Accreditation in transoesophageal echocardiography: statement from the Association of Cardiothoracic Anaesthetists and the British Society of Echocardiography Joint TOE Accreditation Committee

Where transoesophageal echocardiography (TOE) was once used mainly by cardiologists in the echo laboratory, its value in the operating theatre and intensive care unit is now well recognized. TOE has become the gold standard intraoperative cardiac monitor and diagnostic tool in certain cardiac surgical procedures, for example mitral valve repair, congenital heart surgery, and repair of aortic dissections. It is useful to monitor ventricular filling and performance and is sensitive for detection of myocardial ischaemia. TOE provides valuable information that significantly influences clinical management and improves patient outcome, not only during, but also after, surgery. For this reason, the term ‘perioperative’ rather than ‘intraoperative’ TOE is preferred. With modern technology, TOE is capable of providing a much wider range of diagnostic information, which greatly exceeds that available from other monitoring modalities more commonly used by anaesthetists. Two recent retrospective analyses have suggested its cost-effectiveness during routine cardiac surgery.

The need for anaesthetists-echocardiographers

The involvement of anaesthetists has promoted the team approach to perioperative patient care. Where it is inconvenient for a cardiologist to be called at short notice to an unfamiliar environment, anaesthetists are readily available in the operating theatre. Due to work pressure, the cardiologist cannot spend long periods of time in theatre while lengthy procedures are being performed. As a result, some anaesthetists now find themselves in the new role of cardiac diagnosticians. Hodgins pointed out that this new role brings new responsibilities. Successful diagnostic-quality TOE is most valuable when anaesthetists performing the studies work in close collaboration with their cardiology colleagues. They need to develop a functional working relationship with an experienced echocardiographer who can provide advice in the event of ambiguous findings. The anaesthetist-echocardiographer has to perform a complete examination where all cardiac valves and chambers are evaluated in a systematic fashion, otherwise vital information may be missed. The results of this examination have to be formally communicated by means of a written report in the patient’s medical records. Finally, it is important that the person performing intraoperative TOE examinations is experienced and has a proper understanding of cardiac pathology. Diagnostic TOE interpretation requires an advanced level of training and ongoing experience to achieve and maintain competence.

Previous experience

The development of training and certification in echocardiography in the USA has been an intensive process and has been well described in the recent literature. By 1988, the American Society of Echocardiography (ASE) had already published Guidelines for Optimal Physician Training in Echocardiography. Following 3 yr of preparation by an ASE committee, the first examination to test all areas of echocardiography (ASEXAM) was conducted in 1996. In the same year, an American Society of Anesthesiologists/Society of Cardiovascular Anesthesiologists (ASA/SCA) Task Force published practice guidelines on indications for intraoperative TOE. The Task Force divided its recommendations into three categories based on the strength of literature evidence and expert opinion that TOE improves clinical outcome. At the same time, the SCA appointed a Task Force for Certification in Perioperative TOE. This led to the development of first a pilot examination in 1997, and then the first formal examination in perioperative TOE in 1998. Towards the end of 1998, the SCA and ASE combined their two examination processes and founded the National Board of Echocardiography (NBE). The NBE was established to develop and administer examinations in the field of clinical echocardiography, and has been conducting these annually ever since. More recently, guidelines for basic and advanced training in perioperative echocardiography in the USA have been published. Interestingly, these guidelines emphasize the goals of training, number of cases and importance of case diversity, but do not specify the duration.
of training. Since then the NBE has defined criteria for the certification of competency in adult echocardiography. A further statement addressing clinical competence in echocardiography (including TOE) has made an important distinction between training requirements and documentation of competence.

In 1999, the American Society of Echocardiography and Society of Cardiovascular Anesthesiologists Task Force (ASE/SCA) followed with guidelines for performing a comprehensive intraoperative multiplane TOE examination based on a series of 20 anatomical cross-sectional images. These guidelines promote training in TOE, assist assessment of quality and completeness of individual studies, and facilitate comparison of studies performed at different centers. A very similar set of guidelines was recommended in 2001 by the European Society of Cardiology Working Group on Echocardiography.

In 1988, it was reported that only about 50 TOE probes were available in the USA for intraoperative use. In a more recent survey of Society of Cardiovascular Anesthesiologists’ members in the USA and Puerto Rico, Morewood and colleagues reported that 94% of respondents practised in an institution where TOE was used intraoperatively. Of these respondents, 52% noted that anaesthetists usually performed these TOE examinations with the backup of a cardiologist. Only 19% of these anaesthetists had a formal echocardiography qualification. A similar survey performed in 2001 among cardiac units in the UK found that only 43% of units had an echocardiography machine specifically dedicated to the theatre suite. Although anaesthetists performed the intraoperative TOE in 53% of the cases, only 11% of them were formally qualified.

**British Society of Echocardiography**

The British Society of Echocardiography (BSE) developed an accreditation process for transthoracic echocardiography (TTE) in 1994 and introduced re-accreditation in 2002. This has highlighted the need for quality in echocardiography and has been a major stimulus towards the development of educational courses. This process was intended as a service for BSE members to demonstrate a level of proficiency. Although it was never intended as a credential, some hospital trusts adopted it as such.

**Association of Cardiothoracic Anaesthetists**

Since the early 1990s, the Association of Cardiothoracic Anaesthetists (ACTA) has taken the lead in developing intraoperative TOE within the UK. There are now several well-established ‘hands-on’ courses run by cardiac anaesthetists together with cardiologists under the auspices of ACTA. A TOE subcommittee was founded in 1998 with a view to establish and control the quality of these courses. In 1999, the ACTA Task Force on Certification for Perioperative TOE published a syllabus similar in scope to that of the BSE adult accreditation.

Since the introduction of TOE in the perioperative arena, the spectrum of collaboration between cardiologists and anaesthetists performing TOE has ranged from complete cooperation to outright antagonism. This was attributable to a variety of factors, which included institutional culture, level of training in echocardiography technique, quality of TOE evaluations, and the availability of expensive equipment. In the past, the apparent lack of clear national guidelines from the two societies with a primary interest in perioperative echo, BSE and ACTA, may have contributed to this. In the mid 1990s, both these societies were dedicated to improving patient care and promoting their membership’s interest, but were travelling in the same direction on parallel roads. It was obvious that a need existed for collaboration in order to guarantee the highest quality of care in the practice of perioperative TOE.

For the past 3 yr a Joint Committee of members of ACTA and BSE has been meeting to produce a syllabus and establish a process for a UK accreditation in adult TOE. This accreditation is designed to encompass the needs of every specialty using TOE as part of their everyday practice. It is modelled on the current BSE Adult Accreditation in TTE, and therefore contrary to the USA accreditation process the UK TOE Accreditation is also open to non-clinician echosonographers to recognize their valuable contribution to the development and provision of our perioperative TOE services.

**Transoesophageal echocardiography accreditation**

The accreditation process will consist of two main parts. The practical part consists of the compilation of a logbook of 150 cases, together with the retention of 10 fully recorded patient-studies (digital or videotape), all collected over an 18-month period of supervised training. Prospective candidates must register with a supervisor (anaesthetist, cardiologist or echosonographer) who is appointed by BSE after demonstrating competency and continuing practical involvement in TOE. This supervisor will ultimately certify whether or not the candidate is safe to practice. Candidates from different specialties must achieve comparable expertise; however, they will need different training to reach this goal. The theoretical part requires the attainment of a suitable standard in a multiple-choice and videoclip examination.

The purpose of this accreditation process is to enable recognition of special competence in perioperative TOE against an objective standard, by the broader medical community. It is important to stress that this process involves education as well as examination. It will set the standard and encourage the candidate to continue improving their knowledge and skills. It will also identify strengths and
weaknesses in training programmes. The first examination will be held in conjunction with the BSE Scientific Meeting in October 2003. This will be a pilot examination to enable testing of the examination infrastructure and will count as part of full accreditation for those candidates who are successful. Experience from the NBE examination has shown that examination performance is related to clinical experience in echocardiography and is therefore a valid tool to help determine an individual’s knowledge in this field.27

There are numerous textbooks, educational videotapes and CD-ROMS addressing the topic of perioperative TOE. Several TOE courses endorsed by BSE and ACTA are available across the country. The Association of Anaesthetists of the United Kingdom and Ireland (ACTA) and the European Association of Cardiothoracic Anaesthesiologists (EACTA) have all provided TOE workshops during their annual meetings. In September 2002, the very successful ‘First Annual EACTA Echocardiography Course’ took place in Upppsala, Sweden. Many anaesthetists looking for further training have attended the SCA/ASE ‘Comprehensive Review of Intraoperative Echocardiography’ in the USA over the past 6 yr. Right from the pilot examination in 1997, many anaesthetists have travelled from the UK and Europe to the USA, and have successfully completed the NBE Perioperative Transesophageal Echocardiography Examination. Up till now this was the only way they could test themselves against an authoritative standard of practice in TOE.

The ACTA/BSE accreditation is offered as a means of maintaining standards of training and practice in TOE, and is not intended as a mandatory or regulatory certificate of competence. It is also not intended to be a device for credentialing of individual practitioners. Important to note that TOE during repair of complex congenital cardiac defects is a specialty in its own right that falls outside this remit.28 The candidate for the UK Adult TOE Accreditation should, however, recognize the various forms of basic congenital heart disease as it appears in the adult. In future, the development of an examination and accreditation process in paediatric echocardiography may be an important field for ACTA and BSE to explore.

**Summary**

TOE is here to stay and will fulfil a vital role for today’s anaesthetist and intensivist in the perioperative period. It has the benefits of providing a real-time examination of cardiac structures and function that can be reliable and repeatable. As with many interventions, a full understanding of the limitations and possible artefacts is required to benefit patient care. The development of perioperative TOE services in the UK has not been as expeditious as it might have been if sufficient funding had been forthcoming. This did not detract from the enthusiasm with which this tool has been embraced by anaesthetists. There is no lack of expertise and experience in the UK and Europe, although there remains a need for hands-on training opportunities and the evaluation of competence. We are in an era in medicine where guidelines for training, certification and revalidation are important. The development of formal training and certification in the UK can only improve the quality of the service we offer our patients.

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