equipment. However, we are worried that the materials and standards to which these instruments are made will not be of the same quality as their reusable counterparts. A recent proposal to the British Standards Institute (BSI), who are developing a standard for disposable laryngoscope blades, suggested that a disposable blade should be able to withstand a primary axis maximal force of approximately 150 N (15 kg) (A.R. Wilkes, personal communication). This was to provide a margin of safety against breakage of the blade when compared with the maximal force of 90 N found when intubating a manikin [1]. It would follow that these proposals would also be applied to completely disposable laryngoscopes. However, it has also been shown that the force applied to a laryngoscope blade varies not only with the material of manufacture [1] but also with the practitioner [2].

Fifteen experienced anaesthetists (seven consultants, eight specialist registrars) used a laryngoscope handle on a stationary object at approximate intubating height and position. They were asked to use the maximum force that they would be comfortable applying to a patient under unexpected difficult intubation conditions. The applied force was measured using calibrated bathroom scales that the participants were unable to see. The results were varied over a range of 70–350 N, and a mean of 151 N.

This simple observation shows that the proposed standards for the disposable equipment would not have been adequate for seven of our 15 participants. It also supports the findings of previous work relating to the inconsistency of forces applied by different anaesthetists [2]. We would argue that the proposals put forward to the BSI regarding disposable laryngoscope blades are inadequate. Any disposable equipment used should be shown to be at least as reliable as its predecessor before implementation is authorised.

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European Computer Driving Licence

With the advancement of information technology (IT) throughout society, and more specifically within hospitals, a baseline competency in IT has become essential for all NHS staff, including anaesthetists. The European Computer Driving Licence (EDCL) is used as the benchmark IT qualification for the NHS, and since March 2003 this qualification has been provided free to all NHS staff. The ECDL was established by the Finnish Computer Society in 1988 and became a National Standard in IT competency in Finland. The Council of European Professional Informatics Society (CEPIS) developed the curriculum during the early 1990s; the only IT qualification to be endorsed by the EU member states as a European Award. By 1996, the British Computer Society began promoting the ECDL within the UK. By April 2004 there were 1 million people in the UK registered with this international IT qualification.

The qualification requires demonstrating competency across seven modules. Competency is assessed by means of tests, which take approximately 45 min each. Each module is tested separately, and successful completion of all seven modules leads to the award of the ECDL qualification. Testing is taken in an accredited test centre, of which there are now approximately 200 NHS centres, in addition to other accredited commercial centres. Since March 2003, the NHS ECDL Portal was launched, giving NHS staff on-line resources to undertake the qualification. This web-based eLearning solution allows NHS staff to learn from any PC connected to the Internet. For non-NHS staff, commercial testing with or without tuition is available.

The ECDL qualification is designed to allow flexible learning and can be completed from a home with access to a computer. The amount of time needed to complete the ECDL is dependent on baseline computer skills, but those with no computer skills should be able to complete the qualification in 80 h. The seven modules are: Module 1-Basic Concepts of Information Technology; Using the Computer and Managing Files; Word Processing; Spreadsheets; Databases; Presentations; and Information & Communication. In November 2003, the NHS Information Authority carried out an online survey of NHS staff who had passed the ECDL to canvass the impact of the qualification on their work. There were 638 responders of 1103 contacted. Respondents estimated an average time saved of 35 min per day (15 min per day for medical staff). Furthermore, all respondents, irrespective of baseline computer skills, had saved more time over a year than they had invested in their learning. Other benefits reported included improved record keeping for governance, better access to health guidance and protocols and more positive attitudes towards the introduction of new electronic patient records. In summary, the European Computer Driving Licence is a benchmark of basic IT competency and should be in every anaesthetist's portfolio. It is available without charge to NHS anaesthetists and widely available commercially for locum or other non-NHS staff.

For more details on registering for the ECDL see http://www.ecdl.nhs.uk, http://www.nhsia.nhs.uk, or http://www.ecdl.com.

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A reusable ultrasound phantom

The use of ultrasound guidance for the placement of a central line catheter (CVC) has assumed increased importance following the issuing of the NICE guideline in 2002 [1]. One of the recommendations was that 'all those involved in placing CVCs using … ultrasound guidance should undertake appropriate training to achieve competence'.

The use of ultrasound simulators (or 'phantoms') is an attractive component in such training. Simulation of the ultrasound appearances during CVC placement might aid the development of the necessary manual co-ordination skills without compromising patient safety. Furthermore, the experiences of part task simulation in the training of other similar clinical skills suggest that it can play an important role [2]. The main disadvantage of phantoms is the production costs and degradation of the ultrasound medium during use. For example, one commercially available phantom costs £225 with a degradation of the image after 50 cannulations or 3 weeks, whichever is the sooner (Instructions for Use, Ultrasound Guided Venous Access Phantom, Department of Clinical Engineering, University of Liverpool, 2003). In addition, improper use such as the injection of fluid or air into the medium can ruin the phantom earlier.

We have developed a phantom for ultrasound training that is cheap, renewable and effective (see Fig. 2). It consists of a 100 mm diameter Perspex cylinder (ICI, UK) with a silastic tube inserted longitudinally and filled with coloured fluid to represent the vein. The silastic tube was 'harvested' from a piece of 22 mm ventilator tubing (Siemens, Bracknell, UK). We use chlorhexidine 0.5% as the 'intravenous' fluid. A silastic rubber skin is placed over a window on the top of the cylinder (DOW Corning Limited, Coventry, UK). The seals are made watertight with silicon rubber compound (RS Components, Corby, UK), which allows easy dismantling for cleaning. A hole is drilled in one end to allow the phantom to be filled with a suitable fluid with realistic ultrasound properties. We have found bacteriological agar (Agar No.1, Bioconnections, Leeds, UK) to be ideal at a reduced concentration to that used for agar plating of microbiological specimens (1 part agar powder to 100 parts water). The agar sets at room temperature in 4 h (and even quicker in a fridge). After use, the agar is melted with hot water or in a microwave and discarded.

The main advantage of the phantom is that each time it is set up, virgin ultrasound appearances are obtained. In addition, it costs little to build initially (£25 per phantom for materials) and virtually nothing to set up (agar cost is 20p per fill). We make up the phantom before each training session and discard it afterwards to minimise the small risk of bacterial propagation. We have used the phantom to train 45 trainees to date, with varying levels of previous ultrasound experience, using the SonoSite 180plus (SonoSite, Hitchin, UK). Feedback has suggested that it provides an excellent simulation of needle entry into a vessel with real time ultrasound guidance in both transverse and longitudinal orientation.

In summary, we believe that we have developed a cheap and realistic simulator for the training of CVC placement under real time ultrasound guidance. The replacement of the ultrasound medium for each session provides excellent ultrasound appearances each time. We would be delighted to discuss our experiences with individuals interested in building their own phantoms.

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Figure 2 Phantom assembled ready for use.

Detection of impending abdominal compartment syndrome

Abdominal compartment syndrome (ACS) is the end result of sustained and uncorrected intra-abdominal hypertension (IAH). IAH is defined as a urinary bladder pressure greater than 18 mmHg (25 cm H_2O) [1]. Various clinical conditions are associated with this syndrome, including massive intra-abdominal or retroperitoneal haemorrhage, severe gut oedema, intestinal obstruction, ascites under pressure, burn eschars, tight abdominal closures and repair of large hernias [2, 3]. Successful therapy often requires abdominal

