

A Guide to Providing an Ultrasound Workshop

This is a guide for supervisors of Emergency Ultrasound Training for the requirements and structure expected when providing an ultrasound workshop. To ensure the required standards are met for [credentialing by ACEM](#) or [accreditation by ASUM](#), adherence to the appropriate policies and guidelines is mandatory (please follow links provided)

General Workshop Requirements

- Minimum standard for **machine:candidate ratio is 1:5**
- Minimum standard for **instructor:candidate ratio is also 1:5**
- Course faculty must include a medical specialist with appropriate and extensive clinical experience and qualifications, as recognised by the ACEM ED Ultrasound Subcommittee.
- Instructors must have significant practical experience in the application of emergency ultrasound (ASUM require a copy of the CV of those providers involved)
- Registered sonographers can assist with teaching skills related to the fundamentals of ultrasound, image acquisition and interpretation
- Teaching (including practical) hours should at least meet those published in the ACEM / CCPU syllabus that the course aligns with
- Pre and post-course tests
- Provision of a course syllabus, learning material, recommended texts and other references
- The course should be in an appropriate area to accommodate both lectures and practical scanning sessions
- Appropriate models and patients
- Evidence of attendance including numbers and course hours for CME points
- Provision of appropriate certification
- **ACEM requirements**
- **ASUM requirements**

Course Faculty Requirements

- Minimum standard for **instructor:candidate ratio is also 1:5**
 - The total number of faculty will be dependent number of candidates
 - There should be a minimum of 2 course faculty members
- Must include a **medical specialist** with appropriate and extensive clinical experience and qualifications, as recognised by the ACEM ED Ultrasound Subcommittee.
- Instructors must have significant **practical experience in the application of emergency ultrasound** (ASUM require a copy of the CV of those providers involved)

- **Registered sonographers** can assist with teaching skills related to the fundamentals of ultrasound, image acquisition and interpretation
- Suitably qualified instructors (see instructor requirements below)
- Faculty members should be available for at least a half day, but preferably a full day
- The course supervisor will be in attendance for the entirety of the course

Instructor Requirements

- Instructor has a CCPU in the relevant unit (e.g. E-FAST, AAA)
- Instructor has a DDU, FRANZCR, DMU or equivalent
- Instructor is a sonographer registered by ASAR or NZ MRTB
- Instructors must be practicing in the relevant area

Practical Course Requirements and Tips

- **Budget**

A small cost will be incurred to run an ultrasound workshop. This will vary depending on a number of factors:

 - Catering – for volunteers, participants and faculty
 - Venue – if off hospital site is required
 - Equipment – see below
 - Paperwork and stationary
 - Faculty – ideally free, volunteers, non-clinical FACEM time, thank you gift (e.g. bottle of wine, chocolates, Myer voucher)
 - Volunteers – taxi voucher, Myer voucher
- **Venue**
 - Lecture room – projector, PowerPoint, audio-visual capabilities
 - Scanning areas
 - Need to fit up to 6 people (1 faculty, 5 students) around the bed
 - Single room or dividers for patient privacy
 - Accessible toilets, bathrooms and change areas
- **Participants**
 - Number: maximum 25
 - Teach all participants to same standard independent of level of training (nurse, intern, resident, registrar or consultant)

- **Models and Phantoms**
 - **Pathological Volunteers**
 - **AAA** – Discuss with Vascular Surgery and Ultrasound potential volunteers
 - **Peritoneal Dialysis** – for E-FAST. Discuss with Nephrology, Dialysis Unit potential volunteers
 - **Healthy Volunteers**
 - Medical students, nursing students
 - **Phantoms**
 - **Internal Jugular Vein Model** – for CVC – approximately \$2000
 - **Arm Model** for peripheral vascular access - approximately \$2000
 - **Femoral Vascular Access Lower Torso Model** – for CVC - approximately \$5,000
 - **Foreign body / soft tissue biopsy block models** – for image optimisation - approximately \$700 each
- **Faculty**
 - Pre and post course housekeeping and organisation
 - Organises course requirements, volunteers, participants and faculty
 - Organises pre course material for participants
 - Course organiser for the workshop
 - Responsible for housekeeping, timekeeping etc. on the day
 - Instructors
 - Instructor:candidate ratio maximum **1:5**
 - Must meet instructor requirements stated above
 - Willing to provide lectures or practical tuition or both
- **Presentations**
 - Course organiser to provide presentation and lecture material to instructors.
 - Faculty are able to provide their own presentations if preferred. Ensure individual presentations stick to the allocated topic in the timetable, within the allocated timeframe.
 - Individual presentations must be submitted to ACEM and ASUM for credentialing and accreditation purposes
- **Ultrasound Stations**
 - Discuss the stations with faculty members beforehand
 - Set up, timekeeping, supervision, evaluation and necessary competencies must be agreed upon
- **Equipment**
 - **Machines**
 - **1** machine for every 5 participants
 - Portable machines, ideally on stands (if no stand, side tables will need to be provided)
 - Correct probes – linear array, curvilinear, sector

- Consider contacting ultrasound machine companies to loan machines for the day (e.g. Sonosite, M4 Healthcare, GE). They may provide small sponsorship, but be careful not have a conflict of interest
- Extension cords
- Ultrasound gel – loads of it!
- Central line kits
- Ultrasound probe covers
- Cannulas and cannula caps
- Syringes and needles
- Water and dye
- Patient beds, trolleys or examination tables
- Bed sheets, pillows, blankets, gowns, bath towels and paper towels
- Waste bags and rubbish bins
- **Timekeeping**
 - Strict timekeeping is required to stay to schedule
 - Ensure each candidate has ample time perform and practice hands-on ultrasound skills and to demonstrate competence and learning.
- **Housekeeping and Paperwork**

Time and resources will need to be allocated for organisation of each course in addition to provision of the course. This will likely require a minimum of 15-20 hours of non-clinical FACEM time.

 - **Pre course Requirements – email to faculty and participants**
 - Timetable
 - Course manual
 - Reading material
 - Online lectures, e-learning modules
 - Pre course MCQ
 - Provision of presentation information to instructor for review, annotation and presentation on the day
 - **Workshop Requirements**
 - Timetable
 - Attendance sheet
 - Name label stickers
 - Pre course test answer sheet
 - Post course MCQ test and answer sheet
 - Feedback forms
 - Provision of logbooks
 - Certificate of completion
 - Ability to logbook cases
 - Dietary requirements (e.g. gluten free, vegetarian)

- Vouchers and thank you gifts
- **Post course Requirements**
 - Thank you correspondence to volunteers and faculty
 - Review of feedback forms
 - Amend workshop, timetable, talks as necessary post feedback review
 - Review frequency of course – annually or 6-monthly (depending on interest and availability)

Presentation and Lecture Structure

- Introduction
- Superficial and sonographic anatomy
- Sonographic protocols for specific module being taught (e.g. E-FAST, AAA)
- Clinical application of sonographic protocol into medical practice
- Limitations and pitfalls

General Practical Session Requirements

- Maximum **instructor:candidate ratio 1:5**.
- Instructor who demonstrates correct application protocol for emergency indication.
- Sufficient time with patients or models to allow students to demonstrate competence in scanning.
- Appropriate models to demonstrate normal and abnormal anatomy.
- A post-test will be conducted at the end of the course as formative assessment

Physics, Knobology and Machine Care

- **Teaching Requirements**

- Mandatory content requirements for learning as stated by [ACEM](#) or [ASUM](#) can be covered by pre-learning material, recommended texts, pre-learning tutorials, didactic lectures and presentations or a combination of these methods
- Lectures and presentations covering the required content as stated by [ACEM](#) or [ASUM](#)
- This content may be covered in its entirety by pre course tutorials. Examples of these courses include the [ASUM Physics Tutorial](#) * or the online '[Introduction to Diagnostic Ultrasound Technology](#)' course by Dr. Rob Gill *
- A full list of accredited physics module providers is provided by [ASUM](#)
- Supervisors will require certification that candidates have met the required standards in this module on completion of a pre-learning course
- Pre-test completed before commencement of the course

- **Practical Session Requirements**

- Cover the mandatory content requirements for learning as stated by [ACEM](#) or [ASUM](#)
- If all candidates have certification meeting the required standards for this module prior to attending the practical workshop, only a brief overview the principles physics and knobology is required prior to the practical session
- Each candidate has the opportunity to scan live models or phantoms
- Models will require image optimisation and demonstration artefacts. These may include **foreign body or soft tissue mass / cyst identification**
- Direct observation of candidates during scanning by a course faculty member to ensure satisfactory performance in patient detail logging, image acquisition and optimisation, artefact identification, labelling, image and cineloop storage, probe selection and machine care

- **Student Objectives**

- Safe use of diagnostic ultrasound
- Understand how an ultrasound image is obtained
- Understand and demonstrate how to use the controls on ultrasound equipment to obtain an optimal image
- Recognise the limitations of the machine and default settings
- Understand the physics principles underpinning diagnostic ultrasound

* Candidates will incur a cost to undertake these courses (as of November 2015). [ASUM Physics Tutorial](#) = \$1427 (includes ASUM membership and CCPU enrolment), '[Introduction to Diagnostic Ultrasound Technology](#)' = \$175

Extended Focused Abdominal Scan for Trauma (E-FAST)

- **Teaching Requirements**
 - Pre-test completed before commencement of the course
 - **3 hours** of teaching time in total (includes pre reading and practical teaching)
- **Practical Session Requirements**
 - At least **2 hours** of practical teaching
 - Each candidate has the opportunity to scan live models
 - Models include **normal subjects AND patients with ascites or peritoneal dialysis**
 - If models with pathology are unavailable, there will be at least 1 image interpretation station with cineloops demonstrating the appropriate pathology
 - Cover the mandatory content requirements for learning as stated by [ACEM](#) or [ASUM](#)
 - Direct observation of candidates during scanning by a course faculty member to ensure satisfactory performance and interpretation of E-FAST scans
 - A post-test will be conducted at the end of the session as formative assessment
- **Student Objectives**
 - Demonstrate an understanding of the appropriate anatomy, physiology and pathology.
 - Effectively perform and interpret E-FAST ultrasound.
 - Understand the limitations of ultrasound of the chest in trauma.
 - Understand the limitations of ultrasound of the abdomen in trauma.
- Live scans in practical sessions can be used in a candidates logbook

Abdominal Aortic Aneurysm (AAA)

- **Teaching Requirements**
 - Pre-test completed before commencement of the course
 - **3 hours** of teaching time in total (includes pre reading and practical teaching)
- **Practical Session Requirements**
 - At least **1.5 hours** of practical teaching
 - Each candidate has the opportunity to scan live models
 - Models include **normal subjects AND those with a known AAA**
 - If models with pathology are unavailable, there will be at least 1 image interpretation station with cineloops demonstrating the appropriate pathology
 - Cover the mandatory content requirements for learning as stated by [ACEM](#) or [ASUM](#)
 - Direct observation of candidates during scanning by a course faculty member to ensure satisfactory performance and interpretation of abdominal aorta scans
 - A post-test will be conducted at the end of the session as formative assessment
- **Student Objectives**
 - Demonstrate understanding of normal and pathological abdominal aortic anatomy
 - Demonstrate understanding of application and limitations of AAA scanning in clinical practice
 - Understand how to measure the abdominal aorta and show this to examiner practically in both transverse and longitudinal planes
 - Understand limitations of ultrasound of the abdominal aorta
- Live scans in practical sessions can be used in a candidates logbook

Vascular Access

- **Teaching Requirements**
 - Pre-test completed before commencement of the course
 - **2 hours** of teaching time in total (includes pre reading and practical teaching)
- **Practical Session Requirements**
 - At least **1 hour** of practical teaching
 - Each candidate has the opportunity to scan live models to identify relevant normal vascular anatomy
 - Each candidate shall have the opportunity to perform vascular access procedures on vascular access phantoms
 - Both in plane and out of plane techniques will be demonstrated
 - Cover the mandatory content requirements for learning as stated by [ACEM](#) or [ASUM](#)
 - Direct observation of candidates during scanning by a course faculty member to ensure satisfactory performance and interpretation of vascular access techniques
 - A post-test will be conducted at the end of the session as formative assessment
- **Student Objectives**
 - Understanding of the ultrasound techniques and physics principles of peripheral and central venous access and arterial access
 - Proficiency in image optimisation to enable appropriate procedural guidance
 - Understanding of the relevant anatomy and structures encountered during vascular access procedures

Patients, Models and Phantoms

- Patient models
 - E-FAST – peritoneal dialysis patient, ascites patient
 - AAA – patient with known AAA
- [Vascular Access Phantoms](#)
 - Internal jugular central line ultrasound manikin
 - Femoral vascular access lower torso ultrasound model
 - PICC vascular access ultrasound training model
- Image Optimisation Phantoms
 - [Soft tissue biopsy training blocks](#)
 - [Breast biopsy training model](#)
 - [Foreign body identification models](#)