

## From the journals

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### Airway changes during labour and delivery

Kodali BS, Chandrasekhar S, Bulich LN, Topulos GP, Datta S. *Anesthesiology* 2008; 108: 357-62

The aim of this prospective study was to evaluate airway changes in women during labour. The authors carried out two studies; the first was to photographically record the conventional Samssoon modification the Mallampati airway classification, at the onset and at the end of labour. The second study involved measuring upper airway volumes using acoustic reflectometry at the onset and conclusion of labour.

In the first study (of 61 patients) there was a significant increase in airway class from pre- to post-labour ( $P<0.001$ ). The airway class increased

one grade higher in 33% and two grades higher in 5% of women during labour. Post-labour 30 patients had an airway class of 3 or 4.

In the second study (of 21 patients) there were significant decreases in oral volume ( $P<0.05$ ), pharyngeal area ( $P<0.05$ ) and pharyngeal volume ( $P<0.001$ ) after labour.

The authors conclude that clinically significant airway changes may occur during labour. Anaesthetists should not rely on pre-labour airway assessment, when planning anaesthesia during or after labour.

### Antimicrobial prophylaxis against infective endocarditis

NICE guideline CG64, 17 March 2008. Available at: <http://www.nice.org.uk/guidance/index.jsp?action=byID&o=11938>

Since 1955 antibiotic prophylaxis has been widely used to prevent infective endocarditis in at risk patients. This practice came from an extrapolation of animal models and observational case-control studies. The assumption that antibiotic prophylaxis is effective for the prevention of infective endocarditis has never been proven.

Four existing guidelines for prevention of infective endocarditis were examined by the National Institute for Health and Clinical Excellence (NICE) to produce their own recommendations. No consistent association between an interventional procedure and developing endocarditis has been shown. The clinical effectiveness of prevention is not proven and the use of antibiotics may result in death from an adverse reaction. It is worth noting that dental procedures induce less bacteraemia than toothbrushing.

The new recommendations are that in patients with valvular heart disease, antibiotic prophylaxis is not needed to prevent infective endocarditis during

- dental procedures,
- procedures of the upper and lower gastrointestinal tract,
- procedures of the genitourinary tract; this includes urological, gynaecological and obstetric procedures, and childbirth,
- procedures of the upper and lower respiratory tract; this includes ear, nose and throat procedures and bronchoscopy.

The guidelines do not specifically look at individuals without heart lesions who are at risk of infective endocarditis (such as intravenous drug users).

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## Use of the HemoCue® near patient testing device to measure the concentration of haemoglobin in suction fluid at elective caesarean section

Gupta A, Wrench IJ, Feast MJ, Alderson JD. *Anaesthesia* 2008; **63**: 531-4

Haemorrhage in obstetrics can be massive and effective resuscitation of patients relies on accurate estimation of blood loss, which can be difficult during caesarean section.

This study investigated the suitability of the Hemocue® photometer to measure the concentration of haemoglobin present in suction fluid in 30 patients undergoing elective caesarean section. Gold standard measurement of the haemoglobin concentration was taken to be laboratory analysis of the fluid. Haemoglobin concentrations obtained by each method were compared. A Bland and Altman plot indicated a good level of agreement between the two methods.

The authors also found that total blood loss, calculated by suction fluid haemoglobin concentration and weight of the surgical swabs was significantly greater than when determined by clinical estimation alone. Mean blood loss was 768ml versus 506ml respectively ( $P<0.001$ ).

The authors concluded that Hemocue® was an accurate method of estimating haemoglobin concentration in suction fluid and that use of this measurement, to calculate intraoperative blood loss, gave consistently higher results than clinical estimation alone.

## Anaesthesia chapter from Saving Mothers' Lives; reviewing maternal deaths to make pregnancy safer

Cooper GM, McClure JH. *British Journal of Anaesthesia* 2008; **100**:17-22

This article reviews the maternal mortality due to anaesthesia from the 2003-2005 Confidential Enquiries into Maternal and Child Health (CEMACH) in the UK. During this period there were 6 deaths directly related to anaesthetic complications and 31 cases where poor perioperative management contributed to death. Of the six women who died, obesity was a factor in four.

The key recommendations were that:

- Better training in tracheal intubation and dealing with the consequences is required.
- Consultants must know the limits of inexperienced trainees and when they may require close supervision.
- Trainee anaesthetists must be able to obtain prompt advice and help from a designated consultant at all times.

- Morbidly obese women should not be anaesthetized by trainees without direct supervision.
- Anaesthetists should be responsible for their patients until full consciousness has returned, with stable cardiovascular and respiratory systems.
- Referral to a consultant should occur if there is any doubt about a woman's condition.

In the further 31 cases poor perioperative management may have contributed to death. These cases could be categorized into poor recognition and management of women with haemorrhage, sepsis and pre-eclampsia. Early warning scores may help identify the mother who is seriously ill and bedside estimation of haemoglobin concentration is valuable.

## The effects of mild perioperative hypothermia on blood loss and transfusion requirement

Rajagopalan S, Mascha E, Na J, Sessler DI. *Anesthesiology* 2008; **108**: 71-7

This meta-analysis looked at the published randomised trials, comparing blood loss and transfusion requirements in normothermic and mildly hypothermic (34-36°C) surgical patients. Fourteen studies were included in the analysis of blood loss, and 10 in the transfusion analysis. The median temperature difference between the normothermic and hypothermic patients among the pooled studies was only 0.85°C. However, total blood loss in the hypothermic patients was 1.16 times that in the normothermic patients ( $P=0.009$ ).

Normothermia also reduced transfusion requirement, with an overall estimated relative risk of 0.78 (95% confidence intervals: 0.63, 0.97).

In conclusion, even mild hypothermia (<1°C) significantly increases blood loss by approximately 16% (95% confidence intervals: 4-26%) and increases the relative risk for transfusion by approximately 22% (95% confidence intervals: 3-37%).

## Management of inadvertent perioperative hypothermia in adults

NICE guideline CG65, 23 April 2008. Available at: <http://www.nice.org.uk/guidance/index.jsp?action=download&o=40429>

Inadvertent perioperative hypothermia is a common but preventable complication of perioperative procedures, which is associated with poor outcomes for patients. The National Institute for Health and Clinical Excellence in the UK has recently published guidelines on this topic. Some of the suggested techniques will not be available in, or appropriate to, all healthcare settings.

**Preoperative phase** - highlight the patients at risks:

- ASA grade 2 to 5 (the higher the grade, the greater the risk).
- Preoperative temperature below 36.0°C (and preoperative warming is not possible because of clinical urgency).
- Undergoing combined general and regional anaesthesia.
- Undergoing major or intermediate surgery.
- At risk of cardiovascular complications.

**Perioperative care** - patients (and their families and carers) should be informed that:

- Staying warm before surgery will lower the risk of postoperative complications.
- They should bring additional clothing to help them keep comfortably warm whilst in hospital.

### Intraoperative phase

- The patient's temperature should be measured and documented before induction of anaesthesia and then at regular intervals until the end of surgery.
- Induction of anaesthesia should not begin unless the patient's temperature is 36.0°C or above.
- Intravenous fluids (500 ml or more) and blood products should be warmed to 37°C using a fluid warming device.
- Patients who are at higher risk of inadvertent perioperative hypothermia and who are having anaesthesia for less than 30 minutes should be warmed intraoperatively from induction of anaesthesia using a forced air warming device.
- All patients who are having anaesthesia for longer than 30 minutes should be warmed intraoperatively from induction of anaesthesia using a forced air warming device.

### Postoperative phase

- The patient's temperature should be measured and documented on admission to the recovery room and then at 15-minute intervals.
- Ward transfer should not be arranged unless the patient's temperature is 36.0°C or above.
- If the patient's temperature is below 36.0°C, he or she should be actively warmed using forced air warming until they are discharged from the recovery room.

## Assessment of knowledge regarding cardiopulmonary resuscitation of pregnant women

Cohen SE, Andes LC, Carvalho B. *International Journal of Obstetric Anaesthesia* 2008; **17**: 20-25

This study evaluated the knowledge of resuscitation of pregnant women amongst anaesthetists, obstetricians and emergency physicians and highlights some basic important concepts.

A 12 question survey was distributed anonymously to residents and faculty in anaesthesia, obstetrics and emergency medicine departments at Stanford University Medical Centre, California. The survey was designed to look at four areas: need for left uterine displacement, advanced cardiac life support algorithms (ACLS), physiological changes of pregnancy and time to perform Caesarean section in unsuccessful resuscitation of cardiac arrest.

Knowledge of important concepts was inadequate amongst all

three specialties, and ACLS training with emphasis on special considerations for pregnant women was recommended.

Modifications to advanced cardiac life support algorithms for pregnant patients are simple and include:

- Left uterine displacement or at least 15° tilt to the left.
- Placing the rescuer's hands 1-2 cm higher on the sternum of a woman at term to obtain better cardiac output with compressions.
- Consideration of immediate caesarean delivery in a patient who has not responded after 4-5 mins of ACLS (see *Update 23*, 2007).