Ultrasound Training –
Guidelines to Level 1 Standards and Accreditation

The following guide is compliant with the College of Emergency Medicine Ultrasound Sub-Committee (CEM USSC), regarding Point of care Ultrasound (PoCUS). If faced with any difficulties with supervision or gaining/providing experience, everyone is encouraged to contact the regional lead – danstrong@mac.com

Criteria for Core Training in PoCUS

The criteria for establishing competencies and accreditation in level 1 Emergency Medicine Ultrasound are part theory and part practical.

Theory

The theory is covered by:

1. Attendance at a certified Core Training (formally Level 1) Course
   • In the West Midlands, courses are regularly held at UHB and UHCW
2. Completion of the 6 e-learning modules on EnlightenMe / EHL

The theory provides the knowledge to perform the following examinations:

• US of suspected AAA
• FAST (Focused Assessment by Sonography in Trauma) for suspected intra-peritoneal fluid
• US-guided vascular access
• Echo in Life Support (ELS)

Some courses may include broader assessment of shock by echocardiography, and thoracic US for suspected intra-pleural fluid or pneumothorax. This is not currently required for level 1 accreditation, but extremely useful.

Practical

Practical assessments are harder to achieve, but the following guide will help clinicians attain the standards required. CEM suggests that following the theoretical course, individuals should aim to perform 5 studies / week, and complete the accreditation process within 6 months:

3. Logbook

   CEM make it clear that competencies do not depend on absolute numbers, but a logbook of 50 patients (40-70 usually needed) is required. Each should be anonymised, and the following information recorded:
   • Patient demographics (Age, Gender)
   • Indication for Scan (Suspected AAA, Suspected intra-peritoneal fluid, Vascular Access, ELS)
   • Result of scan (Positive / negative / equivocal, with details as appropriate)
   • Results of supporting investigations (eg CT)
   • Anonymised images are not required for every case, but are encouraged
This is a formative assessment, and demonstrates learning, experience, and ongoing contemporaneous use of the skills. The logbook should represent at least 5 of each modality, and CEM recommends a **MINIMUM** of:

- 10 FAST/FAFF scans
- 10 AAA scans
- 5 Vascular accesses using USS of which **AT LEAST ONE** must be central access
- 10 ELS scans of which **AT LEAST 5** must be in full cardiac arrest

There should be a **MINIMUM** of 50% of these performed with supervision from an accredited Core supervisor. There should be a **MINIMUM** of 2 cases in FAST/AAA and 1 case in ELS where there were positive findings.

Breaks between studies of > 3 months should trigger a DOPS assessment in that modality.

Vascular access studies are not often recorded with images, but at least one should demonstrate central access with a wire / needle / cannula within the appropriate vessel. A logbook may be supported by DOPS assessments. Peripheral access by US-guidance may also be included.

4. **Reflective Practice**
   - At least 10 cases with some reflective practice (a brief narrative to illustrate any learning points), which should include at least two each of the four common examinations,
   - These MUST have supporting images. Image quality MUST reflect an understanding of image optimization, interpretation, and appropriate measurements where appropriate. Poor quality images will not be accepted. Examples of good and poor images are illustrated below.
   - AAA / FAST scans MUST demonstrate at least two cases each with positive findings, and at least one ELS scan in cardiac arrest.
   - These must **NOT** include training scans on normal volunteers
   - These should be supervised scans, with trainer feedback.

5. **Triggered assessments**
   When an individual is confident they can acquire good quality images and interpret them reliably, a summative assessment of each of the following is required before sign-off:
   - AAA
   - FAST
   - Vascular Access
   - Echo in Life Support

Candidates must be able to select an appropriate probe and frequency, obtain the standard views with appropriate depth, gain, resolution and accurate measurements, and interpret the images correctly.
Only trainers with at least 1 year of experience post-accreditation should perform summative assessments. In the future there will be a process of sign-off for trainers before they will be able to perform TAs – it is the intention of the local faculty to ensure at least one accredited trainer per department, and a list of accredited trainers will be made available on the Deanery website.

6. **Sign-off by regional training lead**
   One of the roles of the regional lead is to maintain a register of all those who have successfully accredited, and inform CEM. Individuals meeting all the criteria should liaise with the regional lead. (Even if accrediting via a finishing school outside the region, it is ESSENTIAL that the regional lead is informed).

**Supporting local assessments – Guide for EDs**

CEM recommends that each local emergency department (ED) appoint a Lead Consultant for Point of Care Ultrasound. This lead consultant must be a CEM Core (formerly Level 1) certified practitioner with a minimum of 6 months scanning experience who will ideally hold the CFEU certificate or other higher qualification in PoCUS.

Responsibility for the quality of competency assessments lie with the regional CEM ultrasound representative, who along with the designated local ultrasound lead consultant approves local assessors.

The regional lead, or nominated deputy, must complete the final sign-off part of the CEM Core certification document. The final sign-off is not the same as the triggered assessment of competency; this is a review of documentation, aimed at higher specialty trainees, to ensure that all parts of the Core certification process are completed. The regional lead may also have performed the triggered assessment of some or all of the Core applications; however, this may be delegated to an approved assessor. If a trainee attends a Finishing School (FS) not in their region, a regional lead (or nominated deputy) in the area where the FS is taking place may undertake signoff (please refer to the Quality Standards for CEM Approved Core Finishing Schools document).

While the local lead consultant may delegate some of the local assessments to a CEM certified ultrasound trainer, this must be approved by the regional lead. Such assessments must be countersigned by the local or regional lead.

CEM would prefer more than one assessment, which currently occurs on most Finishing Schools. However, CEM recognise the practical challenges in delivering this; therefore, as a minimum, single assessment remains the only viable way at present with the aspiration that this will move to a multi-assessment model in the future.

Assessments may take place in a clinical environment on actual patients; however, patient care must not be compromised. A simulated environment with models or patients is a suitable alternative. The models or patients do not necessarily need to have pathology for the purposes of assessment; the trainee’s log of scans and
Reflective cases should include a proportion of positive pathology encountered. At least one case should be included from each of the four Core applications.

A trainee has the right to appeal in the event of disagreement between the trainee and the assessors. The Regional Lead has the duty to investigate and decide on the best outcome. Their decision is final, however, in the event of continued dispute a nominated investigator from the CEM USSC Chair will be provided.

Supporting local courses

CEM approved Core/Level 1 ultrasound courses
- Must be directed by an individual holding CEM Core (formerly Level 1) competency for at least 1 year.
- Other faculty must hold CEM Core competency with 6 months experience, or hold a recognized qualification in sonography.

CEM approved Enhanced (formerly Level 2) ultrasound courses
- Must be directed by an individual holding the CFEU certificate or equivalent.
- Enhanced level practice incorporates many applications that are in addition to Core level; as the list of non-Core applications are potentially endless, users must specify what enhanced applications they are competent in rather than describe themselves as an Enhanced (or Level 2) practitioner.
- This also applies to Enhanced courses; such courses should specify what applications are included in the program content. CEM accepts that being competent in all PoCUS applications is unfeasible. Other faculty must hold competencies for the applications that will be covered in the course, or hold a recognized qualification in sonography.

Finishing Schools
- The Finishing School (FS) was designed by the CEM USSC with the intention of providing an OSCE type environment for ‘polishing’ trainees prior to undertaking their summative triggered assessment. Only trainees who have some experience of Core scanning and have compiled a training log and written reflective cases should go on a FS.
- All assessors on the FS must be CEM registered. The Regional Lead in the area where the finishing school is proposed should be informed and give consent.
- The Regional Lead, or nominated deputy, should be present during the assessment phase of the FS and the end of course faculty meeting. A trainee has the right to appeal in the event of disagreement between the trainee and the assessors. The Regional Lead has the duty to investigate and decide on the best outcome. Their decision is final, however, in the event of continued dispute a nominated investigator from the CEM USSC Chair will be provided.
- New faculty must be signed off by a CEM approved course director and be assigned a mentor for their first 6 months. There is a specified process for registration of both EM and non-EM assessors; this is available via the CEM ultrasound training website.
**Examples of good & poor quality images**

<table>
<thead>
<tr>
<th>Poor quality</th>
<th>Good quality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AAA</strong></td>
<td></td>
</tr>
<tr>
<td>Too much gain</td>
<td>Good contrast</td>
</tr>
<tr>
<td>Too much depth</td>
<td>Vertebral body at bottom of field</td>
</tr>
<tr>
<td><strong>FAST – Upper Quadrants</strong></td>
<td></td>
</tr>
<tr>
<td>Too little gain with excessive rib shadowing overlying hepato-renal space</td>
<td>Clearly demarcated free fluid appears black, liver parenchyma uniform</td>
</tr>
<tr>
<td><strong>FAST - Pelvis</strong></td>
<td></td>
</tr>
<tr>
<td>No use of time gain compensation resulting in excessively bright deep pelvic structures – likely to miss fluid here</td>
<td>TGC used to ensure fluid appears distinct from deep structures if present.</td>
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