAA

AAA EDUCATION PHASE

Prior to starting AAA credentialing a solid understanding of the following must be achieved as well as 2 hours of supervised AAA scanning. This can be done by attending an AAA ultrasound course *or* completing the online UTEC AAA module, attending department AAA teaching and completing a 1 hour bedside teaching session with an ultrasound supervisor:

Anatomy

- Aorta and major branches
- Inferior vena cava
- Vertebral bodies

Abdominal aorta practice

- Aorta longitudinal and transverse with measurements
- Appearance of thrombus
- Inferior vena cava

Findings

- Abdominal aortic aneurysm
- Ectatic aorta
- Limitations / pitfalls
- Reporting

Integration into clinical practice algorithms

- Haemodynamically unstable patient
- Pulsatile mass
- Back pain
- Flank pain

AAA EXPERIENCE PHASE

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. Once logbook completed and signed off a summative assessment must be completed.

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Appendix D: Focused Echocardiography in Life Support (FELS)

FELS EDUCATION PHASE

Prior to starting FELS credentialing a solid understanding of the following as well as 4 hours of supervised FELS scanning. This should be done by attending a FELS ultrasound course

Anatomy

- Cardiac chambers
- Cardiac valves
- Pericardium
- Great vessels
- Lung

Echocardiography Practice

- Parasternal long axis
- Parasternal short axis
- Apical 4 and 5 chamber
- Subcostal long and short axis
- Inferior vena cava

Findings

- Pericardial effusion and tamponade
- Left ventricular size and systolic function
- Right ventricular size and systolic function
- Estimation of volume status
- Limitations / pitfalls
- Reporting

Integration into clinical practice algorithms

- Haemodynamically unstable patient
- Cardiac arrest
- Reporting Findings and limitations

FELS EXPERIENCE PHASE

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

At least five should be clinically indicated (i.e. shock/peri arrest/cardiac arrest) and these scans should be reviewed by a sonologist.

At least five examinations should be performed under direct supervision of a sinologist/sonographer.

Evidence of review of clinical images/loops from a further 25 cases should be provided.

The 25 cases reviewed must include at least two of the following cases,

- 1) Severe LV systolic impairment
- 2) Pericardial effusion
- 3) Hyperdynamic LV
- 4) RV dilatation

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Of the minimum 50 FELS examinations (25 performed and 25 reviewed), cases must include at least two cases each of pericardial effusion, right heart failure / massive pulmonary embolism, hypovolemia or distributive shock and left ventricular failure.
Once this is completed and signed off a summative assessment must be completed (see section 7).

Appendix E: BASIC LUNG ULTRASOUND

BASIC LUNG EDUCATION PHASE

Prior to starting basic lung credentialing a solid understanding of the following must be achieved and 2 hours of supervised lung scanning. This should be done by attending a lung ultrasound course.

Anatomy

- Lung surface markings of upper, middle and lower lobes
- Lung 'zones' – describe zones 1 to 4 (international consensus) and Lichtenstein's zones
- Diaphragm
- Ribs
- Pleural surface
- Spine
- Heart
- Liver
- Spleen

Practical

- Optimise machine preset/settings to scan lungs
- Scan lung zones 1 to 4
- Identify diaphragms and lung curtain
- Identify ribs, intercostal space, pleural line
- Identify lung sliding
- Identify lung pulse
- Identify comet tail and other artefacts

Pathology (likely to require simulated cases, as patients are not always available/suitable)

- Normal lung
- Absent lung sliding (and how to differentiate causes)
- Focal B lines
- Diffuse B lines
- Consolidation
- Pleural effusion

Integration – clinical cases

- Pneumonia
- Interstitial syndrome
- Cardiogenic pulmonary oedema
- Lung fibrosis
- Pneumothorax
- Pleural effusion

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- Integration of lung ultrasound into resuscitation (initial assessment and in monitoring response e.g. early evidence of fluid overload)

Pitfall cases

BASIC LUNG EXPERIENCE PHASE

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. Once this is completed and signed off a summative assessment must be completed

Associated Documents

Other documents relevant to this guideline are listed below:

NZ Legislation & Standards	None
CM Health Documents	Ultrasound Probe Sterilisation Guideline. Ultrasound Logbook Form EFAST Credentialing Form AAA Credentialing Form ECHO Credentialing Form ED Ultrasound Log Books
Other related documents	UTEC Physics Course https://aci.moodlesite.pukunui.net/course/view.php?id=55

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