Viewpoint Articles

A Position Statement: Echocardiography in the Critically Ill

Kevin Fox

Numerous studies have demonstrated the value of echocardiography in the assessment of critically ill patients in the Intensive Care Unit (ICU) and Emergency Room (ER). We seek to encourage expansion of echocardiography in these areas. However it is important to establish training programmes, standards of knowledge and skills, assessment methods and quality assurance if echocardiography is to be offered with confidence in these clinical areas. We have undertaken discussion with the many groups with a relevant interest in critical echocardiography and developed a consensus on proposals for the appropriate provision of training in echocardiography for the ICU, ER, and increasingly the medical high dependency and admissions wards.

We strongly support the training of doctors in Intensive Care, Acute and Emergency Medicine in the appropriate application of focused echocardiography for critically ill patients. In the peri-arrest period, focused echocardiography may be used to answer key questions that may profoundly affect immediate patient management, including the presence of a pericardial collection or myocardial activity and a simple assessment of filling. These are relevant to all trainees in specialties dealing with acutely ill patients. Training can be achieved by successfully completing a programme comprising a short course, followed by locally supervised practice. The clearly formulated programme of Focused Echo Evaluation in Life Support (FEEL, formerly also called FEER) provides the potential for training within clearly defined boundaries. This "entry level" echocardiography in the peri-arrest period can be delivered locally, following carefully defined protocols similar to the model used for Advanced Life Support training. Similar programmes also exist to include ultrasound of other organs, such as FATE and FAST (see Table 1)

Following training in focused echocardiography a small number of trainees may wish to extend their skills to be able to perform a fully comprehensive study. As in entry level echocardiography, the training requirements for each group differ in important ways. For those trainees in Acute Medicine the range of

Focused Echocardiography in the Critically Ill			
	FEEL	**FATE**	**FAST**
	Focussed **E**cho **E**valuation in **L**ife Support	**F**ocussed **A**ssessed **T**ransthoracic **E**chocardiography	**F**ocussed **A**ssessed **S**onography in **T**rauma
Views	PLAX	PLAX	Subcostal
	PSAX	PSAX	*RUQ*
	A4Ch	A4Ch	*LUQ*
	Subcostal	Subcostal *Pleural*	*Pelvic*
Pathology	Pericardial collection	Pericardial collection	Free intra-peritoneal or pericardial fluid
	Cardiac activity	Measurement of ventricular dimensions	
	Gross ventricular function	Pleural collection	
Training	1 day course	2 day course	25-50 documented and outcome reviewed scans
	Supervised practice (eg 50 cases)	Practical/theory exam	

Table 1. Focused ultrasound protocols devised for the critically ill. FEEL (previously FEER) incorporates only echocardiography, whereas FATE and FAST include additional views to image other organs (shown in italics). PLAX; parasternal long axis view, PSAX; parasternal short axis view, A4CH; apical four chamber view, RUQ right upper quadrant view; LUQ; left upper quadrant view.

© 2008 Rila Publications Ltd.

Dr Kevin Fox
Consultant Cardiologist
Imperial College Healthcare NHS Trust

On behalf of the British Society of Echocardiography

Correspondence:
Email: k.fox@imperial.ac.uk

A Position Statement: Echocardiography in the Critically Ill

pathologies seen during an acute medical take differ little from those that might be seen while undertaking a typical inpatient echo list. Thus we recommend trainees in Acute Medicine who wish to perform echocardiograms beyond the peri-arrest period should undertake the British Society of Echocardiography Accreditation in Adult Transthoracic Echocardiography (TTE). This should be an option, not a necessity for Acute Medicine trainees. Our recent experience of Deaneries agreeing to ensure continuity of training through dedicated sessions over a 2 year period, sufficient to complete BSE Accreditation, is encouraging.

Echocardiographic evaluation of patients in an ICU is of great value but challenging. The skills include assessment of haemodynamics, and monitoring the effects of therapeutic interventions that are particular to the ICU and which may even be outside the experience of many accredited echocardiographers. In addition to reviewing the current BSE curriculum for adult TTE and transoesophageal echocardiography (TOE) we believe that there is a role for an accreditation specifically for the ICU. The accreditation should be focused around answering clinical questions rather than the modality of echocardiography. The British Society of Echocardiography proposes to work with key stakeholders to establish an accreditation in Intensive Care Echo by 2009. As with other BSE accreditations, trainees will be required to pass a knowledge-based assessment and submit a log book of supervised practice. The best and most relevant elements of the current TTE and TOE accreditation will be used, supplemented by specific elements relevant to the ICU. The assessment will draw upon TTE and TOE imaging, and the log book will allow either modality to be interpreted by trainees as long as the log book and supervisor's report demonstrates accumulated experience in answering relevant clinical questions.

In addition to individual training and skill, it is important to recognise that quality echocardiography requires practitioners to work with adequate equipment and within a framework of clinical governance and quality assurance. Cooperation and interactive reviewing of cases between the ICU, Acute Medicine, the ER and the cardiology department, with shared accessibility of stored images, is essential.

We believe that the combination of a core level of training in the use of echocardiography in the critically ill and peri-arrest arena for all, combined with a robust comprehensive accreditation for those who wish to develop further echo skills, represents a logical and effective way forward to ensure expansion of critical echocardiography with an assurance of quality for the patient.

The British Society of Echocardiograhy gratefully acknowledges the collaboration of the following people and organisations in developing this position statement:

Dawn Appleby, Administrator, British Society of Echocardiography; **Federico Bilotta**, Critical Care and Pain Medicine, Sapienza, Univesity of Rome, Italy, World Interactive Network Focused on Critical UltraSound (WINFOCUS); **Raoul Breitkreutz**, Hospital of the Johann-Wolfgang-Goethe University, Frankfurt am Main, Germany,WINFOCUS; **Stefanie Bruemmer-Smith,** Guys and St Thomas's NHS Trust; **John Chambers,** Guys and St Thomas's NHS Trust and British Society of Echocardiography; **Jeremy Cordingley**, Royal Brompton and Harefield NHS Trust; **Martin Culshaw; John Darling,** Ulster Hospital, Belfast and Northern Ireland School of Anaesthesia**; Suneel Desai; Alison Duncan** Royal Brompton and Harefield NHS Trust; **Kevin Fox** Imperial College Healthcare NHS Trust and British Society of Echocardiography; **Jane Graham**, South Cleveland NHS Trust and British Society of Echocardiography; **Fabio Gurracino**, Azienda Ospedaliera Universitaria Pisana, Italy, WINFOCUS; **David Hunter** Royal Brompton and Harefield NHS Trust

Bob Jarman, Queen Elizabeth Hospital, Gateshead College of Emergency Medicine; **Peter Macnaughton**, Derriford Hospital Plymouth Intensive Care Society Council and Education and Training Committee; **C Moran; Craig Morris**, Derby Royal Infirmary ; **Luca Neri** Niguarda Ca′ Granda Hospital, Milan, Italy, WINFOCUS; **Barry Nicholls,** Taunton & Somerset NHS Trust Musgrove Park Hospital;**Peter Nightingale,** Royal College of Anaesthetists **; Robert Orme ; Susanna Price**, Royal Brompton and Harefield NHS Trust, Intensive Care Society Council and Education and Training Committee, WINFOCUS; **Simon Ray,** South Manchester NHS Trust and British Society of Echocardiography; **Conn Russell**, Ulster Hospital Belfast, WINFOCUS; **Eric Sloth** Aarhus University Hospital, Skejby, Denmark, WINFOCUS; **Enrico Storti** Niguarda Ca′ Granda Hospital, Milan, Italy, WINFOCUS; **Justiaan Swanevelder**, Glenfield Hospital, Leicester,Association of Cardiothoracic Anaesthetists;

Daniel Talmor, Beth Israel Deaconess Medical Center, Associate Professor of Anaesthesia Harvard Medical School, WINFOCUS; **Gabriele Via**, Universitary Hospital of Pavia, Italy, WINFOCUS; **John Wright**, Newcastle Hospitals Trust. College of Emergency Medicine lead on echocardiography training,

© 2008 Rila Publications Ltd.

Acute Medicine_V7_N2.indd 96 11/26/2008 7:46:20 PM