FUSIC® HD: Training Details

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Details of Training Pathway

1: Identification of a Trainer

To cover the HD syllabus, you may need more than one Trainer. This is encouraged, especially when different Trainers have expertise in different aspects of FUSIC® HD.

A FUSIC® HD Supervisor is now no longer required to conduct the HD triggered assessment. Approved Trainers can now oversee and sign-off the whole accreditation process for FUSIC® HD. Supervisors may be required in the future for an advanced HD module.

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

- You can identify a FUSIC® approved Trainer at your hospital or other convenient hospitals, however if 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.

- Application is easy using a simple form that can be accessed via the ICS website.

Trainer

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

The following are minimum requirements:

- ***As a minimum***, Trainers are ***expected*** to have been accredited in ***FUSIC® HD*** for at least 12 months.
  OR
- An existing FUSIC Heart Supervisor with - BSE level 2 or equivalent ***OR*** intensivist with EDEC ***OR*** cardiologist with regular echo sessions ***OR*** Intensivist with evidence of competence beyond FICE/level 1 and approval by application to FUSIC® HD sub-committee (Note: VExUS element is not covered by Heart Supervisors)
  OR
- Venous elements - Radiologist ***OR*** sonographer ***OR*** intensivist with evidence of competence at VExUS and approval by application to FUSIC® HD sub-committee.

- Application must be made and approved by the ICS. Trainer application forms can be accessed on the ICS website.

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 identify local experts for review of difficult cases and ongoing clinical support.
- To sign-off your competencies and your summary training record (STR) to confirm that you have satisfactorily completed all the training components required for the practical summative assessment.

Prerequisites for Registration

- Independent competence in history taking, physical examination, interpreting clinical investigations, and understanding of disease processes in critically ill patients, **and**…
- Accreditation in FUSIC® Heart (formerly known as FICE) ***or*** BSE Level 1, **and**…
- Accreditation in FUSIC® Lung (formerly part of CUSIC) ***or*** FAMUS

Please note: the requirement for accreditation in abdominal ultrasound has been removed.

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® HD module page.
- Click on the "add to basket" button.
- Register and pay. Note: *the cost of FUSIC® HD 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 FUSIC® HD accreditation, you must either complete the e-learning or participate in an ICS-approved FUSIC® HD 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 learning portal as soon as your registration and enrolment have been approved.

Logbook requirements:

- Minimum directly supervised – 20 (these do not have to be the first 10 scans or be contiguous)
- Minimum total number of scans – 50
- Case mix – see guidance below

Supervised cases:

- Direct supervision is an essential part of the training process.
- A minimum number of 20 supervised scans are required, but we encourage as much direct supervision as possible throughout your logbook collection period.
- This number is twice that of FUSIC® Heart because the scope of HD is broader and deeper.

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 competencies and logbook cases must also be signed off within this timeframe.

- Learning must also take place in the ***real world***, and we acknowledge that the FUSIC® HD 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 overtime 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® HD 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 HD images should be possible for all patients so each scan must include imaging from each examination point.

Reporting:

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

- All documents, including the competency assessment form, reporting form, logbook and the summary training record form 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

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 50.

- Your Trainer is responsible for assessing competence and whether you have undertaken an adequate number of scans before your practical Summative Assessment.

- It is essential that no patient identifiable details should be included within the logbook.

6: Assessment of competence

- Once you have performed and logged an appropriate number of examinations/ procedures and have had your competencies, logbook and STR signed off, you may undertake a practical summative assessment.

- This will consist of a centrally run examination and may involve the following:

    - A logbook review
    - A video case review
    - A practical skill assessment involving scanning a human volunteer
    - A pathology spotter viva
    - Multiple-choice questions (MCQs)

- Prior to attending the practical summative assessment, you must ensure that your **logbook** and **summary training record (STR)** have been completed, dated, and signed off by your registered FUSIC® approved Trainer. You should submit your **logbook** and **STR** for review by uploading these via the learning portal.

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

- Once all the above steps have been completed and you have passed the practical summative assessment, you will receive a certificate of accreditation from the ICS in FUSIC® HD.

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® HD accreditation, with evidence of ongoing clinical activity in HD ultrasound, you will be eligible to become a FUSIC® HD 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).

FUSIC® HD syllabus

Generic knowledge

Knowledge

- Indications and limitations of a haemodynamic scan
- The differences between a comprehensive echocardiogram and a comprehensive haemodynamic assessment
- Format of a standard report
- Indications for a comprehensive echocardiogram

Module Specific knowledge (FUSIC® HD)

Performance of systematic examination of the heart

See ***here*** for the full HD data set.

FUSIC® HD views
▪ Parasternal long axis (PLAX) ▪ Right ventricular inflow (RVI) ▪ Right ventricular outflow (RVO) ▪ Parasternal short axis (PSAX) views (apex, mid, base, aortic valve levels) ▪ Apical 4 chamber (A4C) ▪ Apical two-chamber (A2C) ▪ Apical three-chamber (A3C) ▪ Subcostal long axis (SC) ▪ Subcostal short-axis (SSAX) ▪ Aortic views - Suprasternal (SS), modified PLAX, modified SAX, modified A2C, abdominal aorta (AA) ▪ Hepatic veins and portal veins ▪ Renal interlobar vessels

Recognition of normal anatomy in each view

Recognition of pathology including:

Pathologies detected by FUSIC® HD	
Left ventricular disease	▪ Left ventricular (LV) hypertrophy (LVH) ▪ Dilatation ▪ Regional wall motion abnormalities (RWMAs) ▪ Impaired systolic function (acute vs chronic) ▪ Raised left atrial (LA) pressure ▪ Left Ventricular Outflow Tract (LVOT) obstruction
Right ventricular disease	▪ Right ventricular (RV) hypertrophy (RVH) ▪ Dilatation ▪ Impaired systolic function (acute vs chronic) ▪ Raised pulmonary arterial (PA) pressure
Mitral valve disease	▪ Significant thickening, calcification, restriction ▪ Significant prolapse ▪ Significant regurgitation ▪ Systolic anterior motion
Aortic valve disease	▪ Significant thickening, calcification, restriction ▪ Significant regurgitation
Tricuspid valve disease	▪ Significant thickening, calcification, restriction ▪ Significant regurgitation

Pathologies detected by FUSIC® HD	
Aortic disease	▪ Root dilatation ▪ Thoracic dissection ▪ Abdominal aneurysm
Atrial disease	▪ Dilatation
Volume overload	▪ Raised intracardiac pressures ▪ Functional tricuspid regurgitation ▪ Enlarged IVC ▪ Pleural effusions ▪ Pericardial effusions ▪ Venous congestion
Reduced venous return (low stressed venous volume)	▪ Hyperdynamic heart ▪ Fluid responsive VTI/stroke volume ▪ Vasopressor responsive VTI/stroke volume
Abnormal flow	▪ Stroke volume ▪ Cardiac output

Venous congestion	▪ Enlarged IVC
	▪ Abnormal venous flows:
	  ○ Portal vein
	  ○ Hepatic vein
	  ○ Renal vein and artery

Clinical integration and conclusions:

A FUSIC® HD scan should be focused on answering the following questions:

1. Is stroke volume abnormal?
2. Is stroke volume responsive to fluid, vasopressors or inotropes?
3. Is the aorta abnormal?
4. Is the aortic valve, mitral valve or tricuspid valve severely abnormal?
5. Is there systolic anterior motion of the mitral valve?
6. Is there a regional wall motion abnormality?
7. Are there features of raised left atrial pressure?
8. Are there features of raised pulmonary artery pressure?
9. Are there features of tamponade?
10. Is there venous congestion?