# Editorial

## TRAINING AND EDUCATION IN ULTRASOUND-GUIDED REGIONAL ANAESTHESIA

It is quite remarkable speed in which ultrasound has permeated our clinical practice. Whilst ultrasound is not new to medicine but its widespread use in anaesthesia and intensive care has occurred only in the last decade. Terms, such as FAST, FATE and FEEL have only recently entered in the anaesthetic vocabulary. However, the widespread introduction of ultrasound has brought with it concerns relating to competency and training. As the use of ultrasound becomes no longer confined to traditional areas, such as radiology and cardiology, it is important to ensure that this technology is used to benefit patients and not allowed to compromise safety. The greater availability of machines means there is a potential for clinicians to use them without adequate training and supervision.

Concern over the quality of training is perhaps the greatest challenge to the future development of ultrasound. Currently, training is often random, sporadic, and largely determined by local factors and whilst trainees do undertake a logbook record of procedures performed that tells us nothing about the competency in which those procedures were carried out. Accreditation however is an official recognition of quality issued at the end of a process, which must include a defined curriculum, practical training and skills assessment.

Why is this so important? We know that the successful use of ultrasound is highly operator dependent and clinicians using machines without adequate training and supervision may actually increase the complication rate over indirect methods. Ultimately, we all have a legal and ethical responsibility to ensure that we are adequately trained in this new technology not only to satisfy quality and safety scrutiny but also as a quality indicator for appraisal and revalidation. The "See one, do one, teach one" mantra of my formative days is no longer acceptable in today's era of clinical governance and risk management.

In order to change practice, we need to develop a framework, which enables clinicians to introduce ultrasound into their clinical practice in an orderly and structured manner allowing procedures to be performed safely and effectively. Despite the acknowledgement from NICE[1] of the importance of training, there is surprisingly little specific guidance from national bodies as to what is required before using ultrasound technology independently.

So what constituents a training programme, who is going to do the training and how are we going to assess its effectiveness? The Royal College of Radiologists accepts that there is a clinical need for ultrasound to be provided by nonradiologists and has published recommendations[2] emphasising that ultrasound training should consist of both theoretical and practical aspects, whilst most practitioners like to practice first and catch up on education later, theoretical training should ideally be undertaken before using ultrasound on patients. In practice, these two components often go "hand-in-hand" with supervised clinical training. "Remember knowledge without experience is no more useful than experience without knowledge."

In 2009, the American Society of Regional Anesthesia (ARSA) and the European Society of Regional Anaesthesia and Pain therapy (ESRA) jointly published recommendations for education and training in ultrasound-guided regional anaesthesia.[3] It suggests that all clinicians before using ultrasound on a patient should be familiar with some basic concepts, such as understanding the physics of ultrasound, machine familiarisation to optimise the image and infection control. The interpretation of any ultrasound image is dependent on a thorough and detailed knowledge of the relevant anatomy. It is important to understand that when using ultrasound, you "only see what you know"; the structures are not labelled and may be appeared differently from individual to individual. Furthermore, compared to traditional atlas anatomy found in textbooks, ultrasound scans show real time images, which require different learning tools. These theoretical elements of training can be delivered by a combination accredited external courses supplemented by textbook and web-based learning (www.usgain.com).

Practical skills are best acquired by scanning of live models, phantoms and cadaveric preparations. Simulators, which allow for the performance of a virtual block on a computer, are becoming increasingly popular in the early learning stages, as they avoid discomfort and potential harm to patients. Finding a suitable named supervisor can be difficult as many trusts do not have a culture of using ultrasound in regional anaesthesia. Ideally, this should be someone who has had at least two years experience and would normally be of consultant status.

Are there a recommended minimal number of cases to define competence? It has been suggested that 50 examinations in each specific area of interest are required, however different trainees will acquire necessary skills at different rates and the end point should be judged by an assessment of competency. At present, all assessments during training are optional and there is no consensus on whether ultrasound-guided regional anaesthesia should be certified and accredited. Ultimately, it is the responsibility of the practitioner to be able to satisfy local clinical governance requirements by auditing own work in order to demonstrate competence.

Cumulative sum (CUSUM) is an assessment tool that can be used to track the success or failure of a trainee over a period of time.[4] CUSUM utilises the data gathered through logbooks to determine whether or not a trainee has achieved competency in a particular skill, and is generally better than logbooks where an arbitrary number of procedures are decided by committee as to the number of procedures, a trainee requires to be deemed competent. Here the problem is that no account is taken of individual variation in speed of acquisition of new skills. The CUSUM score represents the minimal total of successful and unsuccessful

attempts to perform a particular technique. The value attributed to these attempts depends upon the acceptable failure rate. For instance, if the failure rate is 10% then for each failed attempt, there would be an incremental value of 0.9 and for each success there would be a decrement value of 0.1. CUSUM charts provide a pictorial representation of progress, a negative trend indicating success, whereas a positive trend indicates failure of the trainee to become competent in the procedure.

The use of ultrasound is now well-established in anaesthesia and intensive care. The challenge now is to provide robust and consistent training to ensure that this valuable development continues to become an ever important element of our clinical practice.

## REFERENCES


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