FUSIC® Lung: Training Details

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Details of Training Pathway

1: Identification of a Trainer

Approved Trainers can now oversee and sign-off the whole accreditation process for FUSIC® Lung.

Requirements, responsibilities, and ways to identify a Trainer are all outlined below:

- You can identify a FUSIC® Lung approved Trainer at your hospital or other convenient hospitals, however if for any reason you cannot find a local Trainer yourself, then please contact the ICS learning team who will be able to direct you to one.
- If for any reason it has not been possible to identify a Trainer (due to availability), it is possible to nominate a qualified clinical colleague who possesses the correct accreditation(s), credentials, and experience to act as a Trainer on your behalf. They will however be required to make an application to become an officially recognised Trainer before training should commence.
- Application is easy using a simple form that can be accessed via the ICS website.

Requirements for a Trainer

Your Trainer may be any healthcare professional with suitable experience and regular practice in the related area of Intensive Care ultrasound.

As a minimum, FUSIC® Lung Trainers are ***expected*** to have been accredited in ***FUSIC® Lung*** *or* ***FAMUS Thoracic*** for ***at least 12 months***. Applications must be processed and approved by ICS.

Trainers have the following responsibilities:

- To enable you to access a suitable ultrasound machine and patients with pathologies relevant for successful accreditation.
- To mentor you and review your logbook scans.
- To sign-off your competencies and undertake a triggered assessment.
- To sign-off your summary training record (STR) to confirm that you have satisfactorily completed all components of the accreditation.

2: Registration with ICS

Registration is an essential way to ensure that you are kept up to date with all aspects of the accreditation. It will also enable you to freely access our online learning material. We therefore recommend that you register at the beginning of your learning.

- Go to the FUSIC® Lung module page.
- Click on the “add to basket” button.

- Register and pay. Note: *the cost of FUSIC® Lung incudes registration as well as all e-learning content, and a certificate of accreditation at the end of the training*.
- Upon registration, you will receive an email providing details of what the next steps are. This can sometimes take up to 48 hours.
- Once registered, your access to all accreditation-related content will last for exactly 24 months, after which your registration will expire.

If you experience any problems, please email learning@ics.ac.uk

3: Completion of online training

The price of FUSIC® e-learning content is included in the cost of registration and covers the theory required to complement your learning journey. We encourage learners to access and work through it prior to starting their logbook.

4: Attendance on an approved course

To achieve your FUSIC® Lung accreditation, you must either complete your e-learning or an ICS-approved FUSIC® Lung course. Opting to supplement or substitute your e-learning with attendance at an approved course is permissible.

5: Mentored practice and completion of logbook

All training documents, such as the reporting forms, logbook, competency sign offs, and Summary of Training (STR) form, can be downloaded from the FUSIC® Portal as soon as your FUSIC® registration and enrolment have been approved.

Logbook requirements:

- Minimum directly supervised scans – 10 (these do not have to be the first 10 scans or be contiguous)
- Minimum total number of scans – 30
- 1 scan = 1 patient (i.e. 2 lungs for each scan)
- Case mix – see guidance below
- Sufficient and legible information ensuring no patient identifiable data

Doctors must also demonstrate competence in ultrasound-guided pleural aspiration and drainage. This is not required for nurses or allied health professionals unless the procedure is part of their routine scope of practice.

Supervised cases:

- Direct supervision is an essential part of the training process.
- A minimum number of 10 supervised scans are required, but we encourage as much direct supervision as possible throughout your logbook collection period.

Unsupervised cases:

- Any scans you undertake without direct supervision should be stored for review by your Trainer.
- Your training scans ***must not*** be documented in the patients' medical record or used to influence your clinical decision-making until a suitably trained individual has verified them. We recommend that training scans stored on machines or exported from them for review are labelled with a training reference, and not identifiable patient details.

Timeline:

- Your logbook collection period, from ***first scan*** to ***last scan*** should be no more than ***12 months***. Your triggered assessment must also be completed within this timeframe.
- Learning must also take place in the ***real world***, and we acknowledge that the FUSIC® Lung accreditation process, from registration to completion may take time. Conversely, to combat skill fade and ensure appropriate development of knowledge and experience, we advise that scan dates be recorded and monitored closely by your trainer.
- Applications to extend this logbook collection period will only be considered under ***exceptional circumstances***, in which case you should contact the ***ICS learning team*** at least ***4 weeks*** prior to the expiry of your ***12-month scanning window*** to request an extension.

Case-mix:

- A demonstrable range of pathology is essential. Fundamentally, logbook studies should be performed on ***unwell patients***.
- It is acceptable to include multiple scans from the same patient over time if their clinical or radiological picture has changed.
- No more than 10% of logbook studies should be on healthy volunteers (who should still have been scanned within a clinical setting).
- In previous years, examinations undertaken during an approved course were accepted as directly supervised scans. However, we no longer support this practice.
- All FUSIC® Lung views should be attempted in each scan however we recognise adequate images are not always possible in each view. You and your Trainer should ensure your logbook reflects that you can obtain all views competently.
- Courses are important, real-life learning opportunities even more so. Interpretable lung images should be possible for all patients so each scan must include imaging from each examination point (3 on each side).

Reporting:

- You must use the standard reporting form for all training ultrasound examinations where provided.

- All documents, including the summary training record form, logbook, and competency assessments, can be downloaded from the ICS Learning Portal once registration is complete.

Review:

- Your Trainer is responsible for reviewing your logbook and signing off that you have undertaken studies and demonstrated competence in an appropriate range of pathology.
- We encourage you to meet periodically with your Trainer to review your studies. Doing so at the end limits your learning opportunities and risks losing them altogether, after considerable expense of your time and effort. Over time you should notice increasing agreement in interpretation between you and your Trainer.
- Comparing the images you get from lung ultrasound with chest X-rays and CT scans, where available, is an invaluable part of the training process.

Competence:

- Learners acquire skills at different rates. The minimum number of scans that are likely to be necessary to demonstrate competence and to have experience of the required range of pathology, is 30.
- Your Trainer is responsible for assessing competence and whether you have undertaken an adequate number of scans before your Triggered Assessment.

6: Assessment of competence

- Once you have performed and logged an appropriate number of examinations/ procedures and have had your competencies signed off, you may undertake a triggered assessment with your Trainer.

- If your scans and triggered assessment are not signed off by a FUSIC® approved Trainer, they cannot be accepted.

- Once all the above steps have been followed and your **summary training record (STR)** has been completed, dated and signed off by your FUSIC® approved Trainer, prior to submitting your STR for review, please ensure all information is legible. Then please submit your STR via the FUSIC® portal and after approval, you will be awarded your certificate of accreditation in FUSIC® Lung.

7: Maintenance of competence after accreditation

- Once accredited, you will be responsible for maintaining your knowledge and competence in ultrasound by undertaking regular and relevant CPD/CME. In order to maintain your practical skills, it is important that you regularly undertake ultrasound examinations that involve an appropriate range of pathology.

- Undertaking regular audit and multidisciplinary review of your studies by advanced practitioners is an excellent way to maintain quality assurance.

- 12 months after FUSIC® Lung accreditation, with evidence of ongoing clinical activity in Lung ultrasound, you will be eligible to become a FUSIC® Lung Trainer by application to the FUSIC® learning team.

For further guidance on ‘echocardiography and ultrasound’ governance, please go to: GPICS 2 and read section 4.7 (p117-119).

FUSIC® Lung syllabus

Generic knowledge

Physics and instrumentation

- Properties of sound waves: amplitude, frequency, wavelength, propagation velocity
- Ultrasound in the body:
    - Propagation velocity in different media
    - Frequency and attenuation
    - Sound and interfaces - transmission, reflection (specular, scatter), refraction, acoustic impedance.
    - Biological effects - heat generation and safety
- Sound generation:
    - Piezo-electric effect
    - Basic transducer design
    - Types of transducers
    - B mode and M mode
- Image quality
    - Frame rate, temporal resolution, spatial resolution, axial resolution, lateral resolution and how these relate to frequency, depth and width
    - Gain
    - Focus points
    - Artefacts and their generation
    - Colour, Power, Spectral (PW, CW)
- Ultrasound systems
    - Basic components and controls
    - ECG
- Descriptive terms
    - Hyperechoic, hypoechoic and anechoic and how they relate to structures
      -Sonographic appearance of tissues, muscle, blood vessels, nerves, bone, tendons etc.
- Ultrasound techniques
    - Patient information and preparation
    - Indications and limitations of focused examinations

- Relevance of other imaging modalities to ultrasound
- Influence of ultrasound results on the need for other imaging
- Selection of appropriate transducer and exam type
- Use of conductive gel
- Correct probe placement and orientation for standard views
- Correct adjustment of ultrasound controls (depth, gain, width and focus)

- Probe manipulation and nomenclature - e.g. pressure, sliding, fanning, rocking, rotating
- Scanning techniques - 2D, M-mode, and colour Doppler
- Identification of relevant anatomy
- Identification of common artefacts

Administration and governance

- Image recording, reporting and storage
- Indications for immediate expert assistance, subsequent comprehensive scan by accredited practitioner or need for alternative investigation
- Medico-legal aspects - outlining the responsibility to practice within specific levels of competence and the requirements for training
- Need to quality assure reports
- Relevance of data protection act to image storage
- Consent
- Understanding sterility, infection control and machine cleaning
- The value and role of departmental protocols
- The resource implications of ultrasound use

Module Specific knowledge (FUSIC® Lung)

Performance of systematic examination of lung and pleura

- Scanning each lung in 3 zones (upper, lower and postero-lateral regions)

Recognition of normal thoracic structures and adjacent organs

- Ribs, subcutaneous tissues, pleura and diaphragm
- Heart, liver, spleen and kidneys

Identification of ultrasound appearances of normal aerated lung including:

- Diaphragmatic movement
- Pleural line and sliding sign (in 2D and M mode)
- Normal aerated lung (including A-line and B line artefacts)

Recognition of pleural fluid

- Ultrasound appearances of pleural fluid and pleural thickening
- Appearances suggesting transudate, exudate and loculation
- Assessment of size of effusion
- Distinguishing between pleural thickening and effusion
- Demonstration of sinusoid sign on M mode
- Distinguishing between pleural and abdominal fluid collection

Recognition of consolidation/atelectasis

- Ultrasound appearances of consolidated/atelectatic lung
- Ultrasound appearances of air and fluid bronchograms

Recognition of interstitial syndrome

- Differentiating between normal and pathological B-lines

Use of ultrasound to exclude pneumothorax

- Recognition of signs of pneumothorax (B mode and M mode)
- Absence of lung sliding, B lines and lung pulse
- Presence of lung point

Doctors (or Allied Healthcare Professionals for whom this is part of their clinical practice) *- Performance of ultrasound guided thoracocentesis and knowledge of the pros and cons of direct vs indirect approach.*

Allied Healthcare Professionals (when this is not part of their practice) *- Description of ultrasound guided thoracocentesis.*