



# OAA / AAGBI Guidelines for Obstetric Anaesthetic Services Revised Edition 2005

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| Dr David Bogod          | Editor-in-Chief AAGBI      |
| Dr Anne May             | RCA representative         |

The Association of Anaesthetists  
Of Great Britain and Ireland  
21 Portland Place, London W1B 1PY  
Telephone: 0207 631 1650  
Fax: 0207 631 4352  
Email: [info@aagbi.org](mailto:info@aagbi.org)  
Website: [www.aagbi.org](http://www.aagbi.org)

Obstetric Anaesthetists' Association  
PO Box 3219 Barnes  
London SW13 9XR  
Telephone: 020 8741 1311  
Fax: 020 8741 0611  
Email: [secretariat@oaa-anaes.ac.uk](mailto:secretariat@oaa-anaes.ac.uk)  
Website: [www.oaa-anaes.ac.uk](http://www.oaa-anaes.ac.uk)

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## SECTION 1 - RECOMMENDATIONS

1. A duty anaesthetist should be immediately available for the Delivery Suite 24 hours per day.
2. There should be a nominated consultant in charge of obstetric anaesthesia.
3. There should be a clear line of communication from the duty anaesthetist to the supervising consultant at all times.
4. The increasing workload in the modern obstetric unit requires an increase in anaesthetic staffing above currently accepted levels. *As a basic minimum*, there should be 10 consultant anaesthetic PAs/sessions for every maternity unit.
5. When obstetric units are so small, or their workload so sporadic, that provision of the basic minimum staffing levels is not cost-effective, consideration should be given to amalgamation with other local units.
6. Women should have antenatal access to information about the availability and provision of all types of analgesia and anaesthesia.
7. There should be an agreed system whereby the anaesthetist is given sufficient advance notice of all potential high-risk patients.
8. Where a 24-hour epidural service is offered, the time from the anaesthetist being informed about an epidural until being able to attend the mother should not normally exceed 30 minutes, and must be within one hour except in exceptional circumstances.
9. Provision should be made for those who cover the Delivery Suite on-call, but do not have regular sessions there, to spend time in the Delivery Suite in a supernumerary capacity with one of the regular obstetric anaesthetic consultants.

10. Separate staffing and resources should be allocated to elective Caesarean section lists to prevent delays due to emergency procedures and provision of regional analgesia in labour.
11. The assistant to the anaesthetist must have no other conflicting duties, must be trained to a recognised national standard and must work regularly in the obstetric unit.
12. The training undergone by staff in the maternity recovery unit and the facilities provided must be to the same standard as for general recovery facilities.
13. Appropriate facilities should be available for the antenatal and peripartum management of the sick obstetric patient.

## SECTION 2 - INTRODUCTION

Since the publication of the joint Association of Anaesthetists of Great Britain and Ireland/Obstetric Anaesthetists' Association (AAGBI/OAA) guidelines in 1998 [1], there have been changes in staffing, training and working time legislation affecting the obstetric anaesthetic service [2,3]. The report on anaesthesia services by the Audit Commission [4] questioned the wide variability of anaesthetic staffing on labour wards and the rationale for using the delivery rate as a measure of staffing requirements. Apart from normal clinical duties, obstetric anaesthetic consultants are involved increasingly in the assessment of patients, teaching, training, administration, research and audit [5]. The calculation of consultant sessions will need to take into account the increase in non-clinical activities in addition to the clinical workload.

A number of national reports have recommended the maintenance and improvement of obstetric anaesthetic services. 'Towards Safer Childbirth', a report of the joint working party of the Royal College of Obstetricians and Gynaecologists (RCOG) and Royal College of Midwives (RCM), recommended minimum standards for the organisation of labour wards [6]. The Confidential Enquiries into Maternal Deaths (CEMD) 1997-99 emphasised the need for a dedicated obstetric anaesthesia service for all consultant-led obstetric units, the anaesthetic pre-assessment of high-risk women and involvement of specialists, early involvement of senior anaesthetists and transfer to intensive care facilities for high-risk cases [7]. This is supported by the Clinical Negligence Scheme for Trusts (CNST) [8].

The National Sentinel Caesarean Section Audit [9] confirmed the increasing Caesarean section rate and the National Institute for Clinical Excellence's (NICE's) guidelines on Caesarean sections have recommended standards related to obstetric anaesthesia [10]. The 7th Report of the Confidential Enquiries on Stillbirths and Deaths in Infancy (CESDI) 2000 indicated that anaesthetic delay was a factor in some cases and made several recommendations [11]. There have also been concerns about the staffing of isolated obstetric units, the level of experience of anaesthetic staff on-call, and the reduction of exposure to emergency general anaesthesia in obstetrics [12,13].

As a result of all the recent findings and recommendations towards the improved administration and delivery of a high quality obstetric anaesthetic service, the OAA and AAGBI have sought to revise the 1998 guidelines.

It is recognised that the provision of safe anaesthetic staffing levels and resources in a maternity unit, as described in this document, is a major financial and organisational undertaking. In small units, or those where the need for anaesthetic input is sporadic, the costs of such provision may be prohibitive. Consideration should be given to amalgamating such units so that safe anaesthetic services can be delivered efficiently and with minimum compromise to other services requiring anaesthetic input.

## SECTION 3 - STAFFING

### Duty Anaesthetist for the Delivery Suite

In the 1998 edition of these guidelines it was assumed that the '1st on' anaesthetist for the Delivery Suite would usually be a trainee. The term 'duty anaesthetist' will henceforth be used to denote an anaesthetist who has been assessed as competent to undertake duties on the Delivery Suite under a specified degree of supervision (see Section 5: Training and Education). It follows that consultant support and on-call availability is essential 24 hours per day. A clear line of communication from the duty anaesthetist to the on-call consultant should be assured at all times.

The duty anaesthetist should be immediately available for the obstetric unit 24 hours per day.

The duty anaesthetist should not be primarily responsible for *elective* obstetric work, which should be able to continue in an uninterrupted fashion in the face of non-elective demands (e.g. regional analgesia or emergency Caesarean sections).

In the busier units (i.e. one or more of the following: >5000 deliveries/year, epidural rate >35%, Caesarean section rate >25%, tertiary referral centres/ high proportion of high risk cases) it may be necessary to provide extra anaesthetic cover during periods of heavy workload *in addition* to the supervising consultant.

In units that offer a 24-hour epidural service, the duty anaesthetist should be resident on site (i.e. not at a nearby hospital). Details of accommodation that should be offered are given in Section 7.

If the anaesthetist has other responsibilities, these should be of a nature that would allow the activity to be delayed or interrupted should obstetric analgesia or anaesthesia demands arise.

Although the difficulties of smaller units in providing dedicated obstetric cover are appreciated, it is strongly recommended that the duty anaesthetist for the Delivery Suite should *not be solely responsible* for the Intensive Care Unit (ICU) and should not carry the 'crash bleep' since that anaesthetist could be urgently required in two places simultaneously. If the duty anaesthetist covers general theatres or ICU, there must be another anaesthetist/intensivist to take over immediately should they be needed on the Delivery Suite. The lead clinician should audit and monitor such arrangements.

Where anaesthetists work a shift pattern, adequate time for formal hand-over between shifts must be built into the timetable. Ideally the timetable of different professional groups should be compatible: e.g. anaesthetic and obstetric shifts should start/ finish at the same time to allow multidisciplinary hand-over.

### **Consultant Anaesthetic Cover**

Each obstetric unit should have a nominated consultant in charge of obstetric anaesthesia services with programmed activities (PAs)/sessions allocated for the administrative work that this entails, in addition to those for clinical activity. The nominated consultant should be responsible for the organisation and audit of the service, for maintaining and raising standards through provision of evidence-based guidelines, for providing anaesthetic input to the Delivery Suite working party and equivalent multidisciplinary bodies, and for risk management.

The previous recommendation of the AAGBI/OAA [1] and the RCA [14] of a minimum of one fixed consultant session per 500 deliveries is no longer adequate for the following reasons:

- **Changes in workload:** Anaesthetic workload is increasing. The demand for regional analgesia and the Caesarean section rate continue to rise. Parturients are getting older and more obese, and the number with pre-existing disease is growing. The number of multiple pregnancies (due to IVF) is rising. All these are associated with increasing morbidity [7, 13].

- **Changes in expectations/role:** The area of responsibility of the obstetric anaesthetist has expanded (see Section 4 – Services and Standards). As provision of care becomes more consultant-based, more consultant time will be required: ideally consultant obstetric anaesthetic PAs/sessions should be covered during periods of leave by consultants, using flexible working arrangements.

It is likely that, in the very near future, the RCA/AAGBI will recommend that there should be a named anaesthetic consultant for all elective lists and that no trainee should do elective work in remote sites unless under level 2 supervision (consultant in the theatre suite).

Both may require an increase in the amount of consultant time in the Delivery Suite / maternity theatres.

- **Changes in workforce:** Due to reduction in the duration of training and the number of hours worked, trainee anaesthetists are becoming less experienced with a concomitant increase in the amount of level 1 *supervision* required. They are expected to receive more formal training. The amount of formal *assessment* required has increased markedly (see Section 5). Ongoing *appraisal* is also mandatory. All these activities are associated with significant amounts of paperwork for the consultant. Due to the Working Time Directive, the work patterns of anaesthetists in training has changed. In many maternity units, intensity of night time work has required the trainees to adopt shifts or partial shifts. In order to provide adequate supervision and training, consultant PAs are needed to cover more hours out of every 24.

In light of the above, the following are suggested:

*As a basic minimum for any consultant-led obstetric unit, there should be 10 consultant anaesthetic PAs / sessions per week, to allow full 'working hours' consultant cover. If this degree of consultant anaesthetic cover is deemed to be excessive given the activity of the obstetric unit, this may indicate that the 'stand-alone' status of the unit is insupportable.*

In units in which trainee anaesthetists work a full or partial shift system consideration should be given to providing additional consultant time to allow training and supervision into the evening, on one or more occasions per week. The number of such additional hours should be increased where there is a high turnover of trainees (3-month interval or more frequent).

Extra consultant time should be available to units which are busier than average (see above). When formal elective Caesarean section lists are necessary (see Section 4 – Services and Standards), there should be a separate consultant available (especially in the busier units).

Tertiary referral units which are likely to have a higher than average proportion of sick mothers should have extra consultant time allocated. Extra clinical time should be made available per week for antenatal referrals, especially where a formal clinic is provided.

When there is no consultant available to cover the Delivery Suite during 'normal working hours', there should be a nominated consultant to cover who must be instantly able to leave a list to attend the Delivery Suite if necessary.

Each unit should display prominently the name of the consultant responsible for the Delivery Suite at that time. That consultant should not be more than half an hour away from the Delivery Suite at any time. The names of ALL consultants covering the Delivery Suite should be prominently displayed, and contact numbers readily available.

### **Staffing of Theatre and Recovery & Assistance for the Anaesthetist**

Parturients requiring anaesthesia have the right to the same standards of peri-operative care as all surgical patients, including appropriate anaesthetic assistance. Training must be to the standard as defined in the AAGBI document 'The Anaesthesia Team' [15]. If such a person is not available for any reason, a registered nurse or midwife with current and effective registration, who has received equivalent anaesthesia training acceptable to the consultant in charge of obstetric anaesthesia services, should be employed to perform such duties.

The person trained to a recognised standard should assist the anaesthetist on a regular basis, not only occasionally, to ensure maintenance of competence. Such a person thus employed should have no other duties in the operating department at that time, (i.e. the midwife attending the mother and baby cannot also assist the anaesthetist) [15]. Newly-recruited assistants should undergo a period of induction before taking up duties on the maternity unit.

The training undergone by staff in recovery, whether these are midwives, nurses or ODPs, must be to the level recommended for general recovery facilities [16]. A midwife with no additional training is not adequately trained for recovery duties.

Maintenance of standards requires continuous update and staff should work in a general theatre recovery unit on a regular basis to ensure maintenance of competence.

When high dependency care is required, the midwife/nurse-to-patient ratio must be at least one midwife/nurse to two patients. Staff appropriately trained for high dependency care staff should be available 24 hours per day.

All staff must be given regular access to continuing professional development.

There should be a named consultant anaesthetist and obstetrician responsible for all HDU patients 24 hours per day [14].

## SECTION 4 - SERVICES and STANDARDS

Paragraphs typed in bold are auditable standards.

There should be induction programmes for all new members of staff including locums. Locums should be assessed and vetted prior to undertaking unsupervised work.

A trained Resuscitation Team should be available.

There should be a system for multidisciplinary Critical Incident Reporting in the maternity unit that should involve the obstetric anaesthetic team.

### **Antenatal**

Women and purchasers should be informed of the level of availability of anaesthesia and regional analgesia in each unit.

**Antenatal education: when feasible, women should have access to information, in an appropriate language, about all types of analgesia and anaesthesia available, including information about related complications [17,18].**

This should be a detailed unbiased explanation about pain relief and operations under regional and general anaesthesia. It should be documented that women have received this information. It is still necessary to give the patient an explanation at the time of the proposed procedure (see Consent).

Guidelines should be available to obstetricians and midwives on conditions requiring antenatal referral to the anaesthetist. A system should be in place to ensure that such women are seen and assessed by a senior anaesthetist within a suitable time frame, preferably in early pregnancy.

## Consent

There is no difference between the principle of obtaining consent for obstetric anaesthesia and any other medical treatment [19].

The patient is entitled to receive an explanation of the proposed procedure in appropriate language. Interpreters should be made available to women who do not speak English; if at all possible these should not be family members. The explanation should include the nature and purpose of the proposed procedure, as well as any material risks attached to it. The patient should have the opportunity to ask any questions.

**All explanations should be documented.** The use of pre-printed labels to insert in the record as confirmation of the explanation is recommended.

## Pain Relief In Labour

Consultant obstetric units should be able to provide regional analgesia on request at all times. Smaller units may be unable to supply dedicated cover at all times – women booking at such units should be made aware that epidural analgesia may not always be available. **In units providing a 24-hour epidural service, the time from the anaesthetist being informed about an epidural until they are able to attend the mother should not normally exceed 30 minutes, and must be within one hour except in exceptional circumstances.**

The anaesthetist is responsible for ongoing regional analgesia in labour and must be able to assess the mother as required.

Midwifery care of a mother receiving epidural analgesia in labour should comply with local guidelines. The midwife must be trained to an agreed standard in regional analgesia and be aware of potential complications and their management. The midwife must be able to assess and document sensory block height.

Units should have guidelines for management of epidural blocks and there should be appropriate levels of medical and midwifery staff for delivery of the service. If the level of midwifery staff is considered inadequate, epidural block should not be instituted. Units should be able to provide low-dose regional analgesia [20].

Regional analgesia should not be used in labour unless an obstetric team is immediately available in the same hospital to treat emergencies.

There should be a locally-agreed regional analgesia record, and a protocol for the prescription and administration of epidural drugs.

There should be locally-agreed guidelines on antacid prophylaxis and fasting in labour.

### **Anaesthesia For Caesarean Section**

There should be a suitably-trained senior member of either nursing, midwifery or ODP staff with overall responsibility for the safe running of obstetric theatres, who ensures that current standards in all aspects of theatre work are met. He or she must have extensive experience of working in theatre and must undertake the role on a regular basis. This individual should ensure all staff who work in theatre are appropriately trained, and undergo regular appraisal and continuous professional development.

*“The theatre manager should be responsible for maintaining communication with staff groups, and ensuring competent staffing and suitable equipping of all theatres” [21].*

For recommendations on assistance for the anaesthetist see Section 3.

All women requiring Caesarean section should, except in extreme emergencies, be visited and assessed by an anaesthetist before arrival in the operating theatre. They should receive written information about anaesthesia for Caesarean section when the procedure is booked [18].

Protocols should be available for management of postoperative pain.

### *Elective Caesarean Section*

Larger units and those with high Caesarean section rates should have elective Caesarean section lists with dedicated obstetric, anaesthetic and theatre staff to minimise disruption due to emergency work.

**Delays in elective cases should be audited.**

**There should be a named consultant anaesthetist with responsibility for elective section lists.**

In many units, mothers will be admitted on the day of surgery. They must be seen pre-operatively by an anaesthetist. **They should receive written information about anaesthesia for Caesarean section when the procedure is booked.** There should be arrangements for prescription of pre-operative antacid prophylaxis and for laboratory investigations.

### *Emergency Caesarean Section*

An operating theatre must be readily available for women requiring emergency Caesarean section, with appropriately-trained staff available on site.

There should be a clear line of communication between the duty anaesthetist, theatre staff and ODP once a decision is made to undertake an emergency Caesarean section. Urgency of Caesarean section should be categorised by a system agreed locally by obstetricians, anaesthetists, theatre staff and midwives [9,22], and the anaesthetist should be informed about the category of Caesarean section.

There should be clear guidelines available for whom to call if two emergencies occur simultaneously. Anaesthetists in other parts of the hospital may need to be summoned initially if the second anaesthetist is attending from home.

## Recovery, HDU and ICU Facilities

*“All patients must be observed on a one-to-one basis by an anaesthetist, recovery nurse or other appropriately-trained member of staff until they have gained airway control and cardiovascular stability, and are able to communicate” [16].*

Trained recovery staff should be in constant attendance for at least 30 minutes after the procedure or until discharge criteria are met. Discharge from the recovery area should be in accordance with an agreed protocol.

High dependency care should be available on or near the Delivery Suite with appropriately-trained staff or, if this is unavailable, women should be transferred to a general HDU in the same hospital.

Adult intensive care facilities should be available on site.

## Postnatal

Ideally, all women who have received regional analgesia, anaesthesia or general anaesthesia for labour and delivery should be reviewed following delivery. Women must fulfil locally-agreed discharge criteria before going home.

**It is part of the lead consultant’s role to ensure there is an audit programme in place to audit complication rates (e.g. accidental dural puncture rate) and problems.**

If complaints are made about aspects of care, mothers should be reviewed, interviewed and examined as appropriate by a consultant anaesthetist; this should be documented. Referral for further investigations may be required. Complaints should be handled according to local policies.

## SECTION 5 - TRAINING and EDUCATION

Each obstetric unit with an anaesthetic service should have a nominated consultant responsible for training in obstetric anaesthesia. This consultant may or may not be the lead clinician for obstetric anaesthesia. Programmed activity time should be allocated for the work arising from these responsibilities.

### Anaesthetic Trainees

An appropriate training programme, as defined by the RCA, should be in place for anaesthetic trainees according to their grade:

- Senior House Officers (SHOs) [23].
- Specialist Registrars (SpRs) years 1 and 2 [24].
- SpRs years 3,4 and 5 [25].

A process should be in place for the formal assessment of trainees prior to allowing them to go on call for obstetric anaesthesia with distant supervision [26]. This assessment applies to:

- SHOs new to obstetric anaesthesia.
- More experienced trainees who are working in the UK for the first time.
- Newly-appointed SpRs who have not successfully completed a formal assessment.

A typical SHO would undertake this assessment after approximately 20 supervised obstetric 'sessions' taken within a 4-month period. Supervision must be undertaken by a consultant who is a recognised specialist in obstetric anaesthesia. More experienced trainees, whatever their grade, may be deemed ready for assessment after a shorter period of familiarisation. Assessment will include competence to conduct regional and general anaesthesia for Caesarean section as well as regional techniques for pain relief in labour.

## **Anaesthetists Not In Training**

Any doctor providing anaesthetic cover on the Delivery Suite must ensure that their own knowledge and skills are kept up to date. This should include regular multidisciplinary meetings and attendance at appropriate CPD activities.

Any non-consultant career grade / SAS anaesthetist who undertakes anaesthetic duties in the Delivery Suite must have been assessed by the consultant in charge of obstetric services as competent to perform these duties in accordance with OAA and RCA guidelines. Such a doctor must work regularly in the Delivery Suite but must also regularly undertake non-obstetric anaesthetic work to ensure maintenance of a broad range of anaesthetic skills.

Provision should be made for those who cover the Delivery Suite on-call, but do not have regular sessions there, to spend time in the Delivery Suite in a supernumerary capacity with one of the regular obstetric anaesthetic consultants. The frequency of these sessions will vary for each individual.

## **Others**

Anaesthetists should contribute to the education/ update of midwives, ODPs, anaesthetic nurses and obstetricians, covering the scope and limitations of obstetric anaesthesia services.

Anaesthetists should help organise and participate in regular multidisciplinary 'fire drills' of emergency situations including haemorrhage and collapse.

## SECTION 6 - PROFESSIONAL RELATIONSHIPS

### Anaesthetists and midwives

'Midwifery-led care' refers to all cases in which the lead professional for the case is a midwife rather than an obstetrician. This type of care may be delivered in a variety of units. If regional analgesia is required, the anaesthetist may be the only medically-qualified person involved with the labour/ delivery. The recent development of Consultant Midwife posts means that autonomous midwifery-led care is likely to increase in the future.

It is recommended that the following criteria should be met whenever a hospital or maternity unit is proposing that anaesthetists should work directly with midwives who are acting as lead providers of obstetric care:

- There should be a consultant-led obstetric service on site.
- Hospital information leaflets on anaesthesia and regional analgesia should be available to all women. These documents should be agreed by the anaesthetists, midwives and obstetricians.
- There must be guidelines in place for the management of regional analgesia that have been agreed by anaesthetists, midwives and obstetricians. Midwives practising independently but intending to make use of a regional analgesia service must agree to follow the guidelines of the unit where they deliver their clients.
- The midwife requesting the epidural must be trained in its management to a standard acceptable to the anaesthetist responsible for the service, must undergo regular refresher training, and must be managing regional analgesia on a regular basis.
- The midwife must allow the anaesthetist access to any woman considering regional analgesia who wishes to discuss pain relief options.

- If the anaesthetist feels that an obstetric opinion is necessary, he/she should consult the midwife in the first instance. However, if necessary, the anaesthetist may consult directly with the obstetricians, but should inform the midwife that this is his/her intention.
- All decisions regarding regional analgesia must rest with the anaesthetist.

## **Anaesthetists and Obstetricians**

The anaesthetist is an integral part of the team caring for maternity patients participating in the management of over 50% of parturients in a typical unit. As such, it is essential that a good working relationship is established between anaesthetists and obstetricians, whether at consultant or non-consultant level.

Anaesthetists should encourage and facilitate consultation in the antepartum period by making themselves available when antenatal clinics are in progress and by ensuring clear lines of referral. A system for the antenatal assessment of high risk mothers should be in place with 24-hour access to the information on the Delivery Suite.

Good communication on the Delivery Suite is vital in order to minimise last minute referral and the hasty decision-making that often ensues. Anaesthetists should make themselves known to obstetricians who should, in turn, keep them informed of developing problems. There should be formal arrangements in place for inter-disciplinary hand-over at the beginning and end of each shift.

Obstetric anaesthesia/analgesia guidelines, that are evidence-based and referenced, should be available on the Delivery Suite. If possible these guidelines should also be posted on the hospital Intranet. These guidelines are designed to supplement the midwifery and obstetric (and, where appropriate, the obstetric HDU) guidelines.

Anaesthetists must have some managerial responsibility and should be involved in planning decisions that affect the delivery of maternity services. Anaesthesia should be represented on the Maternity Services Liaison Committee, Labour Suite Working Party, obstetric directorate and any other bodies involved in the planning and delivery of such services.

### **Other professionals**

As the proportion of high-risk cases increases, it is important that anaesthetists develop good lines of communication with other professionals, both from other disciplines and colleagues with different subspecialties [6]. Thus obstetric anaesthetists must be readily able to liaise with intensivists, neurologists, cardiologists, haematologists, other physicians and surgeons.

## **SECTION 7 - SUPPORT SERVICES, FACILITIES and ACCOMMODATION**

For the efficient functioning of the obstetric anaesthetic service, the following support services, facilities and accommodation are essential. The standards of equipment and monitoring must be the same as that of non-obstetric anaesthetic service.

### **Support Services**

Haematology and biochemistry services must be able to provide rapid analysis of blood and other body fluids, and to make blood and blood products for transfusion available without delay according to clinical need. A supply of O rhesus-negative blood should be available in the Delivery Suite at all times for emergency use. Blood gas analysis and the facility for rapid estimation of haemoglobin should be available on the delivery suite.

Pharmacy services are required for the provision of necessary routine and emergency drugs. The provision of sterile pre-mixed low dose local anaesthetic combined with opioid solutions for regional analgesia should be available as well as other sterile opioid solutions used for patient-controlled analgesia.

There must be rapid availability of radiological services.

Medical physics technicians are required to maintain, repair and calibrate anaesthetic machines, monitoring and infusion equipment.

Hotel services must provide suitable on-call facilities including housekeeping for resident and non-resident anaesthetic staff. Refreshments must be available throughout the 24-hour period.

There must be adequate secretarial support for the antenatal anaesthetic assessment clinic and other duties of the consultant obstetric anaesthetist – teaching, research, audit, study, appraisal activities and other administrative work.

## Facilities

The delivery suite rooms must be equipped with monitoring equipment for the measurement of non-invasive blood pressure. There should also be readily available equipment for monitoring ECG, oxygen saturation, temperature and invasive haemodynamic monitoring if required. All delivery rooms must have oxygen, suction equipment and access to resuscitation equipment.

Delivery Suite rooms must have active scavenging of inhalational analgesics to comply with COSHH guidelines on anaesthetic gas pollution [27].

There must be easy and safe access to the Delivery Suite from the main hospital at all times of the day.

There should be at least one fully-equipped obstetric theatre *within* the Delivery Suite. Where this is not possible, a lift which can be commandeered for the rapid transfer of women to theatre must be available. The number of operating theatres required should depend on the number of deliveries and operative risk profile of the women delivering in the unit.

The standard of monitoring in the obstetric theatre must allow the conduct of safe anaesthesia for surgery. This will include a minimum of ECG, non-invasive blood pressure, pulse oximeter, capnograph, oxygen and agent analyser, facilities for invasive monitoring, disconnection monitor, airway pressures monitor, monitoring of neuromuscular block and temperature [28]. A blood warmer allowing the rapid transfusion of blood and fluids as well as warm air blankets must be available.

A difficult intubation trolley with a variety of laryngoscopes, tracheal tubes, laryngeal masks and other aids for airway management must be available in theatre. The maximum weight that the operating table can support must be known and alternative provision made for women who exceed this. The operating table should be able to support a weight of *at least* 160 kg.

Adequate recovery room facilities including the ability to monitor systemic blood pressure, ECG and oxygen saturation must be available within the Delivery Suite theatre complex [28]. Patient-controlled analgesia equipment and infusion devices must be available for postoperative pain relief.

A fully equipped High Dependency area should be available in units caring for high-risk obstetric patients. Access to the ICU must be available for all obstetric patients. Portable monitoring with facility for invasive monitoring must be available to facilitate transfer of obstetric patients to the ICU.

For obstetric units on site but not part of the main hospital, adequate links or transport arrangements must be in place to allow the safe transfer of obstetric patients to the main theatres or ICU.

### **Accommodation**

An anaesthetic office, in proximity to the Delivery Suite, should be available to the duty team. The room should hold a computer with intra/internet access for the audit of the anaesthetic service and access to up-to-date information. A library of specialist reference books/journals and local multidisciplinary evidence-based guidelines must be available. The office space, facilities and furniture should comply with the standards recommended by the AAGBI guidelines [29].

There should be a separate anaesthetic consultant's office available to allow teaching, assessment and appraisal which should comply with AAGBI guidelines [29].

A communal rest room in the Delivery Suite should be provided to enable staff of all specialities to meet. A seminar room(s) must be available for training, teaching and multidisciplinary meetings.

There should be a 'rest' room for the duty anaesthetist in a quiet area suitably equipped for rest, napping and study [30, 31]. Where a consultant is required to be resident, the on-call accommodation provided should be commensurate with their status [32].

## SECTION 8 - THE FUTURE

Obstetric anaesthetists will continue to be actively involved in audit, research, teaching and the delivery of an obstetric anaesthetic service.

Obstetric anaesthetists must continue to be represented nationally on committees relating to maternal and child health, and ensure that both the Department of Health and the Government hear our opinions. Although it is difficult to be certain, challenges for the future are likely to be in the following areas:

### **Finance**

The NHS is well used to financial constraints and these will continue, though the priority of maternity services within the provision of health services by the Government is hard to predict. At a local level, the budget for obstetric anaesthetic services is often not clearly defined. Funding becomes confused as the responsibility falls between two directorates, namely, the anaesthetic and the obstetric directorates.

### **Demographic changes**

These will affect both the workforce and patients. The trends already noted in Section 2 are likely to continue and such trends can only increase the demands and complexity of the work presented to obstetric anaesthetists.

There is no clear indication of how the Caesarean section rate will change though it is unlikely to decrease due to many of the above factors.

### **Public demand**

The changing relationship between patient and doctor means that women require more information, and informed consent is becoming an ever-increasingly demanding process. Increasing access to the internet means that information available to the public on obstetric anaesthetic issues is often extensive, if not always accurate.

For some years, the OAA has been producing information for mothers, but not all Trusts are prepared to pay for dissemination of such information. Dealing with complaints and risk management in general will become increasingly time consuming.

### **Changing workforce**

At present, there is a 6% expansion in anaesthetic posts but with inadequate numbers of entrants into anaesthesia or even to medical school for some years. The Working Time Directive combined with this shortage of anaesthetists will force us to consider alternative models of anaesthetic services. This is already being investigated by the NHS Modernisation Agency, and there is an ongoing pilot study to train nurses to perform labour epidurals. However, it is not clear how this could help provide an obstetric anaesthetic service, particularly out of hours, as such a person would always need an anaesthetist readily available on site, for back up and to provide anaesthesia for operative deliveries.

There is an increasing shortage of midwives and our ability to provide a safe service could be limited by this.

The WTD will limit the time available for training. In addition, the use of regional anaesthesia for operative deliveries has meant that training in general anaesthesia in obstetrics is limited. The use of simulators and scenario training should be investigated as alternatives to 'hands on' experience.

### **Future developments**

An increasing shortage of blood and blood products, and growing anxiety about the use of donor blood, is leading to an increasing interest in the use of cell salvage in obstetrics [33, 34]. Staff will have to be suitably trained and the equipment obtained and maintained.

Research may give us more understanding of the pain and process of labour and may suggest alternatives to Entonox, which is likely to be withdrawn from use, due to environmental concerns.

## SECTION 9 - LIST OF RECOMMENDED PROTOCOLS

All departments should provide and regularly update the following guidelines as a minimum:

- Conditions requiring antenatal referral to the anaesthetist
- Management of major haemorrhage
- Management of pre-eclampsia and eclampsia
- Management of failed/difficult intubation
- Management of high regional block
- Management of regional anaesthesia including
  - regional block for analgesia
  - regional blocks for surgery
  - inadequate regional block
- Management of accidental dural puncture
- Management of postdural puncture headache
- Hypotension during regional block
- Admission and discharge criteria from/to HDU
- Management of regional techniques in patients on thromboprophylaxis
- Antacid prophylaxis for labour and delivery
- Oral intake during labour
- Resuscitation of the pregnant patient

All guidelines should be readily accessible

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**THE ASSOCIATION OF ANAESTHETISTS**  
*of Great Britain & Ireland*

**21 Portland Place, London W1B 1PY**  
**Tel: 020 7631 1650**  
**Fax: 020 7631 4352**  
**Email: [info@aagbi.org](mailto:info@aagbi.org)**  
**[www.aagbi.org](http://www.aagbi.org)**