

Appendix 9: Focused Emergency Ultrasound

Level 1: Training and Practice

- Practical training should involve regular emergency department or radiology department ultrasound, with approximately five examinations performed by the trainee (under supervision) per week.
- Approximately 50 examinations should be undertaken if this is the first practical training module. A clinician working in emergency medicine will need to devote sufficient time to gain Level 1 competence. This may be as much as one session per week but is unlikely to be in dedicated blocks of time. However, different trainees will acquire the necessary skills at different rates, and the key end point of the training programme should be judged by an assessment of competencies.
- Examinations should concentrate on the core clinical indications of trauma, aortic aneurysm and vascular access where there are benefits of an early focused ultrasound scan in the Emergency Department or acute assessment area.
- A logbook listing the types of examinations undertaken should be kept.
- An additional pictorial record containing an illustrated description of 10 cases in which the trainee has been personally involved may be collected and is a useful confirmation of experience when moving between departments.
- Training should be supervised either by someone who has obtained at least Level 2 competence in focused emergency ultrasound, or by a Level 1 practitioner with at least 1 years' experience of Level 1 practice.
- Trainees should attend an appropriate theoretical course and should be familiar with the published literature on focused emergency ultrasound.
- During the course of training the competency assessment sheet should be completed as this will determine in which area or areas the trainee can practise independently.

Level 1: Knowledge Base

- Physics and technology, ultrasound techniques and administration (see Appendix 1)
- Sectional and ultrasonic anatomy
 - kidneys
 - liver
 - spleen
 - retro-peritoneal structures (aorta, IVC)
 - vessels: internal jugular veins, carotid arteries, femoral veins and arteries
- Pathology in relation to ultrasound
 - kidneys: trauma/free fluid
 - liver and spleen: trauma/free fluid
 - retroperitoneal: presence or absence of abdominal aortic aneurysm (AAA)
 - vessels: vascular access
 - cardiac scan: trauma/pericardial tamponade, pericardial effusions, asystole

Level 1: Competencies to be Acquired

- To be able to:
 - recognise normal anatomy
 - use focused ultrasound to assist in bedside emergency department decisions
 - recognise the limitations of a scan and be able to explain these limitations to patients/carers
 - recognise patients requiring formal specialist sonographic assessment
 - incorporate ultrasound findings with the rest of the clinical assessment

Appendix 9: Focused Emergency Ultrasound *continued*

- To be able to use ultrasound in the context assessment of:
 - focused assessment by sonography for trauma (FAST)
 - AAA screening/detection in symptomatic patients
 - peri-arrest scenario for pulseless electrical activity (PEA)/tamponade/effusion
 - vascular access
 - pleural and pericardial fluid

Level 2: Training and Practice

- Practical training should involve at least 1 year of experience at Level 1 with an average of three to five scans/week.
- A further 150–200 examinations should have been undertaken in order to encompass most of the conditions and procedures listed. A practitioner may develop competencies in some but not all of these areas.
- A logbook of all examinations undertaken should be kept.
- A further pictorial logbook should also be kept detailing 10 cases examined by the trainee which may be useful as a record when moving between departments.
- Supervision of training should be undertaken by someone who has achieved at least Level 2 competence in focused emergency ultrasound and who has had at least 2 years' experience at this level.
- A Level 2 practitioner will be able to accept referrals from a Level 1 practitioner.

Level 2: Knowledge Base

- Sectional and ultrasonic anatomy
 - kidneys
 - liver
 - proximal leg veins
 - heart
 - musculo-skeletal system
 - pelvic structures (uterus, ovaries, bowel)
- Pathology in relation to ultrasound
 - kidneys: cysts, calyceal dilatation, renal calculi, trauma (free fluid)
 - liver: cysts, trauma (free fluid)
 - vessels: proximal deep venous thrombosis
 - cardiac: reduced ventricular function, tamponade, effusion
 - retroperitoneum: aortic aneurysm, fluid collection
 - musculoskeletal: fractures, soft tissue collections, foreign body detection

Level 2: Competencies to be Acquired

- Competencies will have been gained during training for Level 1 practice, and then refined during a period of clinical practice.
- Recognise and correctly utilise ultrasound within the emergency department and be able to perform at least three of the following:
 - ultrasound-guided invasive procedures (chest drain insertion, suprapubic aspiration/catheterisation, fluid collection drainage)
 - an initial assessment for patients with loin pain/haematuria
 - a focused assessment of patient presenting with hypotension
 - proximal DVT assessment
 - detection of foreign bodies and fluid collections within soft tissues
 - early assessment of symptomatic women in the first trimester of pregnancy post trauma including assessment of foetal cardiac activity
 - Emergency Department obstetric presentations

Appendix 9: Focused Emergency Ultrasound *continued*

Level 3: Training and Practice

- A Level 3 practitioner is likely to spend a significant proportion of their time undertaking emergency ultrasound, teaching, research and development and will be an 'expert' in this area.
- He/she will accept referrals from Level 1 and 2 practitioners and will perform the spectrum of examinations indicated above. This will include developing the role for innovative ultrasound practice within Emergency Care.

Maintenance of Skills: All Levels

- Having been assessed as competent to practise there will be a need for CPD and maintenance of practical skills.
- An emergency trainee will need to continue to perform ultrasound scans throughout the remainder of the training programme and into his/her consultant appointment. Such further ultrasound practice may be intermittent, but no more than 3 months should elapse without the trainee using his scanning skills, and at least 50 scans should be performed per year.
- All practitioners should have regular meetings within the department to ensure appropriate focused emergency ultrasound use. The department lead for ultrasound practice will have regular contact with radiological colleagues and should have a named radiologist as an 'ultrasound mentor'.
- Practitioners should:
 - include ultrasound in their ongoing CME
 - audit their practice
 - participate in multidisciplinary meetings
 - keep up to date with relevant literature

Approved by the Faculty of Accident and Emergency Medicine

Appendix 9: Focused Emergency Ultrasound Training Competency Assessment Sheet

Core Knowledge Base — Level 1		Trainee	Trainer	Trainer signature	Date
Physics and technology					
Practical instrumentation/use of ultrasound controls			Administration		
Ultrasound techniques			Sectional and ultrasonic anatomy Pathology in relation to ultrasound		

Competencies/Skills to be Acquired — Level 1
To be competent to perform/diagnose/recognise the following:

<ul style="list-style-type: none"> • normal anatomy and variants of kidneys, liver, spleen and aorta • differences between arteries and veins • focused ultrasound to assist in bedside emergency department decisions • the limitations of a scan and be able to explain these limitations to patients/carers • patients requiring formal specialist sonographic assessment • ultrasound findings with the rest of the clinical assessment 	Trainer signature	Date	Trainer signature	Date	
			<ul style="list-style-type: none"> • ultrasound in the assessment of patients presenting with: <ul style="list-style-type: none"> - trauma-FAST - AAA screening/detection in symptomatic patients - peri-arrest scenario for PEA/tamponade/effusion - vascular access: internal jugular and femoral vein - pleural and pericardial fluid - free intraperitoneal fluid – use of four-quadrant scan • know when to refer to a more expert ultrasonologist and the role of alternative imaging 		

Core Knowledge Base — Level 2

Trainee	Trainer	Trainer signature	Date
Sectional and ultrasonic anatomy			
<ul style="list-style-type: none"> - kidneys - liver - proximal leg veins - heart - musculo-skeletal system - pelvic structures (uterus, ovaries, bowel) 			
Pathology in relation to ultrasound			
<ul style="list-style-type: none"> - kidneys: cysts, calyceal dilatation, renal calculi, trauma (free fluid) - liver: cysts, trauma (free fluid) - vessels: proximal deep venous thrombosis - cardiac: reduced ventricular function, tamponade, effusion - retroperitoneum: aortic aneurysm, fluid collection - musculoskeletal: fractures, soft tissue collections, foreign body detection 			

Competencies/Skills to be Acquired — Level 2
Recognise the role of and correctly utilise ultrasound within the emergency department and be able to perform at least three of the following:

<ul style="list-style-type: none"> • ultrasound-guided invasive procedures (chest drain insertion, suprapubic aspiration/catheterisation, fluid collection drainage) • an initial assessment for patients with loin pain/haematuria • a focused assessment of patient presenting with hypotension 	Trainer signature	Date	Trainer signature	Date	
			<ul style="list-style-type: none"> • proximal DVT assessment • detection of foreign bodies and fluid collections within soft tissues • early assessment of symptomatic women in the first trimester of pregnancy after trauma including the assessment of foetal cardiac activity • Emergency Department obstetric presentations 		