

# More about...Anaesthetics

## Optimising the two-month intern training programme

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The new 2-year internship includes a 2-month anaesthetic rotation. The challenge for anaesthesia departments is to make this a relevant and valuable experience for all concerned.

Previously the exposure of South African medical interns to anaesthesia was a 2-week rotation requiring them to 'perform' 40 general anaesthetics. This period mutated into finding the quickest way to obtain 40 signatures for presence in theatre, and then taking the balance of the 2 weeks as vacation!

### Important changes

The Health Professions Council of South Africa has laid down guidelines for interns' achievements during the 2-year period. With regard to anaesthesia this includes achieving certain skills and an assessment of the rotation by the interns and of their performance by their trainers.

### Changing the 'mind set'

The first challenge when this comprehensive training programme was put into place was to change the long-standing attitude of interns and anaesthetic trainers to this rotation. We do not believe that 2 months in an anaesthesia department will make a competent anaesthetist, but a carefully structured and monitored programme will send doctors into the community with some basic anaesthetic skills.

### Competent trainers

The 2-month anaesthetic rotation during the 2-year internship is unique – the interns are not menial servants, but part of the team. Every day should be a step up the learning curve. With this in mind the first change has to be the approach of the trainers. It is always quicker and easier to 'do it yourself'. If the intern is to

achieve any skills, the surgeon has to be tolerant, and the trainer has to have the self-confidence to allow the intern to be an integral part of every case.

### Increasing numbers

A major problem is the inevitable increase in intern numbers, the diminishing theatre time and the finding of suitably qualified and interested trainers. There is a huge variation in the quality of medical graduates, both in their knowledge and attitude to work. This is especially evident in the interns' sense of responsibility. Constant vigilance and encouragement by the trainers in a well-structured anaesthetic rotation can markedly improve the performance of poorer interns, and can aid the transformation from medical student to competent, well-informed and professional doctor.

### Programme structure

In the Pietermaritzburg Hospital Complex there is a comprehensive structured programme. At the beginning of the rotation the interns are given a booklet containing:

- protocols with regard to the functioning of the department and where they fit in
- a list of skills required, with space for 3 trainer signatures certifying competency
- a list of discussion topics for theatre and ICU
- log sheets to record details of cases and with space for trainer signatures
- a daily attendance sheet
- a collection of basic notes replacing the inevitably lost undergraduate notes
- a programme of tutorials and topics for presentation.

Interns are encouraged to build skills in obstetric spinal anaesthesia. Placing them only in the obstetrics theatres is inappropriate, although this is a major part of community service work. Theatre calls do emphasise obstetrics, but the obstetric complication rate is too low for the intern to obtain adequate experience in all aspects of obstetric anaesthesia. Therefore obstetric management is constantly emphasised in tutorials, supplemented by comprehensive protocols. Complementary experience in resuscitation and management of trauma patients is gained in theatre and surgical ICUs. Interns are on call in the ICU, attend ward rounds and learn to be part of the team.

Interns are expected to be part of the preoperative assessment for both elective and emergency patients. In theatre, emphasis is placed on understanding and operating anaesthetic machines and achievement of skills related to airway management. Safe insertion of lines and administering of regional blocks are encouraged. Knowledge of drugs, monitoring of anaesthesia, and recovery room management are stressed.

Regular academic meetings are held with presentations by consultants and interns. Here attendance sheets, log sheets and tick lists are reviewed so that problems are identified and corrected before the end of the rotation. At that stage the intern must give a regional, a general and an obstetric anaesthetic under supervision, with tick-box assessment by the trainers. The intern then has an interview with the domain co-ordinator for a final assessment of his/her performance and a discussion on the merits or problems of the programme.

From our experience during the last 2 years, we have seen that by making the interns welcome in the department, and changing the attitude of the various trainers, the interns have become more interested and motivated and appreciate the more rigid structure of the programme.

## Failed intubation in the district hospital

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The twin potential consequences of failed tracheal intubation are the onset of **hypoxia** and **emergence** of the patient from the anaesthetic. The former may result in hypoxic brain injury or cardiac arrest and death of the patient, while the latter may impair conditions for effective management of the situation. Thus, when tracheal intubation has failed, the primary objective of resuscitation is to establish ventilation by any other means so as to ensure continued oxygenation of the patient.

The first step at this point is to revert back to manual ventilation with a facemask and 100% oxygen to ensure oxygen saturation is above 90%. This will allow an opportunity to re-appraise the situation and formulate the next plan of action, i.e.

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to proceed with the surgery or awaken the patient and postpone. If the decision is made to proceed, the anaesthetic will have to be topped up, not least to assure patient comfort but more importantly to optimise conditions for further airway manipulations.

If on the other hand it is decided to abort the procedure, the patient is allowed to emerge and the procedure rescheduled or other options considered, e.g. local, regional or plexus anaesthesia. If short-acting drugs had been used (propofol, suxamethonium, alfentanil) the patient can be expected to resume spontaneous ventilation shortly. The use of long-acting drugs such as non-depolarising neuromuscular blockers, on the other hand, will require that the patient is manually ventilated for a considerably longer period before spontaneous resumption of breathing or until it is safe to reverse the muscle relaxants (about 20 minutes for most).

**Difficult facemask ventilation** may improve with simple manoeuvres such as neck extension, jaw-thrust or placement of an oral airway. If there is no improvement, call for help and employ a two-person technique where one maintains the airway while the other takes over manual ventilation of the patient. If this still does not resolve the problem, insert a laryngeal mask airway while also excluding other causes of difficult ventilation such as laryngospasm or bronchospasm.

A **secondary attempt at intubating** the trachea implies that surgery cannot be postponed and that it can only be safely done with a tracheal tube in place. If help comes in the form of a more experienced colleague, another attempt at intubating the trachea with the aid of a rigid laryngoscope may be justified. This, however, is only appropriate where long-acting agents have been used, because of the need to avoid further doses of muscle relaxants when dealing with an already compromised airway. A more preferable option is the placement of an intubating laryngeal mask airway (ILMA: Fastrach) and subsequent use thereof to intubate the trachea. There is good evidence in the literature of successful placement of this device even by inexperienced personnel.<sup>1,2</sup> Even if intubation through the mask is unsuccessful the patient will still have a dedicated airway in place that allows positive pressure ventilation. In the absence of the ILMA the classic laryngeal mask airway (LMA) has also been used as a conduit for tracheal intubation.<sup>1,3,4</sup> There are however conflicting data about the success of this technique, thus prompting the Difficult Airway Society of the UK not to recommend its use in this setting.<sup>5</sup> Its effectiveness as an aid to intubation should

improve if used in conjunction with a lighted stylet (Trachlight).<sup>4,6,7</sup>

**Blind tracheal intubation** with the use of a solid or hollow tracheal tube guide (e.g. stylet, gum elastic bougie or tube exchanger) is to be discouraged unless undertaken by an experienced practitioner in a stable, well-oxygenated and easily ventilated patient because it not only exposes the patient to further risk of hypoxic injury, but it may also contribute to deteriorating conditions by worsening tissue trauma, bleeding and airway oedema.

Whereas the flexible fiberoptic bronchoscope (FOB) features prominently in various published guidelines and algorithms for difficult airway management, it is useless in inexperienced hands during an emergency and will not be discussed any further.<sup>3,5,6,8,9</sup>

If **secondary attempts at intubation** have failed, the next step is to maintain oxygenation and ventilation with the dedicated airway device in place (ILMA or LMA) while preparing to awaken the patient or proceed with emergency surgery. It is important to recognise the risk of aspiration of gastric contents in emergency patients whose airways are secured with a LMA. The use of a ProSeal LMA as the dedicated airway device in patients at increased risk of aspiration will mitigate this risk.<sup>5,10</sup> An alternative device is the oesophageal-tracheal combined tube (Combitube), which not only provides a reliable seal against regurgitation, but also allows effective positive pressure ventilation; it can be used as a conduit for secondary tracheal intubation and placement in either oesophagus or trachea will allow ventilation.<sup>1,4,11</sup>

**Failure of ventilation and ensuing hypoxia** despite the techniques described is an indication for an invasive rescue technique.<sup>4,5,8,9,11</sup> A number of user-friendly cricothyrotomy kits are available on the market, but in the absence thereof surgical cricothyrotomy is possibly the most effective alternative (stab incision of skin and cricothyroid membrane and placement of a cuffed ID 5.0 mm ET tube). The use of intravenous catheters for needle cricothyrotomy is fraught with complications and not particularly effective.

In conclusion, every operating theatre complex should have a **difficult airway trolley** with the fewest possible alternative devices with which every practitioner is familiar.

(The reader is referred to the website of the Difficult Airway Society of the UK for a simplified management algorithm: <http://www.das.uk.com>.)

The unanticipated difficult airway trolley should include the following:

- failed intubation airway algorithm chart
- intubating laryngeal mask airway (complete sets of different sizes)
- ProSeal laryngeal mask airways with appropriately sized nasogastric tubes (or intubation catheters) for suction through the oesophageal port
- Combitube (small adult size)
- Trachlight
- nasal RAE tracheal tubes or microlaryngeal tubes (MLT)
- cricothyroid cannula set
- surgical cricothyrotomy kit.

## References

1. Dorges V, Wenzel V, Knacke P, Gerlach K. Comparison of different airway management strategies to ventilate apneic, nonpreoxygenated patients. *Crit Care Med* 2003; 31(3): 800-804.
2. Choyce A, Avidan MS, Shariff A, *et al*. A comparison of the intubating and standard laryngeal mask airways for airway management by inexperienced personnel. *Anaesthesia* 2001; 56: 357-360.
3. Langeron O, Amour J, Vivien B, Aubrun F. Clinical review: management of difficult airways. *Crit Care* 2006; 10(6): 243.
4. Foley LJ, Ochroch EA. Bridges to establish an emergency airway and alternate intubating techniques. *Crit Care Clin* 2000; 16(3): 429-444.
5. Henderson JJ, Popat M, Latta IP, Pearce AC. Difficult Airway Society guidelines for management of the unanticipated difficult intubation. *Anaesthesia* 2004; 59: 675-694.
6. Crosby ET, Cooper RM, Douglas MJ, *et al*. The unanticipated difficult airway with recommendations for management. *Can J Anaesth* 1998; 45(7): 757-776.
7. Agro F, Hung OR, Cataldo R, *et al*. Lightwand intubation using the Trachlight: a brief review of current knowledge. *Can J Anaesth* 2001; 48(6): 592-529.
8. Practice Guidelines for Management of the Difficult Airway: An updated Report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology* 2003; 98: 1269-1277.
9. Berkow LC. Strategies for airway management. *Best Pract Res Clin Anaesthesiol* 2004; 18(4): 531-548.
10. Cook TM, Hommers C. New airways for resuscitation? *Resuscitation* 2006; 69(3): 371-387.
11. Combes X, Le Roux B, Suen P, *et al*. Unanticipated difficult airway in anesthetized patients: prospective validation of a management algorithm. *Anesthesiology* 2004; 100(5): 1146-1150.

## Further reading

- Heidegger T, Gerig HJ. Algorithms for management of the difficult airway. *Curr Opin Anaesthesiol* 2004; 17(6): 483-484.
- Hung O, Murphy M. Unanticipated difficult intubation. *Curr Opin Anaesthesiol* 2004; 17(6): 479-481.
- Scrase I, Woodard M. Needle versus cricothyroidotomy: a short cut. *Anaesthesia* 2006; 61: 962-974.
- Wong EK, Bradrick JP. Surgical approaches to airway management for anaesthesia practitioners. In: Hagberg CA, ed: *Handbook of Difficult Airway Management*. Philadelphia: Churchill Livingstone 2000; 209-210.