A national survey of obstetric anaesthesia guidelines in the UK

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ABSTRACT
Background: In May 2005 the Obstetric Anaesthetists’ Association (OAA) and Association of Anaesthetists of Great Britain and Ireland published a document entitled Guidelines for Obstetric Anaesthetic Services. This survey investigated if standards recommended in this document were being met more than six months after its release.

Methods: An OAA-approved questionnaire was sent to all obstetric anaesthesia lead clinicians across the UK, using the OAA mailing database. Standards investigated were those in relation to anaesthesia for caesarean section and postnatal audit programmes. The availability of 14 recommended clinical guidelines within departments of obstetric anaesthesia was also investigated.

Results: The response rate for the national survey was 79.3%. Not all departments met the standards set out in the guidelines for anaesthesia for caesarean section with only 61.2% of obstetric units having consultant-led elective lists carried out independently of emergency procedures. Eighty percent of units surveyed had postnatal audit programmes in place but only 58.8% generated a regular report from such programmes. The clinical guidelines recommended for obstetric departments were available to varying degrees. Guidelines for haemorrhage, preeclampsia and difficult/failed intubation were available in all units but only 34.6% of units had all 14 recommended guidelines available.

Discussion: This national survey illustrates to what extent UK departments meet national guidelines for provision of obstetric anaesthesia services. It also highlights areas for improvement nationally and could be used by individual units to plan resources in the future.

Keywords: Obstetric anaesthesia; Standards; Postnatal audit; Guidelines

Introduction

In May 2005 the Obstetric Anaesthetists’ Association (OAA) and the Association of Anaesthetists of Great Britain and Ireland (AAGBI) published a booklet Guidelines for Obstetric Anaesthetic Services – Revised Edition. This followed an edition published in 1998. Neither of these organisations has statutory powers over anaesthetic practice, but both regularly produce guidance aimed at improving safety and quality of practice. This latest publication added to a number of existing documents including the Audit Commission’s 1997 report Anaesthesia Under Examination, which examined a number of issues including anaesthesia staffing levels on labour suites. In the 1997–1999 Confidential Enquiries into Maternal Deaths there were specific recommendations for the provision of anaesthesia services. The 1999 publication Towards Safer Childbirth: Minimum standards for the organisation of labour wards produced by the Royal College of Obstetricians and Gynaecologists (RCOG) recommended minimal organisational standards for delivery of care. The updated document Safer Childbirth: Minimum standards for the organisation and delivery of care in labour which came out in 2007 again from the RCOG in conjunction with, amongst others, the Royal College of Anaesthetists, specifically detailed the role of anaesthetists in obstetrics.

The stated aim of the 2005 OAA/AAGBI document was to recognise changes in practice that had been highlighted in documents published between 1998 and 2005 and bring the previous edition up to date. This survey aimed to assess how closely UK obstetric anaesthesia practice matched the standards set out in this document.

Methods

Embedded within the text of Guidelines for Obstetric Anaesthetic Services – Revised Edition hereafter referred to as “the OAA/AAGBI document”, are highlighted statements, which the authors intend to be auditable standards. We have taken these standards from the text and classified, listed and numbered them 1-6 reflecting the order they appear in the text (Table 1). From this
we identified two standards that could be easily audited on a national basis (standards 4 and 6). We then combined these standards with the list of recommended protocols in the OAA/AAGBI document, which were considered to be a minimum set of clinical guidelines that all obstetric anaesthesia departments should provide and regularly update (Table 2). This combination of two auditable standards and 14 departmental guidelines was used to construct our survey questionnaire (Appendix 1).

Six months after the publication of the guidance and following approval by the OAA Audit Subcommittee the survey was sent, initially in electronic format, to each of the 208 obstetric anaesthesia lead clinicians registered on the OAA database. A paper copy with a pre-paid return envelope was sent by post to all the targeted clinicians who had not replied after three months. Returns were collated by a single investigator (LM) on an Excel Spreadsheet and the results presented as descriptive statistics.

Results

We received 67 responses by email and a further 98 by post. In total our response rate was 79.3% (165/208).

Auditable standard 4: Anaesthesia for caesarean section

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

In the UK 61.2% of units that replied met this standard. Amongst those that did not, many units did not have separate elective lists independent of services for emergency caesarean sections. Others had a second consultant anaesthetist available but lacked resources or theatre staff to run a separate theatre.

Auditable standard 6: Postnatal audit programme

It is part of the lead consultant’s role to ensure that complication rates (e.g. accidental dural puncture rate) and problems are audited regularly.

Departmental guideline availability

Overall 34.6% of units had the full set of guidelines available, with the remaining 65.4% missing one or more. Guidelines referring to haemorrhage, pre-eclampsia/eclampsia and difficult/failed intubation were

Table 1 OAA/ AAGBI auditable standards

<table>
<thead>
<tr>
<th>Area of care</th>
<th>Auditable standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal education</td>
<td>1. 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.</td>
</tr>
<tr>
<td></td>
<td>2. All explanations should be documented.</td>
</tr>
<tr>
<td>Pain relief in labour</td>
<td>3. In units providing a 24-h 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 min and must be within one hour except in exceptional circumstances.</td>
</tr>
<tr>
<td>Anaesthesia for caesarean section</td>
<td>4. There should be a named consultant anaesthetist with responsibility for elective section lists.</td>
</tr>
<tr>
<td></td>
<td>5. They [mothers] should receive written information about anaesthesia for caesarean section when the procedure is booked.</td>
</tr>
<tr>
<td>Postnatal audit</td>
<td>6. It is part of the lead consultant’s role to ensure that complication rates (e.g. accidental dural puncture rate) and problems are audited regularly.</td>
</tr>
</tbody>
</table>

Table 2 Availability of OAA/AAGBI recommended guidelines in UK obstetric departments

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions requiring antenatal referral to the anaesthetist</td>
<td>77%</td>
</tr>
<tr>
<td>Management of major haemorrhage</td>
<td>100%</td>
</tr>
<tr>
<td>preeclampsia and eclampsia</td>
<td>100%</td>
</tr>
<tr>
<td>failed/difficult intubation</td>
<td>100%</td>
</tr>
<tr>
<td>Management of regional anaesthesia including:</td>
<td></td>
</tr>
<tr>
<td>regional blocks for analgesia</td>
<td>92.1%</td>
</tr>
<tr>
<td>regional blocks for surgery</td>
<td>88.5%</td>
</tr>
<tr>
<td>Management of complications of regional anaesthesia including:</td>
<td></td>
</tr>
<tr>
<td>inadequate regional block</td>
<td>81.2%</td>
</tr>
<tr>
<td>accidental dural puncture</td>
<td>94.5%</td>
</tr>
<tr>
<td>post dural puncture headache</td>
<td>90.9%</td>
</tr>
<tr>
<td>hypotension during regional block.</td>
<td>74.5%</td>
</tr>
<tr>
<td>high regional block</td>
<td>73.9%</td>
</tr>
<tr>
<td>Management of regional techniques in patients on thromboprophylaxis</td>
<td>81.8%</td>
</tr>
<tr>
<td>Admission and discharge criteria from/to HDU</td>
<td>60.6%</td>
</tr>
<tr>
<td>Antacid prophylaxis for labour and delivery</td>
<td>98.8%</td>
</tr>
<tr>
<td>Oral intake during labour</td>
<td>83%</td>
</tr>
<tr>
<td>Resuscitation of the pregnant patient</td>
<td>81.8%</td>
</tr>
</tbody>
</table>

HDU: high dependency unit
present in all the units surveyed. Four guidelines: antenatal referral, high block, hypotension and high dependency unit (HDU) criteria were present less than 80% of the time, with the latter guideline being the least frequently available at 60.6%. The full list of guidelines with their availability in units surveyed is displayed in Table 2.

Discussion

This survey has demonstrated a lack of consistency in practice between UK obstetric anaesthesia units. The OAA/AAGBI guidelines suggest that an ideal unit has at least two separate theatre teams, one for emergency and one for elective work, with a consultant responsible for the elective list. At the time of the survey, existing recommendations were for at least one consultant anaesthesia session (a 5-h period) per 500 deliveries.2 This has since been upgraded to a minimum of 10 sessions, with additional sessions for elective lists, clinic cover and for tertiary referral units with complex cases.6 Some units in the survey were able to provide a second consultant, others had trainees or non-consultant career grade doctors (doctors who have completed training but work under the direction of consultants) available.

The second component of the OAA/AAGBI recommendations for an ideal unit was to have a system of post-natal audit, whereby complications such as post dural puncture headache, can be identified and fed back to clinicians. Lastly this ideal unit should have a core set of available guidelines to assist the clinicians’ decision making in a variety of emergency situations.

The text of the OAA/AAGBI document refers to these practices as “auditable standards”. Whilst the phrase is not enlarged upon, the National Institute of Clinical Excellence (NICE) describes audit as follows: “Clinical audit is the component of clinical governance that offers the greatest potential to assess the quality of care routinely provided for National Health Service users”.7 This implies that these standards can be subject to a process of examination, and that they have a tangible relationship to the quality of care that users of obstetric anaesthesia services receive.

Anaesthesia for caesarean section

When asking lead clinicians if they have a named consultant with responsibility for elective section lists, we decided to break this standard into two parts. Firstly, we asked if there was an elective list with separate staff and resources in their unit. We also asked if there was a dedicated consultant to carry out these elective lists as there would be little point in having a dedicated consultant if other resources were not available to run elective caesarean section lists separately.

It may seem surprising that only 61.2% of obstetric departments in our survey had staff and resources for elective caesarean section lists separate from emergency procedures arising from labour wards. For each hospital that did have these facilities, a dedicated consultant anaesthetist was available to take responsibility for anaesthesia. Therefore, due to lack of other resources including theatre staff, 38.8% of obstetric units could not carry out consultant-led elective caesarean sections independently of emergency work. The Royal College of Anaesthetists has reinforced the recommendation that a separate consultant anaesthetist be available for formal elective caesarean section lists, particularly in busier units, in their guidelines for obstetric services.6 Therefore, obstetric departments that have decided to run elective section lists should strive to provide the staff and resources to allow these lists to be consultant-led and to be conducted separately from emergency work.

In the UK the National Collaborating Centre for Women’s and Children’s Health commissioned by NICE have recommended that in cases of suspected or confirmed acute fetal compromise, delivery should be accomplished as soon as possible. Thirty minutes has been suggested as the time limit to achieve this,9 but it is accepted that in many cases this time scale may be too long. Clearly in obstetric units that cannot carry out elective sections independently of emergencies, the situation could arise where emergency delivery could be delayed whilst the theatre team complete an elective case.

Postnatal audit programme

It is reassuring that 80% of UK obstetric anaesthetic departments have a postnatal audit program. This means that most women who receive regional analgesia or anaesthesia are seen by an anaesthetist in the early post-partum period as recommended by the 2007 Safer Childbirth document.6 This should help identify complications that may benefit from further follow-up. It may not be surprising to many obstetric anaesthetists, however, that such audits are regularly reported in only 58.8% of obstetric anaesthetic units. Although it may be time-consuming to generate such reports, the information that can be gleaned regarding success and complication rates is useful and may improve anaesthetic services. Generating reports is made easier if post-natal audit is recorded on forms that can be summarised into a report electronically. Whether audit systems were paper based or electronic was not recorded as part of our survey.

Departmental guideline availability

Although the OAA/AAGBI document uses both terms ‘guideline’ and ‘protocol’, we have restricted ourselves
to the term guideline to avoid confusion. It would appear that many anaesthetic departments have well-established guidelines within obstetric departments to advise on treatment. Most of the recommended guidelines are available in more than 80% of UK units, with some of the key emergency guidelines such as those for haemorrhage, preeclampsia/eclampsia and difficult/failed intubation being present in all units. However, only 34.6% had the full set of guidelines available. As the OAA/AAGBI document refers to these as a minimum set of guidelines that should be present and updated regularly, it is disappointing that most units have incomplete guidelines. The reason is not easily answered from our survey, as we did not specifically ask whether the units had altered their protocols following the publication of the report.

It is unlikely that responding clinicians were unaware of the OAA/AAGBI document, as this short, easy-to-read publication was mailed to all members of the Association of Anaesthetists of Great Britain and Ireland and is available as a link on the websites of both organisations. A few responses had free text stating that they were in the process of writing more guidelines, suggesting that six months after the publication of the document was too short a time for some to update their list. There are many published studies of the effect of the introduction of clinical guidelines. A study from the Netherlands demonstrated that doctors, in this case general practitioners, were more likely to follow clear, non-controversial guidance that had an evidence base and that ‘vague’ recommendations were followed less frequently. Our survey suggests this effect may be relevant, with the core non-controversial guidelines such as the management of haemorrhage being in place. The OAA/AAGBI document does not make any recommendations about what should be in the guidance, or what evidence base underlies each, so this may have influenced uptake of those guidelines perceived as ‘vague’.

Introducing new guidelines can be time consuming, with many units lacking the resources to produce their own fully researched evidence-based documents and often adopting existing guidelines as a result. The 2007 Safer Childbirth document identifies the production and updating of protocols and guidelines as a duty of the lead obstetric anaesthetist within each unit. Therefore resources should be put in place to allow this to be done.

The lack of any template guidelines in the document or from other national bodies may have contributed to the low adoption of new guidelines. One response from a consultant-only unit suggested that they regarded such protocols as being more important for units that had trainee anaesthetists, and had thus given this a low priority.

Four guidelines were available in less than 80% of units. The first related to conditions requiring antenatal referral to the anaesthetist, which was available in 77% of units. Such a guideline can be used by medical and midwifery staff caring for women antenatally allowing them to make appropriate referrals to obstetric anaesthetists in selected conditions drawn up by the anaesthetic department. Such referrals may be helpful in conditions as diverse as drug dependency, obesity and heart disease. Referral guidance may help clinicians run efficiently, aid communication between anaesthetic and obstetric staff and provide an opportunity for patient education. In 2005, a survey of UK obstetric units showed that only 30% of units ran a formal anaesthetic pre-assessment clinic with 70% relying on ad hoc referrals. Therefore a guideline on conditions for referral for anaesthetic assessment could assist in the care of high-risk pregnancies, where financial or organisational constraints prevent the establishment of formal clinics.

The 2007 Safer Childbirth document reemphasises the need for a guideline for antenatal referral to the anaesthetist to be used by obstetricians and midwives.

Guidelines for the management of high regional block and hypotension under regional anaesthesia were available in 73.9% and 74.5% of units respectively. Because of the overlap in their management these could easily be combined or linked, and subsumed within a ‘Management of regional anaesthesia’ guideline, which was available in most units. The incidence of high regional block in obstetrics, following either epidural or spinal anaesthesia, has been variably quoted in different studies between 1985 and 2000. In a 1997 UK survey of anaesthetic techniques for caesarean section conducted by Shibli and Russell, the incidence of high regional block following epidural top-up for emergency caesarean section requiring conversion to general anaesthesia was 1:2470. In the same survey, the incidence of conversion to general anaesthesia for emergency spinal was 1:3019 and for elective spinal was 1:5334. In contrast, Kar and Jenkins’s study of 81 322 obstetric epidurals in 2000 gave an incidence of high regional block as only 1:27 107. Life-threateningly high regional block is rare, being quoted as one in every 16 200 epidurals in a further study by Jenkins in 2005, but arguably guidelines are most useful when a practitioner encounters a problem with which they have no previous experience. An editorial by Yentis and Dob in 2000 reviewing the incidence of high regional block suggested a drill for high regional block in obstetrics be formalised in each obstetric unit. They gave an example of such a drill, which other departments could use to form a guideline.

A guideline for admission and discharge criteria from/to HDU was present in only 60.6%. Our experience locally is that HDUs within obstetric units vary widely in size and facilities. Furthermore, they vary in the level of training of midwifery or nursing staff caring for patients in this setting. Many obstetric anaesthetists believe that provision of high dependency/intensive care
facilities in obstetrics lags behind that in other spheres.\textsuperscript{24} A postal survey of all UK units in 1997 examining high dependency and intensive care facilities, showed that only 41\% had specific obstetric high dependency beds.\textsuperscript{25} Management of critically ill obstetric patients may be better on a maternity suite than on a general HDU as obstetric staff are experienced in the altered physiology and demands of mothers and babies. Moreover, the availability of such facilities within maternity suites can avoid hazards of transport and improve continuity of antenatal and postnatal care.

The utilisation rate of obstetric high dependency facilities varies between units. A study conducted in 2000 in Dublin reported that 1.02\% of all deliveries required HDU care with 0.04\% needing transfer to intensive care unit.\textsuperscript{26} The commonest reasons for an obstetric patient to need critical care are hypertensive disorders and haemorrhage, and at least 50\% can be managed with an intermediate (HDU) level of care, which is significantly cheaper than ICU.\textsuperscript{27} Clearly admission guidelines must be able to recognise that someone is sufficiently ill to require critical care and be able to stratify them to either HDU or ICU. We were unable to find evidence-based guidance in the literature for obstetric cases, but there is some suggestion that scoring systems can help identify those suitable for critical care in the general surgical population.\textsuperscript{28} It is likely that such systems would need modification before being useful in obstetrics; for example APACHE II over-estimates mortality in this group.\textsuperscript{27} Discharge criteria from critical care seem to be largely based on expert opinion\textsuperscript{29} and are in many instances organisational rather than based on clinical guidelines. In practice most admission and discharge decisions will be made by a consultant obstetrician and anaesthetist in consultation. Therefore guidelines should help other staff identify at-risk patients and the need to refer for a senior opinion.

The OAA/AAGBI document contains other audit-able standards listed in Table 1. However, standards on antenatal education, consent and response times (1,2,3 and 5) could be audited only by retrieving information from individual case records or by interviewing each patient. A pilot review of departmental databases available in the West of Scotland Deanery revealed that no unit had a sufficiently detailed record system that could be accessed as an alternative to auditing individual parturients. We are aware of systems that record response times for labour analgesia (standard 3), but we suspect that this would not be typical of UK practice. Although the document makes no mention of it, intuitively it would seem easier to audit a standard if its compliance is recorded at each patient episode. It may therefore be worthwhile for units to consider adding this information to their databases. For the purpose of this survey we decided to include only those standards that could easily be reported by the lead clinician in each department, such as the availability of a named consultant anaesthetist for elective caesarean section lists and the presence of a postnatal audit program. This information, together with the availability of the 14 recommended departmental guidelines formed our survey.

The survey form was designed to be short and completed with minimal effort by the clinician, using mainly a tick box format, although free text could be used if required. The design was partly influenced by research into improving postal survey return rates,\textsuperscript{30} specifically being short, including pre-paid return envelopes, following up non-responders and having authorisation from a nationally recognised body. Financial constraints limited our use of other strategies known to improve response rates such as recorded delivery or coloured ink. Using monetary incentives, which doubles response rates,\textsuperscript{30} was felt to be inappropriate for this type of survey. However the response rate of 79.3\% is comparable to similar national surveys in obstetric anaesthesia.\textsuperscript{31,34}

In conclusion this national survey of standards and guidelines has examined how far UK obstetric anaesthetists conform to recommendations from the OAA/AAGBI on the provision of guidelines. The majority of units in the survey came close to matching the minimum list of departmental guidelines, but only a minority had adopted the full set. It is possible that units had insufficient time to write new guidelines, given the difficulty of finding evidence on which to base such guidance. We would suggest that if template guidelines had been included in the OAA/AAGBI document the adoption rate might have been higher. A named anaesthetist was not universally available for elective caesarean sections, presumably reflecting resource and organisational differences between units. Whilst postnatal audit is undertaken in most units, a lack of regular dissemination of the results may limit its value as a feedback mechanism to improve practice.

Acknowledgements

We would like to thank the OAA for approving the national survey, for access to the list of lead clinicians of obstetric anaesthesia in the UK and for all those taking time to reply to the survey.

References


Appendix

A national survey of standards and guidelines in obstetric anaesthesia Please tick yes or no in response to the following questions:

Do you have an elective caesarean section list?  
i.e. a theatre list with separate staff and resources independent of the emergency caesarean sections

If yes, is there usually a dedicated consultant anaesthetist for elective caesarean sections in your unit?

Is there a postnatal audit programme in place in your unit, to audit complication rates and problems of general and regional anaesthetic procedures?

Is a report of these data generated regularly from your unit?

Is each of the following guidelines present and available within your unit?

- Conditions requiring antenatal referral to the anaesthetist
- Management of major haemorrhage
- Management of preeclampsia and eclampsia
- Management of failed/difficult intubation
- Management of high regional block
- Management of regional anaesthesia including
  - Regional blocks 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