Perioperative medicine: an evolutionary process

The demand for surgery increases globally and there has recently been a concomitant acknowledgement of the health and economic impact of this 'surgical epidemic'. Not only are health-care systems around the world being challenged to deliver increased access to higher quality surgical services, they are being required to do so in a more resource-constrained environment. Health-care systems that fail to change how they approach this epidemic are at risk of failing.

The review articles that comprise the perioperative medicine symposium in this issue explains the current zeitgeist within specialties caring for patients on a surgical pathway. While there has been no big bang, perioperative medicine has rapidly evolved as a specialty. Although not exclusively the domain of the anaesthetist it has been incorporated into the Royal College of Anaesthetists' curriculum and it is now possible to gain Masters-level qualifications from several prestigious universities around the globe. The skills that the new perioperative physicians possess are ideal for helping to meet the challenges now posed by the surgical population.

Why perioperative medicine?

In the late 1990s and early 2000s it was becoming apparent that traditional measures of surgical success or failure were inadequate. Pearse et al (2006) showed that only 12.5% of the surgical population accounted for 80% of deaths after surgery in the UK. This work led to an increased interest in studying perioperative surgical risk, as described in the article in this issue by Oliver et al (https://doi.org/10.12968/hmed.2017.78.11.616). While mortality as a measurement is black and white, many patients were undergoing surgical procedures that resulted in harm. Khuri et al (2005) used a large database from the USA to show that the development of any one of 23 complications would adversely affect the long-term outcome. Some of the complications studied were relatively benign, e.g. superficial skin infection, and yet still had a marked long-term impact on morbidity and mortality.

This work has been now been validated in the UK in a different health-care system (Moonesinghe et al, 2014) and risk prediction tools for the surgical population are becoming more popular. Once a surgical patient has been identified as having a greater risk profile steps can now be taken to mitigate harm. These might include patients attending a high risk preoperative clinic, where comorbidities are identified and their management optimized. An exemplar of this kind of service is the proactive care of older people undergoing surgery (POPS) service where a multidisciplinary team approach to optimization has been shown to improve postoperative outcomes (Harari et al, 2007).

Enhanced recovery

Fast track surgery, also now more widely known as enhanced recovery after surgery, is another example of how concepts of perioperative medicine have improved patient outcomes. Pioneered by Danish surgeon Henrik Kehlet (1997) in order to streamline the surgical patient's pathway, Kehlet tirelessly asked the question – why is this patient still in hospital? By process mapping and using improvement science techniques seen in the car industry he questioned dogma and removed wasted steps.

Enhanced recovery after surgery is now well established and has been shown to improve not only short-term outcomes such as length of hospital stay (a surrogate for a reduction in inhospital morbidity), but also longer-term outcomes (Morrison, et al, 2017). By implementing quality improvement techniques, designed by the Institute for Healthcare Improvement and extensively tested in the enhanced recovery after surgery arena, enhanced recovery after surgery has now become so enculturated in some institutions that it is now the normal way of caring for patients.

The evidence base for perioperative medicine is rapidly growing, through the increasing number of well-designed international multicentre studies. Perioperative medicine research continues to be facilitated by the network ideal and benefits from having a large population to study. Successes achieved with this model by both the Australian and New Zealand College of Anaesthetists Trials Group and the Canadian Perioperative Anesthesia Clinical Trials Group, e.g. the ENIGMA-II trial, has led to the development of a UK Perioperative Medicine Clinical Trials Network, emulating these models. This clinical trials network is hosted by the National Institute of Academic Anaesthesia and is truly open to all, with non-anaesthetists and patients represented both at board and membership level.

The type of studies sponsored by the UK Perioperative Medicine Clinical Trials Network resonates with the new specialty because of its multidisciplinary cooperation, and a vital partner in this research is the patient. By trying to find a mechanistic cause for both the patients at risk and the improvements gained from, for example enhanced recovery after surgery programmes, investigators with an interest in the surgical insult and how to mitigate its effects have found a home in the perioperative medicine fraternity.

How does perioperative medicine continue to evolve?

Clearly there are pockets of excellence within the NHS. The Royal College of Anaesthetists recognizes this and has appointed two national perioperative medicine leads and organized a national network of departmental leads in order to disseminate best practice. The collaborative nature of this fledgling specialty has allowed it to seek out and adopt

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best practice from international partners, e.g. the American Society of Anesthesiologists' concept of the surgical home (Holt, 2014) is attracting much interest in the UK. However, the next big challenge in the UK must surely be to engage with partners outside the setting of secondary care in a vertical fashion, i.e. primary care linking with secondary and tertiary care, and also a horizontal fashion by including primary care, secondary care and the social care system in planning a patient's surgical journey.

Given the current constraints on general practice, it is understandable that there has not been widespread adoption of perioperative medicine principles. However, if the specialty was able to illustrate both the long-term effect on a patient's health in those who have a complication in the perioperative period and also the potential ways in which these may be prevented (or the effects mitigated) by simple preoperative interventions, the momentum gained from having primary care doctors as collaborators would be immense.

The American Society of Anesthesiologists' surgical home also includes recuperation and if the UK were able to more widely use the surgery school model (Levett et al, 2016) to plan bespoke discharge packages and implement them before patients had their surgery, then it would seem more likely that less time would be spent in hospital and a more rapid return to patients' own homes would be more likely. By enlisting champions in allied health professionals interested in the surgical patient, such as physiotherapists and occupational therapists, and also partners in the social care setting this could become a reality.

So, who are the future perioperatists?

From the work presented by Groves et al (https://doi.org/10.12968/hmed.2017.78.11.642) it can be seen that those at the forefront of perioperative medicine are principally anaesthetists, but encouragingly other specialties are also interested and becoming involved. These early adopters are currently junior within the specialty, but they have the vision to see where current models of care are failing, where they need to improve, and have the foresight to equip themselves with the tools to make those changes throughout their careers. Despite the impending surgical epidemic, the future for the surgical patient looks improved as the specialty of perioperative medicine continues to evolve. **BJHM**

KEY POINTS

- The increasing demand and complexity of surgery has been described as an epidemic.
- It is now becoming easier to identify those patients at increased risk of harm in the perioperative period.
- Perioperative medicine is a new and rapidly evolving specialty that is ideally placed to improve outcomes for these surgical patients.
- The specialty's evidence base is increasing as a result of high quality multicentre trials being able to access a large study population.

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