

## Anaesthesia

THE SPECIALTY OF ANAESTHESIA has seen rapid development of its scientific and clinical basis and equally rapid changes in clinical practice, often driven by the quality and efficiency pressures of modern healthcare delivery.

**Prevention.** Australia has been a world leader in establishing confidential audits of anaesthetic-related deaths, and, more recently, audits of critical incidents.<sup>1</sup> Australian anaesthesia is among the safest in the world. The potential to further improve the quality and efficiency of patient care by increased anaesthetic involvement in pre- and postoperative care is increasingly recognised.

Patient-controlled analgesia and prolonged epidural analgesia have become routinely available in most hospitals.<sup>2</sup> The range of techniques and drugs used is increasing rapidly as we develop a better understanding of the physiology of pain. This has enabled many elderly or "sick" patients to have major surgery, and for other patients to have a much shorter postoperative hospital stay. The crossover from acute to chronic pain is being clinically recognised earlier, and early interventions to treat neuropathic postoperative pain are more common.

Most elective surgery patients now arrive in hospital only shortly before their operation. This requires comprehensive preadmission patient assessment, intraprofessional communication and teamwork. Perioperative services, including preadmission clinics staffed by anaesthetists and specialised nurses, are becoming widespread. This has improved patient outcomes, reduced length of stay<sup>3</sup> and led to enormous cost savings for the health system generally.

**Diagnosis.** Continuous intraoperative monitoring of many patient variables has become routine and has been shown to improve patient outcomes. The technological development of anaesthetic monitors and "machines" is continuing.

Continuous monitoring of the heart by transoesophageal echocardiography is becoming widespread in cardiac surgery. As a low-morbidity procedure providing unparalleled diagnostic information, it promises to become widespread in "sick" patients having non-cardiac surgery.

There is some controversy about the use of monitoring aimed at identifying intraoperative awareness. The phenomenon of awareness under general anaesthesia is well recognised, although patients' fear of this may be disproportionate to its actual incidence. New devices (BIS monitoring) that use processed electroencephalographic data to (possibly) detect awareness in individual patients are being evaluated.<sup>4</sup> In the United States, media discussion of the problem of awareness, and the possible "prevention" of this by monitoring, has verged on product promotion.

**Interventions.** The widespread adoption of the laryngeal mask has revolutionised airway management. Based on this experience, the appropriate use of the laryngeal mask and endotracheal intubation outside the operating theatre needs to be reviewed.

A number of new (and old) drugs are changing anaesthetic practice. Sevoflurane, an inhalational anaesthetic with

short action and acceptable smell, has largely displaced halothane, particularly in children. A newer inhalational agent, desflurane, which has even shorter recovery but an unpleasant smell, will probably become widely used for relaxant anaesthesia. Remifentanyl, an opioid with a remarkably short duration of action, also promises to change intraoperative anaesthesia, in particular by enabling extremely rapid recovery from deep general anaesthesia. The "setrons" (serotonin 5-HT<sub>3</sub> receptor antagonists) have improved the management of perioperative nausea and vomiting. There is renewed interest in ketamine (an NMDA [*N*-methyl-D-aspartate] antagonist), particularly for pain prevention and management. New analgesics include injectable non-steroidal anti-inflammatory drugs (eg, ketorolac) and tramadol, an opioid which possesses novel non-opiate properties.

Combined general and epidural anaesthesia is becoming widespread for major surgery, particularly as the epidural can readily be used for prolonged postoperative analgesia. Cardiac anaesthesia is changing from the traditional approach based on postoperative overnight ventilation to a variety of "fast-track" techniques, including the use of high thoracic epidurals and short-acting drugs.

Recent studies identifying the benefits of perioperative  $\beta$ -blockade to prevent myocardial ischaemia for as long as six months postoperatively are increasing the use of this intervention. The adverse effects of inadvertent mild hypothermia are now better recognised, and techniques such as warming of intraoperative fluids and forced-air patient warming are becoming standard.

Anaesthetists are now widely involved in intensive/critical care, pain medicine, and preoperative preparation. Complex imaging or therapeutic procedures (such as magnetic resonance imaging, brachytherapy, and endoscopy) mean that anaesthetists are increasingly required outside the operating theatre. There is also a broad need for hospital-based doctors who have procedural skills together with knowledge of acute medicine and perioperative care.<sup>5</sup> These demands and pressures mean that the role of anaesthetists (or "hospitalists") may change considerably in the next decade.

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