

EDITORIAL I

Perioperative medicine: the future of anaesthesia?

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For time and the world do not stand still. Change is the law of life. And those who look only to the past or the present are certain to miss the future.

US President John F. Kennedy, Frankfurt, June 25, 1963.

Perioperative medicine is the future of anaesthesia, if our speciality is to thrive.

Traditionally, the care of patients undergoing major surgery has been tailored to the index operation and the disease being treated by this procedure. However, a strong case can be made that the development of postoperative adverse outcomes relates primarily to the interaction between the inflammatory response to the tissue injury of surgery and a patient's physiological reserve, modulated by the type and quality of surgery.¹ From this perspective, the response to surgery becomes the primary 'disease process' and the consequent organ dysfunction the condition to which care should be focused. The aim of perioperative medicine is to deliver the best possible pre-, intra- and post-operative care to meet the needs of patients undergoing major surgery.^{1,2} This will be achieved through refining existing care pathways and by developing new pathways where current approaches are not fit for purpose.

As anaesthetists, we are faced with a choice between narrow and broad definitions of the scope of our practice. On the one hand, a tightly defined focus on administering anaesthesia of the highest quality risks limiting us to a technical role. On the other hand, we can embrace the

opportunities presented by the broader role of the perioperative physician encompassing many aspects of the 'non-operative' care of the patient undergoing major surgery. Along with the many other aspects of anaesthetic practice, this would allow us to consolidate our position as a mature and respected medical speciality alongside our peers. This proposition highlights the critical decisions we face as a speciality. Indecision is a choice in itself, and will most likely result in progressive loss of influence as other specialities embrace the concept of perioperative medicine.

However, important questions remain as follows:

- What unmet needs does the perioperative physician fulfil?
- How can the anaesthetist contribute?
- How should the speciality of perioperative medicine be organized?

In this editorial, we will attempt to address these questions.

Unmet needs in perioperative care

Anaesthetists rightly take pride in the outstanding track record of our speciality in improving safety and reducing avoidable patient harm. However, while harm directly attributable to the conduct of anaesthesia is rare (<1 in 50 000 mortality),^{3,4} there is arguably an epidemic of avoidable harm after major surgery, with dramatic variation in patient outcomes between institutions and nations which

highlight the gap between what is achievable and what is actually achieved.^{5–8}

The scope of unmet need in the care of patients undergoing major surgery is becoming clearer. The global volume of surgery has been estimated at close to 250 million procedures per year and this activity is increasing as a consequence of patient characteristic change, technological advances, and economic development, as national surgical activity correlates closely with gross domestic product.⁹ In the UK, estimates of the volume of in-patient surgery vary, but an accurate figure is likely to be in excess of 1.5 million procedures each year.¹⁰ Thus, even a low rate of avoidable harm would be associated with a large number of preventable deaths.

Evidence is growing for a variety of discrete interventions, such as maintenance of normothermia,¹¹ and packages of care, like enhanced recovery,¹² that reduce the incidence of adverse outcome after major surgery. Furthermore, the importance of timely and effective handling of complications when they do develop is achieving greater prominence with the development of the 'failure to rescue' paradigm.^{7 13} Finally, the long-term impacts of short-term postoperative harm are increasingly recognized. Postoperative complications are a more important determinant of long-term postoperative survival than either co-morbid disease or intraoperative adverse events.¹⁴

Comparison of processes of care between surgical specialities highlights striking contrasts. For the most recent period when directly comparable national data are available (2008), the 30 day mortality of patients undergoing elective colorectal surgery for cancer was 3.0%,¹⁵ whereas the hospital mortality rate of patients undergoing isolated elective coronary artery bypass surgery was 1.5%.¹⁶ Clinical practice in these areas is widely divergent with substantially more resources focused on patients undergoing cardiac surgery, despite the greater risk of death after colorectal surgery. Patients undergoing cardiac surgery can expect multidisciplinary team meetings to plan care, advanced cardiovascular monitoring (e.g. transoesophageal echocardiography) and postoperative critical care admission as standard, whereas patients undergoing colorectal surgery rarely benefit from such a package of care. It is highly likely that fewer patients would die after non-cardiac surgery if the quality of care typical in cardiac surgery was available to all patients undergoing major surgery. The care of patients undergoing emergency surgery, such as hip fracture surgery or emergency laparotomy, within the UK offers particularly striking examples of variations in outcomes alongside divergent process of care and institutional mortality rates vary by a factor of 10.^{5 6}

Many of us confidently assert that we work in institutions where standards of care are among the best and claim little room for improvement. However, the paucity of robust audit data suggests that most of us cannot know how effective our perioperative care is. Failure to implement interventions with a substantial, albeit imperfect, evidence base is a recurring theme. There is a risk that critical appraisal becomes all

critical with limited true appraisal. Unpicking the contributions of various elements of perioperative care to surgical outcome is not straightforward, but it is clear that a substantial proportion of harm is attributable to variations in the non-surgical elements of perioperative care. While successful surgery is a necessary condition for good postoperative outcomes, technical proficiency alone is not sufficient. The role of the perioperative physician is to fulfil this unmet need.

The anaesthetist as perioperative physician

Perioperative medicine is a multidisciplinary subspeciality composed of practitioners who can effectively identify and meet the complex medical needs of patients at particular risk from the adverse effects of surgical treatment. This may require intervention before, during, or after surgery and may extend beyond the index admission for surgery. Doctors from many specialities are starting to identify themselves as 'perioperative physicians', but it is anaesthetists who are best placed to lead in this field, with an ideal combination of training, skills, and experience. As surgeons increasingly focus on new and more specialized technical procedures, other specialists are taking more responsibility for the wider care of a patient population with complex medical needs. Perioperative care is a focus of growth that is starting to develop the type of a collaborative culture at the bedside which has proved so successful in critical care. In some institutions, physicians now lead perioperative care, for example, of elderly patients with hip fractures.

The perioperative physician is a qualified medical practitioner with an appropriate portfolio of competencies whose patient interaction is temporally defined by the index surgical admission. From the decision to operate, which may be before hospital admission, to hospital discharge and beyond, the role allows us to use every opportunity to maximize patient benefit. The perioperative physician may come from one of various base specialities, including anaesthesia, surgery, acute medicine, cardiology, and care of the elderly but sits at the centre of a web of relevant specialists. This individual will have undergone a programme of appropriate education, training, and certification to arm them with the necessary competencies, either essential, such as evaluating perioperative risk, or desirable, for example, echocardiography, to fulfil a defined scope of practice, the limits of which will require clarification.

From this perspective, the anaesthetist is defined as the individual administering anaesthesia. Anything beyond this narrow definition spills into the role of the perioperative physician. Implicitly, most anaesthetists practice perioperative medicine to some extent. However, there are clear differences in the degree of enthusiasm with which individual practitioners embrace this role. The warning is clear, if the speciality of anaesthesia does not take the lead in developing more sophisticated and effective approaches to perioperative care, then many other specialities are ready to do so. At a recent educational meeting held at the Royal College of Physicians, more than 200 physicians attended

lectures given by anaesthetists on perioperative medicine while in the private sector, non-anaesthetists are already offering their services as perioperative physicians.

How should the speciality of perioperative medicine be organized?

To understand the answer to this question, it is necessary to consider the nature of the role of perioperative physician. In a well-resourced environment, the perioperative physician will have many opportunities to minimize perioperative harm, adding further value to the episode of patient care. For many patients, surgery represents a sentinel event. Having had few previous encounters with the medical profession, their health risks have often not been fully evaluated. The experienced anaesthetist will be familiar with this problem, frequently making new medical diagnoses in the 24 h before surgery is conducted. For the perioperative physician, this situation is not an inconvenience, but an opportunity to provide primary and secondary screening and to initiate general health interventions. Thus, for many patients, surgery will become a catalyst event, providing a brief but vital opportunity to impact on postoperative survival and quality of life in the long term. Consequently, the speciality of perioperative medicine must integrate the training, experience, and organization to link effectively with a range of hospital and community specialists from the surgeon to the general practitioner. This will allow us to establish a new standard of care, maximizing the long-term benefit associated with each surgical episode.

Clearly, the full scope of the role of perioperative physician is not currently covered by any single medical training scheme or college. It will be necessary to define the core knowledge, skills, and experience expected of perioperative physicians. It will also be necessary to define the required competencies, basic, intermediate, and advanced, for training as a perioperative physician and, potentially, for the competent generalist and the subspecialist. Integrated cross-speciality training programmes will be required to deliver this training and define appropriate qualifications.

The consequences of perioperative medicine for the professional identity of anaesthetists are uncertain. As this field develops towards being a speciality, the need for certification of training and competence will increase. How should our professional organizations address these changes? Should the Royal College of Anaesthetists and the Association of Anaesthetists of Great Britain and Ireland rebrand? Perioperative medicine is so fundamental to anaesthetic practice; it seems inconceivable that the two fields would ever be led by separate colleges. How, then, do we meet the needs of perioperative physicians from other specialities, without following the same path as critical care? Whether we welcome the prospect of perioperative medicine or not, it is time to widen the debate about the implications of such change for the speciality of anaesthesia allowing advanced and rational planning of our speciality's future.

In conclusion, the speciality of Anaesthesia is clearly best placed to drive the development of perioperative medicine both nationally and locally. We need to educate patients, the public, healthcare professionals, and policymakers about the scope and significance of the unmet needs of patients undergoing major surgery. We need to define and drive an integrated agenda for healthcare policy, quality improvement, education, training, and research, around the emerging healthcare challenge of achieving consistent best-practice and expert care of the patient undergoing major surgery. We must conduct rigorous audit of outcomes¹⁷ and capitalize on opportunities to provide long-term benefit for all patients having surgery. If we duck this challenge, others will not, and anaesthetists risk being sidelined from the activities we trained for so many years to perform.

Declaration of interest

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EDITORIAL II

Innovation, NICE, and CardioQ

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In March 2011, NICE published Medical Technologies guidance on the CardioQ oesophageal Doppler monitor, promoting its use.¹ This was reported prominently in the national press, with strong support from some senior anaesthetists, and it was second only to the conflict in Libya (which was intense at the time) on the BBC national news. The main message was that for patients having high-risk surgery or other operations in which invasive cardiovascular monitoring might be used, CardioQ could reduce postoperative complications and hospital stay, with a consequent reduction in cost for the health service.

The guidance and its support for a particular product to monitor cardiac output during surgery clearly irked some anaesthetists and made many others uneasy.² This was not the kind of recommendation they expected from NICE. They did not understand why one product had been singled out for recommendation, when others were available which arguably worked at least as well. They were concerned that the published evidence of benefit seemed to be less voluminous, less consistent, and less convincing than they expected to justify a supportive recommendation from NICE.²

Certainly, this kind of guidance and recommendation from NICE was a departure from its well-established products (although the reaction to it was reminiscent of the hostility which followed the publication of Guidance on the use of ultrasound locating devices for placing central venous catheters in 2002: this is now a routine practice).³ Medical Technologies guidance is the result of a

responsibility given to NICE to address the complex business of promoting innovative medical technologies.⁴ This responsibility has recently been highlighted in the NHS Chief Executive's report 'Innovation, health and wealth', which reinforces NICE's role in identifying beneficial innovations, and also points out the benefits of widespread implementation of beneficial technologies using CardioQ ('... or similar fluid management monitoring technology ...') as an example.⁵

The brief NICE was given was to identify, evaluate, and then (if appropriate) promote technologies which, if adopted by the NHS, could offer advantages to patients and to the service over current practice. The prime focus was to be on new devices and diagnostics, but not to the exclusion of those which were less than novel and yet which might offer substantial advantages if adopted more widely.

How best to address this brief was a highly complex matter, which occupied planners at NICE for many months and wide consultation. There were meetings and working groups with industry, clinicians, patients, scientists, managers, academics, and commissioners. With the help of opinions and advice from all these contributors, a scheme was devised which was then subject to public consultation, and which received a large number of responses, especially from industry.

The overall scheme was for a two-stage process, with the new Medical Technologies Advisory Committee (MTAC) first deciding whether technologies are suitable for evaluation