

ECHO EDUCATION

UK Cardiology Training in Core Echocardiography Symposium Report: the good the bad and the ugly

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Abstract

Training in core echocardiography skills within the UK has been the focus of considerable discussion following recent national surveys. This article reports the proceedings of a joint meeting held by the British Society of Echocardiography and British Junior Cardiologists' Association. It considers the current issues impacting on high-quality training and presents potential solutions for the future.

Key Words

- ▶ echocardiography training
- ▶ junior cardiologists

Introduction

Last year, the GMC and British Junior Cardiologists' Association (BJCA) national surveys (1, 2, 3) highlighted major failings in training in echocardiography. Concerned by this, the Specialist Advisory Committee (SAC) approached the British Society of Echocardiography (BSE) to investigate and understand the reasons why this was the case. On the 4th December 2013, the BSE in conjunction with the BJCA held a joint symposium to discuss the critical issues in offering echo training across the UK. The purpose was to examine the factors responsible for the failure of training standards and how it might begin to improve this aspect of core training for the future. Over 100 cardiology trainees attended. In this report we highlight the current barriers to achieving high-quality training, identify the major stakeholders, and consider how UK core echocardiography training can be improved.

allows rapid acquisition of complex data, accelerating diagnosis and further management. At a time where the pressures on the NHS continue to intensify, timely decision making is a key. Limitations in high-quality service delivery hamper patient care in multiple ways and can in part be attributed to standards in doctor training and acquisition of essential core specialty skills. With the introduction of Modernising Medical Careers, reducing total training time by 1 year, and implementation of the New Deal and Working Time Regulations, the working week has been restricted to an average of no more than 48 h. Although these changes offer benefits, they also present a number of challenges, in particular those resulting from tensions between demands for service provision (with increasing on-call commitments) and training.

The requirements for core echocardiography training are specified in the new cardiology curriculum, first introduced in 2007 (4) and updated in 2010 (5); it sets out a clear framework of knowledge and skills. Trainees must acquire an understanding of the role of echocardiography in managing patients with cardiac disease; be able to perform, interpret and report a transthoracic study; and understand the indications of more advanced techniques including transoesophageal echocardiography (TOE) and

Current training format

It is generally agreed that of all the core skills, being able to perform a transthoracic echocardiogram is the most crucial for patient management, service delivery and education. The transthoracic echo is an easily accessible bedside investigation, which is not only cost effective but

stress echocardiography. Currently, practical competency (including interpretation and reporting skills) can be demonstrated through completing six directly observed procedural skills assessments (DOPS) or by achieving BSE transthoracic echocardiography accreditation (Box 1).

The issues with current training

The key issues centre around access to formal echo training lists. At present there is variability in whether a local echo trainer is identified to oversee the delivery of hands-on structured training. It seems that a lack of a named local echo trainer has a negative impact on the quality of training received. Trainees have also highlighted inconsistencies in Regional Training Committee expectations of what constitutes core training in echocardiography and the level of support provided to the trainee in achieving these goals.

Echo departments are expected to deliver the practical aspects of core echo training. However, Specialty Registrar (StR) training lists are disrupted by lack of protected time, where StRs may fail to attend a training list due to demands elsewhere. Understandably, such lists are then given out reluctantly. There is a lack of engagement of senior physiologists in the formal training programme, yet they are the very people who are expected to deliver the training.

It is not surprising that this aspect of cardiology training has been highlighted as a major failing, since it is the only procedure-based training where, at a local level, senior doctors rarely become involved. While the training from clinical scientists results in high-quality tuition, the lack of medical input affects the attitudes and culture, resulting in de-prioritisation of echo training.

Trainees' views

In order to gain further insights and understanding of the issues currently affecting trainees, those who attended the joint BSE/BJCA day were asked to complete a questionnaire regarding their experience of

echocardiography training programme. Although this was a focused imaging day attended predominantly by imaging trainees, all cardiology sub-specialties were represented. The trainees responding to the survey represented a broad range of deaneries throughout the UK and at all levels of training, from ST3 to ST7. The main findings can be summarised as follows:

- Only 56% trainees had access to formal echo training. This was bleep free in 25% of cases and access to these sessions was variable.
- Although the majority of trainees (85%) did not have BSE accreditation, most intended to achieve this.
- However, over half of the trainees considered that the current time scale to achieve the BSE logbook was not feasible.
- Over half the trainees (57%) felt confident to perform and report an echo, and the majority of trainees performed between one and five echocardiograms per week.
- The majority of trainees (>80%) felt that a modular approach to training would be beneficial.

Trainees were asked to make any recommendations, which they felt would improve their experience of echocardiography training. These suggestions included: protected bleep-free training sessions, identification of a responsible echo lead for training StR's in each hospital, greater flexibility regarding the timescale for BSE logbook collection and a modular training approach.

These findings are broadly abreast with data obtained from the national training surveys. The cardiology section of the 2012 GMC survey (1) contained detailed questions specific to echocardiography; it indicated although the majority of StR was performed between one and five or more echocardiograms per week there was a lack of adequate supervision (reported in ~25% of cases). Access to echocardiography training was made less than once a month in almost 50% of cases, and there was significant variation across deaneries. The subsequent 2013 GMC (2) survey highlighted the increasing acute medicine

Box 1 How to demonstrate competency in core echocardiography

BSE Transthoracic Accreditation (not mandatory)

Written exam.

Logbook of 250 cases (with specific case mix) collected over 24-month period before and after passing the exam.

Directly observed procedure (DOPS) Assessment

A minimum of six DOPS completed by at least two different assessors.

BSE curriculum assessment tool (not mandatory).

Logbook (not mandatory).

commitment occupying >20% of time for one fifth of trainees, along with a lack of access to simulator-based training.

Similar themes emerged from the results of the 2013 BJCA survey (3); 10% of trainees reported significant difficulty in accessing core echocardiography training, only 26% had BSE accreditation and the majority of respondents perceived the current requirements for the accreditation process to be too difficult to achieve.

The way forward

After discussions with SAC, British Cardiovascular Society Training Committee and BJCA, the BSE have suggested the next steps in how these issues might begin to be addressed. This is summarised in a letter to the Cardiology SAC and a response is currently awaited. What is clear is that the three key stakeholders (the trainee, the specialist training committee (STC) led by the local Training Programme Director (TPD) and the hospital/echo lab) all play an active role in training registrars. Additionally the BSE have a key role in the facilitation of the process. However, there appear to be inconsistencies and confusion in understanding exactly what is expected of each. It would be useful to reiterate and clarify these roles; not only to aid the trainees and those responsible for training them, as to what they should expect from each other, and also what

they must contribute. A summary of these suggestions is given in Box 2. Some of these points are discussed in more detail below.

Better access to echocardiography sessions with appropriate supervision and training

A lack of access to a regular supervised echocardiography training list(s) is perceived as one of the major barriers to achieving good quality training. The reasons for this are complex. Although some trainees reported very few or even no specific training lists offered by echocardiography departments, in many cases an increased demand and prioritisation of service commitments and constraints of shift-patterns led to an inability to attend available sessions. Training sessions delivered were usually not 'bleep-free' protected time. Furthermore, trainees felt that they were not prioritised for a number of reasons: staffing constraints, the need to allocate training lists to trainee physiologists and the significant impact of training on a general workflow. However, what is also clear is that non-attendance at an allocated training echo list is not acceptable and leaves the echo department in difficulties. Consistent attendance is therefore essential to promote engagement by echo departments.

A shift in attitudes is therefore required, in which the STC mandates trainees to attend echo lists. It should

Box 2 The key roles of individual stakeholders.

Regional Training Committee

1. Should provide trainees with clear guidance of what to expect from their local echocardiography departments, including named echocardiography mentor, responsible for hands-on training and a regular 'protected time' (min 1x/week) training lists with supervision from a physiologist (ideally BSE accredited) or cardiologist.
2. Clear guidance as to how to achieve structured training and experience, e.g. BSE accreditation process.
3. A regionally appointed echo training director to oversee training.
4. A regionally appointed physiologist to support and facilitate training delivery across the region.
5. Clear guidance to the trainee as to the appropriate pathway to raise concerns.

Local Echocardiography Department/Hospital Trust

6. Should offer a formal supervised training session in TTE.
7. Should identify a training lead (physiologist and/or cardiologist) responsible for ensuring echo training delivery.

Trainees

8. Should know exactly what is expected of them during core echo training (e.g. producing evidence through case logbook collection. BJCA echocardiography toolkit provides a succinct summary of training requirements and proposed time line to achieve this http://www.bcs.com/documents/Toolkit_for_New_Cardiology_Trainees_Final_2013_update-Appendix_D.pdf).
9. Should highlight any issues regarding difficulty in acquiring competencies early in the training process to allow relevant actions to be taken using the pathway provided by the STC.

British Society of Echocardiography

10. Should support the offering of high-quality echocardiography training through:
 - National BSE training days in addition to proposed regional echocardiography courses for core trainees, which will include both core knowledge and simulator training;
 - Greater emphasis on echocardiography training at BSE conference;
 - Raising awareness (and offering support) amongst physiologists of the importance and benefits of training cardiologists;
 - Develop an updated version of the curriculum-based assessment to be submitted in conjunction with DOPS assessment to achieve core competency;
 - Development of formal recommendations for guidance on training cardiologists in echocardiography in the UK.

be noted that this is already an explicit requirement of the training programme. The STC should then actively seek evidence from the trainee that this is occurring. The hospital staff, from the consultants to the echo department, should acknowledge the mandate to provide a regular protected training list (at least once a week) and preferably provide a senior trainer, while the trainees recognise that it is mandatory to attend the training. The excuse (by either the trainee or echo department) such as no time to train is of great concern, and while we acknowledge departments are working under pressure, the importance of training future cardiologists in this core skill cannot be emphasised enough. There are more advantages in encouraging the presence of StRs in the echo lab. More complex echo studies (e.g. contrast administration for left ventricular (LV) opacification or agitated saline for assessment of an intracardiac shunt) and valuable dialogue between physiology and clinical teams are essential when striving to deliver a quality service. Furthermore, to facilitate better physiology engagement the BSE have suggested the appointment of a regional physiology lead for echocardiography to facilitate engagement and formalise the role of physiologists in the training process. This would create a dialogue and understanding between the two groups about the weaknesses and strengths in training within the region and how these might be addressed.

Greater flexibility in BSE TTE accreditation process allowing a greater number of trainees to achieve this standard

Currently, echocardiography competency for cardiology trainees is assessed through the following mechanisms: i) knowledge-based assessment exam undertaken at the ST5 stage of training and ii) a practical competency assessment (Box 1). Practical competency can be demonstrated either by completing BSE TTE accreditation or achieving six DOPS, completed by two different assessors. If trainees choose to use DOPS for assessment they are strongly encouraged to complete the BSE curriculum-based assessment tool in order to provide evidence of experience across a breadth of cardiac pathologies (5).

Data from the 2013 BJCA survey suggest that although many trainees wish to obtain BSE accreditation, the numbers actually achieving this are low (26% of all trainees surveyed). The trainees felt that the requirement for compiling a logbook over a 24-month period, but submitted within 12 months of successfully completing the exam, is too difficult to achieve (3). In addition not all

departments may have the capacity to offer trainees the opportunity to attain BSE accreditation. In order to address this issue, the BSE have recently extended the time duration for collating a logbook to 24 months around the time of the examination; and this change has been active since October 2013.

Although it is agreed that BSE accreditation should be expected for those who intend to pursue an imaging subspecialty, not all trainees will need or want to undertake this formal process. However, the alternative, of six DOPS may not be robust enough to ensure proficiency in TTE. Given that much of the echo training delivered in the UK is by physiologists, they are neither familiar with nor trained in this form of assessment, and there is a lack of clarity as to whether they can complete them. For those pursuing this alternative approach, the BSE assessment tool in addition to an informal logbook may provide a more comprehensive approach. Therefore, a vital aspect of supporting such training is clarification of what exactly is meant by core echo training. Currently, a document on 'Training Cardiologists in Echocardiography in the UK' is under development, led by Dr Thomas Matthew, BSE Lead for Trainees.

Identifying and supporting trainees who are not achieving echocardiography competency in an appropriate time frame

It was interesting to note that during the Joint BSE/BJCA training day discussion, trainees did not have a clear understanding of the process by which they could raise concerns regarding failure to progress in their echo training; indeed some feared negative repercussions if they did so. Currently concerns may be directed to either clinical or educational supervisors, TPD or to the annual review of competence progression (ARCP) panel. The ARCP is the formal annual process by which a trainee's progress is reviewed and assessed. The trainees reported that often echocardiography was not specifically asked about and when concerns were raised, they were not necessarily addressed.

The appointment of an Echo director has been advised by the Cardiology SAC (Chair Dr Ian Wilson). They would be responsible for ensuring the trainee access to regular echo training lists, through acting as a point of contact for trainees to raise any concerns, addressing any issues raised and ensuring training is being delivered to individual trainees at a satisfactory level. Furthermore, greater clarity of what trainees should practically expect from echocardiography training will also facilitate this. The key roles of individual stakeholders are summarised in Box 2.

Concept of modular training

One key aspect raised by the trainees was the need for early acquisition of hands-on echo skills. They were keen for StR entry-level focused training in echocardiography. Some trainees struggle to obtain the necessary standard in competency, which if reached to a desired level is acquired late in their training programme. Hence, the BJCA are very keen to see the establishment of a modular-type approach, whereby 1–3 months is spent training in an echo lab performing a high volume of transthoracic echo studies. This intense focused training will bring the StR up to speed rapidly, and usefully set the scene for further development of such skills, hugely benefiting the trainees and their patients, as well as other staff. However, in the current system this may not be feasible in all hospitals. Simulator training has been suggested as a useful adjunct and, in the absence of modular training, may help to partially bridge the gap.

The BCS have run pilot courses in simulation training, centered on patient safety. These are proving to be very popular amongst trainees. The benefits of simulation training have been widely assessed in medicine, and there is extensive supportive evidence published in the medical training literature. Simulator-based medical education has been shown to be superior to the traditional didactic system of education (6, 7, 8). Six competencies are defined: patient care, medical knowledge, practice-based learning, interpersonal skills, professionalism and system-based practice (9, 10). Simulation training has the potential to facilitate proficiency in all six areas, and where appropriate allows re-creation of clinical scenarios, helping in standardisation of medical education and training. This improved proficiency leads to better patient care and management with improved patient outcomes (11, 12). There is no doubt that simulation-based training accelerates learning (13).

A number of echo simulator training systems exist. The most popular in the UK is Heartworks (6). Important features of this system include programmes in transthoracic and transoesophageal echocardiography, excellent anatomical virtual imaging alongside echo images and normal heart studies with an increasingly wide range of cardiac pathologies.

BSE initiative

The BSE runs a national course in echocardiography, core knowledge, which is lecture based and includes case reviews and discussions. The BSE is in the process of devising an echo training course, which will be aimed at all core cardiology trainees and will incorporate a

core knowledge lecture series and simulator training. It is hoped to engage each training region to provide a regional simulation training centre(s), once the trainee has attended a 2-day lecture course. The advantages of regional engagement in this process are significant, creating a forum for echo training and discussion with the opportunity to meet the Echo Training Director.

Conclusion

We conclude from these proceedings, and discussions since, that there is a gathering momentum to improve core echo training. By raising awareness of the issues and providing clarity as to the responsibilities of each key player we will help to facilitate progress to achieve consistent high-quality echo training across the UK. It is clear that all groups involved, namely SAC, BCS BSE and BJCA, are committed to this and will continue to increase their efforts. Further national training days are planned and under development include: a formal document offering guidance in echo training, a nationally delivered course with inclusion of simulator training and greater emphasis given on issues specific to trainees at the annual conferences.

Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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