



Table 2 Survey results showing responses from 22 surveyed anaesthetists. Values are number.

	Disagree strongly	Disagree slightly	Neither agree or disagree	Slightly agree	Strongly agree
Standardising the manufacturer/connector of new neuraxial block equipment across the postgraduate school could improve <i>patient safety</i>	0	0	5	10	7
Standardising the manufacturer/connector of new neuraxial block equipment across the postgraduate school could make it <i>simpler for trainees</i> to provide anaesthesia	0	1	4	9	8
I would be willing to give up my first choice of manufacturer/connector in order to standardise neuraxial equipment across the postgraduate school	2	1	2	11	6

[4]. The NPSA have advised that in this situation, affected equipment should be placed on the trust risk register [5]. This implementation will be complex and require co-ordinated management. Our survey shows a clear majority of opinion, among consultant anaesthetists surveyed in the South West region, that standardisation of equipment is desirable for improving patient safety and benefiting trainees' practice. This opinion applies both to a standard for epidural and spinal equipment and more strongly for all spinal equipment used by different physicians throughout each trust. There was also willingness to compromise on first choice of equipment in favour of standardising across the postgraduate training area.

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A complicated case of chlorhexidine-associated anaphylaxis

We present a case of anaphylaxis to chlorhexidine where diagnosis was complicated by concern over potential rupture of a known thoracic aortic aneurysm.

A 74-year-old man scheduled for laparoscopic hemicolectomy underwent pre-operative staging that revealed a previously undiagnosed type B dissecting thoracic aortic aneurysm. This condition was managed conservatively. He was otherwise fit, with no documented allergies and had undergone three previous general anaesthetics uneventfully.

Following application of monitoring, including invasive arterial blood

pressure, we induced anaesthesia with remifentanyl $0.1 \mu\text{g.kg}^{-1}.\text{min}^{-1}$, propofol 100 mg, atracurium 50 mg and labetolol 5 mg. We intubated his trachea and maintained anaesthesia with desflurane in oxygen and air.

Following central venous and urethral catheterisation, the systolic blood pressure suddenly fell to 40 mmHg. Initially resistant to standard doses of ephedrine and metaraminol, the blood pressure stabilised at 90/60 mmHg with a heart rate of 80 beats.min^{-1} , following aggressive volume resuscitation and with an ongoing requirement for vaso-active agents. The oxygen saturation fell to 88% with normal breath sounds and airway pressures.

We suspected the haemodynamic instability reflected rupture or proximal extension of the known aortic dissection, so we arranged emergency transoesophageal echocardiography. This procedure showed no leak or extension of the dissection and an offloaded, hyperdynamic left ventricle with an ejection fraction of 78%.

Thirty minutes following induction of anaesthesia, we noted the patient was markedly vasodilated with widespread erythema. No angioedema was noted. We made a diagnosis of anaphylaxis and sent blood samples for mast cell tryptase. We terminated anaesthesia pending further investigation. There was a minor rise in serum tryptase at 1 h to $11.5 \mu\text{g.l}^{-1}$, falling to $3.1 \mu\text{g.l}^{-1}$ on the following day.

Subsequent skin prick testing revealed a substantial wheal and flare reaction to chlorhexidine. In retrospect, it seems likely that mucous membrane exposure during urethral catheterisation using

Instillagel® (Farco-Pharma GmbH, Cologne, Germany) was responsible for the episode of anaphylaxis. The patient subsequently underwent surgery uneventfully, with avoidance of chlorhexidine.

Our heightened concern regarding the potential consequences of haemodynamic instability at induction of anaesthesia, or during surgery, complicated the diagnosis of anaphylaxis. Obtaining a transoesophageal echo excluded the seemingly likely and catastrophic cause of haemodynamic collapse and provided information leading to the recognition of anaphylaxis.

This case reminded us to consider all potential causes of unexpected haemodynamic collapse in the anaesthetised patient. The use of transoesophageal echo is recommended when severe or life-threatening haemodynamic instability is threatened or present [1], and when unexplained life-threatening circulatory instability persists despite corrective therapy [2]. We are fortunate to have cardiothoracic theatres in the same theatre suite and so were able to contact a cardiac anaesthetist to perform the transoesophageal echo with minimal delay. Many centres will find rapid access to transoesophageal echocardiography more difficult.

We would also encourage colleagues to remember that it is not only drugs administered by the anaesthetist that can precipitate anaphylaxis. The incidence of anaphylaxis to chlorhexidine is under-represented, with centres reporting 13–44% of anaesthetic-related incidences of suspected anaphylaxis testing positive for chlorhexidine sensitivity [3, 4]. A review of data from our local immunology service showed that of 19 proven incidences of anaphylaxis related to general anaesthesia in our centre over the past 15 years, two were attributable to chlorhexidine.

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A novel use for the Apple (4th generation) iPod Touch in the operating room

There are many potential uses of video technology in the operating room; however, few have been implemented. Uses include using video for teaching best practice, monitoring team performance, skills training and operating room command and control [1]. We wish to report an innovative use of two iPod Touch™ devices (Apple, Cupertino, CA, USA) in the operating room environment that we believe have the potential to improve patient safety.

The latest (4th generation) Apple iPod Touch has two built-in high definition cameras. There is a feature built into the device, called FaceTime™, that allows the devices to be used for live video-conferences. Each party can decide to use either the front-facing or rear-facing cameras, depending on what image they wish to show. The devices do not use a conventional phone signal to carry the FaceTime transmission, rather they use any local WiFi network, which is often present in healthcare facilities.



Figure 2 iPod Touch attached to GorillaPod pointing at the 'patient monitor'.



Figure 3 Second iPod Touch at remote location monitoring the first patient's vital signs.

An iPod Touch was mounted on a GorillaPod™ flexible tripod (Joby, San Francisco, CA, USA) using velcro. The tripod was wrapped around a standard intravenous pole mount. The rear-facing camera was pointed to a 'patient' monitor (we used a simulated patient to avoid transferring patient data over an unsecured internal network; Fig. 2). A FaceTime connection was established between the two devices. The second device was at a remote location within the same theatre suite (Fig. 3), but could have functioned identically anywhere else in the hospital. The 'patient' data were displayed on the second iPod Touch that was secured under a second 'patient' monitor. The patient in this case was one of the authors. We found the quality of the video display of the iPod Touch to be acceptable for viewing the vital signs of our simulated patient. There was no perceptible lag, although data transfer rates were not formally measured. The audio quality was also found to be acceptable; a conversation could be held at normal volumes. Our second test involved