therapy unit (ITU) and required only one additional pool of platelets on ITU. She was electively ventilated overnight and was extubated the following morning. The patient made an uneventful recovery thereafter and was discharged from the hospital on the sixth postoperative day. Histology demonstrated placenta percreta.

Massive obstetric haemorrhage is a major cause of maternal mortality [1]. CEMACH (Confidential Enquiry in Maternal and Child Health) suggests risk of maternal mortality with low-lying placenta may be as high as 1 : 200. There is increasing experience of use of rFVIIa in cases of intractable haemorrhage from other causes. rFVIIa promotes clot formation by acting at a number of points in coagulation cascade [2]. The data sheet for rFVIIa suggests potential thrombotic complications (0.6%); however, data from rFVIIa extended use have lack of thrombotic complications in acute bleeding episodes. Use of rFVIIa in major obstetric haemorrhage is 'off label' in the UK [2] and hence it required approval from a consultant haematologist before use. The dose of rFVIIa ranges from 15 to 120 $\mu g\,kg^{-1}$. There is debate regarding the optimal timing of administration of rFVIIa. Loudon and Smith [3] suggest that according to their hypothetical model in terms of cost effectiveness, the optimum time for administration of rFVIIa is after transfusion of 14 units of red cells as cost neutrality was maintained at this point even when two doses of rFVIIa were required. These findings need to be distributed widely as cost continues to be a contraindication for its use in some centres. Currently, there is lack of evidence-based guidelines on use of rFVIIa in major obstetric haemorrhage but this is an area that might merit further study.

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Are anaesthetists adequately trained to resuscitate patients?

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EDITOR:
Resuscitation is not performed on a regular basis by the vast majority of anaesthetists, especially those who no longer form part of a cardiac-arrest team. There is however a perception that anaesthesia is the lead specialty in this area [1]. There is no routine continued assessment of an anaesthetist's capability to perform cardiopulmonary resuscitation nor a specific requirement to maintain one's knowledge. We set out to survey both the level of training and knowledge of the universal algorithm (Resuscitation Council UK Guidelines, 1997) in one region of England to ascertain whether training within the region met recommended standards and whether knowledge was appropriate to clinical need.

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In all, 150 anaesthetists were surveyed from five different hospitals during April 2005. Of them, 49 (33%) had received no formal basic life support (BLS) or advanced life support (ALS) training within the last 3 yr, either internal (provided by the hospital) or external (formal course). Of those who were surveyed, 61 (41%) had completed a Resuscitation Council UK ALS course within the past 3 yr. The proportion of anaesthetists completing this course was less in those in non-training posts compared to those in training posts (Fig. 1).

Of the untrained (no training in the last 3 yr) anaesthetists, 82% knew the first shock energy and 88% knew the dose of epinephrine. For trained anaesthetists this was 87% for first shock and 91% for dose of epinephrine. Knowledge of the algorithm was poor in both the trained and untrained anaesthetists. It has been demonstrated that retention of knowledge after resuscitation training is poor, when re-evaluated over a 6-month period [2]. This emphasizes the need for periodic reinforcement, especially for those who do

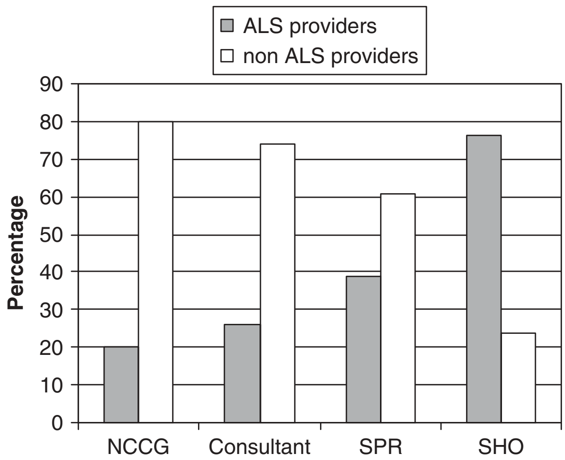

Figure 1.
The percentage of ALS and non-ALS providers for each grade of anaesthetists surveyed (NCCG: non-consultant career grade; SPR: specialist registrar; SHO: senior house officer (junior trainee)).

not attend cardiopulmonary arrests on a frequent basis. Of those who were on a cardiac arrest team, 94% knew the dose of epinephrine and 87% knew the first shock energy with a defibrillator. For those who were not on a cardiac arrest team, this was 83% for dose of epinephrine and 82% for first shock. This demonstrates that regular attendance at cardiac arrests preserves knowledge.

The findings of this survey are similar to previous work. Bell and colleagues [3] assessed the basic and advanced cardiopulmonary resuscitation skills of 30 trainee anaesthetists, and found that the management of ventricular fibrillation and asystole was carried out correctly by only 27% and 30% of anaesthetists, respectively. The conclusion from this study was that all trainee anaesthetists needed to undergo regular training and assessment of their resuscitation skills.

Despite a level of training below recommended standards, 90% of anaesthetists felt they were able to run a cardiac arrest. This feeling seems to be contrary to their overall knowledge of the algorithm. Most anaesthetists work in clinical isolation and in the event of an on-table cardiac arrest would be expected to initially resuscitate the patient. It is important therefore that all grades of anaesthetists are trained appropriately.

Knowledge of ALS and BLS forms an important clinical governance issue for all anaesthetists. It is however the responsibility not only of the individual but also of the relevant hospitals or departments of anaesthesia to ensure that an adequate training structure is provided for all anaesthetists. This is of particular importance when guidelines change, as was the case in 2005.

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Can respiratory-related variations in the optical plethysmograph be a surrogate for respiratory-related changes in arterial pressure?

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EDITOR:
The paper by Cannesson and colleagues [1], comparing respiratory-associated variations in the optical plethysmograph and arterial pulse pressure, was very interesting. It was a tightly controlled study. A study I report here, carried out in New Zealand and in the UK, was of a more uncontrolled clinical nature [2].

With the agreement of local research Ethics Committees in Auckland (NZ) and Cambridge (Addenbrooke's, UK) and the patients' consent, electronic data were collected from anaesthetic monitors (Datex-Ohmeda Division, Instrumentarium Corp., Helsinki, Finland) that were used during major surgical procedures. The scenarios were true clinical situations without standardization of anaesthetic technique. One set of data was collected at 10-s intervals to give an overall physiological picture of events, another set was collected at 100 Hz to enable waveforms of arterial pressure and pulse-oximeter plethysmography to be analysed and free text comments were collected from the anaesthetist. The data were stored on a disk and analysed off-line.

The data were smoothed to enable timestamping of the systolic peaks and then the original values

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