“What are the challenges likely to be faced by obstetric anaesthetists over the next decade and how might these be addressed?”

Since the OAA formed in 1969, the specialty of obstetric anaesthesia has developed considerably. Anaesthetists play an important and ever expanding role in the maternity team; being responsible for ensuring that labour analgesia, regional and general anaesthesia are administered safely and effectively and also for the resuscitation and care of women with life-threatening complications of pregnancy and childbirth. We have a duty not only to improve safety and quality of care, but also to contribute towards efficiency savings of the NHS. These challenges come at a time when the birth rate is rising and the proportion of high-risk and complex pregnancies is increasing. This in addition to a change in the way obstetric services are funded and a call for increased consultant presence on delivery suite presents several challenges for the future of obstetric anaesthesia.

One of the most recognised sources of the increased obstetric anaesthesia workload is obesity. As the overall incidence of obesity in the general population has increased so has the prevalence amongst pregnant women\textsuperscript{1,2}. The complications of obesity in pregnancy include an increased risk of pre-eclampsia, thromboembolism and miscarriage. Obese parturients have a higher rate of instrumental or surgical delivery and a greater risk during procedure\textsuperscript{3,4}. The caesarean section rate for women with a BMI > 35 is 37% compared to 25% in the general population. The general anaesthetic rate is 7.7% compared to 5.5% in the general obstetric population\textsuperscript{5}. The 2011 Confidential Enquiry into Maternal and Child Health’s report on maternal deaths demonstrated that a disproportionate number of maternal deaths occurred in women who were either overweight or obese (49%) compared to those with a normal BMI\textsuperscript{6}. 
Combatting the problems of maternal obesity should be multi-disciplinary. Ideally, obesity should be managed before conception. All pregnant women need to have their BMI calculated at the earliest opportunity and monitored throughout pregnancy. Those with a BMI > 35 should be referred for antenatal anaesthetic assessment. Anaesthetic departments should nominate an obstetric anaesthetist with a special interest in the obesity. In smaller departments this may become an additional role of the lead obstetric anaesthetist. This anaesthetist should work with the obstetric team to formulate a local policy for the management of the obese parturient and have a responsibility to ensure appropriate equipment is available (large BP cuffs, theatre table with safe working load, hoists, difficult intubation aids, ramping pillow, long spinal and epidural needles) and that theatre staff and junior anaesthetists have the appropriate training in the use of these devices and manual handling of bariatric patients. A recent meta-analysis has shown that ultrasound imaging can be a useful adjunct for lumbar punctures and epidural catheterisations. The use of ultrasound for this purpose may become more widespread in future years as we encounter patients with larger BMIs who may present a challenge for regional anaesthesia. Funding for point of care ultrasound equipment and training obstetric anaesthetists in the technique of ultrasound guided regional anaesthesia presents a further challenge for obstetric units.

At present the anaesthetic curriculum does not have specific competencies for management of obese pregnant women. Given the rising prevalence of obesity this should be incorporated into the curriculum from an early stage. Anaesthetists obtaining their initial assessment of competence in obstetrics should have an awareness of the increased risks in obese parturients, the anaesthetic challenges they may present and how to manage these. At an intermediate
level, trainees should attend obstetric anaesthetic clinics to gain experience in assessing these patients and formulating management plans. This training should be evaluated by both workplace based assessments and review of their anaesthetic logbook to ensure that anaesthetic trainees on call for the delivery suite have appropriate training and experience in managing the obese parturient.

Since 1976 there has been a continuing rise in maternal age. In 2012 the average maternal age in England and Wales was 29.8, compared to 27.9 in 1992. Increasing maternal age is associated with increase in obstetric intervention including instrumental delivery, elective and emergency caesarean section and epidural usage. Improved medical care and assisted reproductive techniques are now enabling women with chronic medical conditions that previously precluded them from pregnancy to become pregnant, adding to the more complex workload. The lead obstetric anaesthetist should be responsible for setting up antenatal anaesthetic clinics to see all high risk pregnant women in order to identify potential problems such as difficult iv access, regional or general anaesthesia. An anaesthetic management plan for labour and delivery should discussed with the patient and documented in her notes as well as consideration of referral to other specialties, the need for thromboprophylaxis and management of any anticoagulation perinatally.

When an obese or otherwise high risk parturient presents in labour there needs to be a system to alert the on call obstetrician, obstetric anaesthetist and theatre team of their presence. This could involve documenting all patient BMIs and any anaesthetic alerts on the in-patient board (provided it is in a private area) and nominating the team leader to contact the duty anaesthetist when a high-risk patient arrives. The patient should be seen by the anaesthetist at the earliest opportunity and have their anaesthetic plan reviewed. Structured documented
handovers must occur between midwives, obstetricians and anaesthetists to ensure that this information is communicated at shift changes.

More complex pregnancies and a rising birth rate can also increase the workload of critically ill obstetric patients. In the most recent CEMACE enquiry there were 261 maternal deaths from causes related to pregnancy\textsuperscript{6}. In 2007 there were 513 pregnant or recently pregnant women admitted to critical care\textsuperscript{11}. Major haemorrhage remains the leading cause of admission to critical care. Other diagnoses include eclampsia, sepsis, thromboembolism, acute organ dysfunction and anaesthesia-related morbidity such as aspiration, anaphylaxis and muscle relaxant-related problems. One of the findings of the CEMACE report was an unacceptable level of suboptimal care. Early detection of severe illness in obstetric patients is a challenge due to altered physiology and increased reserves. Use of a track and trigger system like the modified early obstetric warning score (MEOWS) helps to identify sick patients early and prompt referral for expert help. A nationalized, validated early obstetric warning score should be formulated and used by all NHS trusts. Obstetric anaesthetists should be involved in agreeing appropriate triggers for escalation of care, auditing the use of early warning scores and ensuring that referrals to critical care are acted upon appropriately and in a timely manner. If outreach teams are involved in the assessments of pregnant women for escalation of care then they should have additional training, ideally by obstetric anaesthetists, to include awareness of physiological adaptations to pregnancy and pregnancy-specific conditions.

Changes to intensive care training means that future obstetric anaesthetists may have less experience in critical care unless they choose to dual-accredit. Similarly, future intensivists coming from a non-anaesthetic background may not have completed training in obstetric
OAA Membership number 6713

anaesthesia. As a result is it going to be vital to share expertise between critical care, obstetricians, anaesthetists, midwives and nurses in order to optimise the care seriously ill pregnant women receive\textsuperscript{12}. Critical care networks can provide a framework to facilitate this. In addition, the anaesthetic training curriculum should include more competencies in the management of critical illness in obstetrics, particularly at the advanced level.

The RCOA Obstetric Anaesthesia Service guideline specified minimum levels of anaesthetic staffing for consultant-led obstetric units\textsuperscript{13}. These included a minimum of ten consultant anaesthetic sessions per week separate to elective lists and provision of 24-hour anaesthetic cover, which should be on site if an epidural service is offered. The objective is to deliver a quality service that improves patient care but also contributes towards training and development of staff. The recommendations set a standard expected for departmental accreditation but also help obstetric units provide a business case for additional funding. There is also a motion towards 24-hour consultant presence on the delivery suite. This has come at a time when European Working Time Directive makes it difficult to provide specialty-specific 24-hour cover.

Having a consultant anaesthetist on site overnight has advantages for patient safety but also has huge impact on costs, provision of daytime service and training. Smaller obstetric units may not have enough workload to justify such levels of anaesthetic staffing and therefore become uneconomical to run. If junior anaesthetists are removed from on call rotas to reduce costs and hours they will miss out on valuable training experiences. One solution already being implemented is to amalgamate smaller maternity units. This is not only more economical but more importantly results in high patient quality care by facilitating increased consultant presence and ensuring that specialists are centrally located together where the
workload is greatest. However closing maternity units is contradictory to the Department of Health’s pledge for women to have the choice of where to give birth and can mean that in some areas women are travelling significant distances for obstetric care. An alternative to avoid closure of maternity units would be for the consultant anaesthetist allocated to the delivery suite during the daytime to use time not required for obstetric work to support other professional activity (P.A.). This could include participating in audit, teaching or continuing professional development, provided that they are immediately available to for emergency work on the delivery suite. As some trusts are reducing P.A. allocations in new consultant contracts, this could provide a business case for keeping the number of P.A sessions constant whilst making S.P.A. time and obstetric services in smaller units more financially viable.

One proposal for reducing the cost of providing 24-hour consultant cover would be to have a two-tier fee system overnight. The consultant anaesthetist could be allocated a reduced P.A. for the hours they are resident overnight. A trainee anaesthetist would be on site and manage the majority of the obstetric workload with the consultant providing near supervision. If the consultant anaesthetist directly undertakes clinical work during these hours then they could be “paid by results” similar to the private sector. This also ensures that anaesthetic trainees are gaining valuable experience on call while having the support of a senior anaesthetist if required.

Some of the future challenges for training in obstetric anaesthesia have already been discussed. With reduced training hours anaesthetic trainees are gaining less experience in obstetrics. This means that more consultant input is required but new consultants may also be less experienced. Training in obstetric anaesthesia should be delivered as a dedicated
block of training in large consultant led units with exposure to a combination of high and low risk pregnancies, elective and emergency work. The teaching programme must incorporate simulation training with the multidisciplinary team including midwives and obstetricians and participation in antenatal anaesthetic clinics to develop experience in managing a variety of pregnancy complications and comorbidities. Obstetric anaesthesia fellowships are an invaluable way of gaining further experience and broadening knowledge. With reduced training numbers and EWTD it can be difficult for deaneries to facilitate out of region fellowships due to rota gaps. This can be detrimental, as observing how practice may differ in other regions and countries can be a very useful learning experience and can benefit local units. One way to help enable out of region fellowships would be for deaneries to set up exchange programmes with other deaneries and countries to ensure that service provision can be maintained while benefitting both the trainees and the deaneries. Having an updated list of national and international fellowships, as on the OAA website also helps trainees to organize advanced training fellowships.

A recent article in the BMJ has highlighted the issues of rising litigation in maternity care\textsuperscript{14}. Between April 2000 and March 2010 there were 172 maternity claims involving anaesthetic issues, with an estimated total value of £19 million\textsuperscript{15}. The national audit office has reported that the number of claims rose by 80\% between 2007 and 2013. As a result 1/5 of all funding for maternity services in England is now spent on clinical negligence cover\textsuperscript{16} and there has been a sharp increase in professional indemnity fees for individual doctors. The majority of claims relate to inadequate anaesthesia, issues of consent and complications of regional anaesthesia\textsuperscript{17}. 
In addition to the financial implications, increasing medico-legal claims against obstetric anaesthetists raises questions about patient safety, has an impact on patient confidence in anaesthetists and can affect job satisfaction. Lessons could be learned from sharing information about litigation in obstetric anaesthesia, which might prevent similar complaints arising in the future. However the majority of claims are never made available to clinicians for educational purposes due to the lack of a regular system to collect, process and disseminate the information. This represents a missed opportunity. The NHSLA provides an overview of litigation but not much specialty-specific detail. Introducing an anonymised national database of medico-legal cases in obstetric anaesthesia could maximize the learning opportunities from these claims.

The NPSA has defined seven steps to patient safety\(^{18}\), which are:

1. Build a safety culture
2. Lead and support your staff
3. Integrate your risk management activity
4. Promote reporting
5. Involve and communicate with patients and the public
6. Learn and share safety lessons
7. Implement solutions to prevent harm

Building a safe culture and supporting staff relies on effective teamwork. Teamwork contributes to performance by reducing errors and improving the quality of patient care\(^{19}\). Midwives and doctors can have different approaches to patient care and the need for intervention in labour. Communication between anaesthetists, obstetricians and midwives,
particularly at shift changes and during emergencies, is not always effective and it can be unclear who is leading the team. Effective handover not only improves teamwork and communication, but also patient safety. We as anaesthetists need to implement the use of a structured handover tool such as the SAFE handover to improve the quality of information shared\textsuperscript{20}. To improve communication in a clinical setting, we should encourage the use of the SBAR method to outline what information should be conveyed between members of the team, thus further developing teamwork and promoting patient safety\textsuperscript{21}. Effective teamwork relies on different members of the team having an understanding of each other’s role. Integrating training opportunities such as organising multi-professional resuscitation courses and simulation training could facilitate this. Regular departmental audit and risk management meetings should involve the whole maternity team and provide a forum for suggesting ways to improve service quality.

Supporting team members is vital at a time when workload is increasing and there is a growing amount of non-clinical responsibilities such as audit, risk management and implementation of clinical guidelines. Midwife numbers (expressed as whole time equivalents per delivery) have reduced slightly over the last 30 years and total midwife hours worked have fallen by 14\% between 1994 and 2004, resulting in the current number of midwives being below recommended levels. This is despite considerable expansion of their role and an increase in administrative duties. The shortage of midwives may result in there being insufficient staffing to provide one to one care, which could affect choice of labour analgesia e.g. remifentanil PCA. It is important that we as obstetric anaesthetists rally together with the wider maternity team to encourage trusts to recruit additional staff, employ
clerical staff to undertake paperwork, update IT systems and adopt paperwork that is easy to complete e.g. tick-box forms.

Analysing litigation in a particular area can lead to a prospective national audit of events and recommendations to improve patient safety can be made as a result. An example of this is the third National Audit Project and subsequent NPSA 2009 Safety Alert: Safer Spinal, Epidural and Regional devices. Despite this guidance there has been a failure to implement a single design of non-Luer lock connector for neuraxial and regional anaesthesia that has undergone satisfactory testing before its introduction. Sterility concerns and the lack of an international standard has meant that the implementation of devices covered by Part A of the NPSA’s 2009 Safety Alert (spinal needles and syringes) has varied in different parts of the UK. By April 2011 all intrathecal injections and lumbar puncture samples should have been performed with safer connectors that will not connect to iv Luer connectors. However in February 2013 only 55 hospital trusts in England were using non-Luer spinal devices. Due to the focus on developing and introducing new spinal needles, there has been a knock on effect on devices covered by Part B of the guidance which had a target implementation date of April 2013. With standards due to be finalised in 2015, trialling and introducing new neuraxial and regional needles will continue to be an issue in the coming years.

In the next ten years we will see many changes in the way maternity care is delivered and our role as obstetric anaesthetists. An increasing workload, changes in staffing, training and working time legislation are the key challenges faced. The future is likely to involve amalgamation of maternity units to form large centralised obstetric centres. As well as providing a 24-hour consultant-delivered anaesthetic service and adopting more management
responsibilities, we will undoubtedly see an extension of our role to include that of a peri-partum physician. By learning from previous problems, sharing experiences and working together with the multi-disciplinary team to evolve to the challenges faced we should ensure that we meet the shared goal of delivering better and safer care for mother and child.

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OAA Membership number 6713

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OAA Membership number 6713