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Surgical care – how can new evidence be applied to clinical practice?

Evidence-based medicine should facilitate improvement in surgical patient care and thus enhance outcome. Much of the early focus of this approach has been on the appropriate use of pharmacological agents such as antibiotic prophylaxis and the prevention of deep vein thrombosis. However, although positive results from large randomized trials have been incorporated into best-practice and disseminated widely by professional societies and articles, they have often been slowly adopted into practice [1]. Procedural specialties such as general surgery and its subspecialties, especially, have been reluctant to accept results from randomised trials evaluating perioperative care, even though such improvements are evidence based and clearly enhance patient outcome [2,3].

This article will discuss the recent improvements made in perioperative care, address barriers that prevent their widespread implementation and provide suggestions as to how these hurdles might be overcome.

Changes in perioperative care

Surgical training has traditionally been based on the guild system, where the trainee (medical student or resident) learns successful practice from the teacher (practising surgeon) and uses these approaches throughout his or her professional career. After completion of training, demonstration of professional competency is required through board examinations and recertification tests, but these rarely examine the clinical skills, evidence based care principles, outcome or patient satisfaction related to the individual surgeon. Moreover best-practice standards published by professional groups have not to-date been demonstrated to improve care. Professional oversight groups have emphasized a wide range of traditional 'safe practices' but have not embraced an evidence-based approach. Unfortunately, current changes in the procedural specialties have mainly occurred through pressure from purchasers through adoption of early stage unproven technological developments or to a lesser extent from the legal system.

Over the past 10 years various carefully structured studies have shown that many of the traditional approaches to surgical care, such as preoperative bowel preparation, the use of nasogastric tubes, placement of drains, enforced bed rest, and the use of graduated diets are unnecessary or even harmful [2,3]. Moreover, the use of local or regional anaesthesia, multimodal opioid-sparing pain treatment [4] administered on a procedure-specific basis [5], careful intraoperative monitoring, active warming [6] and evidence-based volume therapy [7,8] have also been associated with a reduction in complications and shortened hospital stay [2,3]. When these evidence-based approaches are integrated into a treatment plan supervised by a multidisciplinary team (a concept referred to as fast track surgery or enhanced recovery programmes), recovery has been accelerated with decreased length of stay, reduced medical morbidity and shortened convalescence [2–8].

While it would seem apparent that many of these advances should be common practice, the literature shows that there is still wide variation in the pattern of surgical care [9–13] which has often been slow to apply the scientific data. Why have surgeons failed to embrace these evidence-based patient directed approaches?

Impediments to change

Behaviourists tell us that for an individual to change there must be some recognized advantage or gain. Personal 'buy-in' to a concept and self-motivation are far more important to change than 'top down' requests or directions from a department chairman, chief-of-staff, purchasers or professional society. However, participation by representatives from these areas is important for change, for they can provide information, resources, support and encouragement. The first step for buy-in to occur is for the individual to experience some dissatisfaction or discontent with the present system and therefore be motivated to do something different. This is opposite to those who want to maintain the *status quo*.

Individual surgeons may not change behaviour for several reasons because: they are unaware of the evidence, they do not agree with the evidence, they do not have time to change their practice patterns, they have insufficient staff support for change or are concerned with liability issues [1]. Surgical leadership has not emerged in this area, and recognized leaders have generally only echoed the complaints of many surgeons who feel their autonomy threatened by purchasers who demand preapproval of treatment plans, monitor utilization and often withhold or quibble over payments. Consistent with the guild model, leadership of surgical societies usually falls to the elder professional at the peak of his or her career. Their role is often ceremonial and rarely do they propose controversial plans for change. Moreover, the limited

duration of time in office often prevents the initiation and appropriate follow through of long-term projects.

Given these matters and the present health care environment, how can evidence-based, accelerated care plans be initiated?

A pilot programme

Industry addresses these types of challenge requiring major behavioural changes by investing in pilot projects, which in this case would start by identifying the appropriately motivated and interested health-care professionals in an institution. To initiate such a project within a surgical department, resources must be provided (whether from the department, hospital, insurance company, or governmental or nonprofit agency) and the individual participants must be assured of consistent operating times, designated hospital beds, administrative support and salary.

The team members should visit sites where fast track surgery is practiced and then establish their own protocols, appropriate for their most frequent operations and institution goals. Most data on fast track surgery have been generated in the area of colorectal surgery [2,3,14], and this would be one logical area to initiate the first program. Another approach could be to emphasize operations where length of stay in the institution is at odds with that reported in the fast-track literature [2,3]. In this context the provision of web-based evidence-based care principles and updated medical literature to nurses (e.g. http://www.periopnursing.dk) together with procedure-specific workshops, local audits and site-visits have facilitated progress on a nationwide basis in Denmark for several procedures. Finally, multi-institutional collaboration with database monitoring of care principles has been a successful instrument in implementing fast-track methodology in colonic surgery in Germany [15].

The group must include anaesthesiologists, surgeons, recovery room and unit nurses and physiotherapists [3,4]. A hospital administrator is necessary along with resources for appropriate data management. The current structure of hospital departments does not facilitate participation in stable multidisciplinary groups, and it may be that members should function independently from their main department, reporting instead to another authority in the organization (presumably an individual who controls resources). Such a plan obviates other department commitments (such as rotating shifts, night call and departmental emergencies), allows team members to participate more actively in postoperative care (e.g. ensuring pain relief rather than relying on a pain service) and allows all individuals to focus on the fast track program.

Finally, the multidisciplinary group should agree on the procedure-specific care program, based upon best available evidence to be followed by participating stakeholders unless specific circumstances of the patient justify deviation from the agreed care protocol as confirmed by the group.

Management experts who have studied problem-solving groups suggest that such groups are sometimes more effective without a formal leader [16] or with an informal leader who serves as a facilitator, orchestrating the interactions among members and allowing leadership to emerge from each individual as the situation warrants. This can occur because the group brings together individuals with diverse expertise; a single leader does not understand enough about the work of other team members to guide them at critical times. A better model is to let the individual whose expertise is needed at the moment take the lead. This may be contrary to usual practice (often not accepted by surgeons) but it is thought to result in the most productive method for multidisciplinary team working. Clearly, group organization and function will depend on the personalities of the individuals involved, but outside management consultation may be desirable at some point to optimize results.

The program would hope to achieve goals at specific time points that have been previously outlined in an initial business plan. In addition morbidity, long-term outcome, patient satisfaction and cost data should be tabulated and reviewed at intervals agreed by the group including comparison with the NSQIP data and the fast-track literature. When enough data are available to evaluate results, presentations by the group should be made at the appropriate hospital staff meetings and at local and national societies. With time, the positive results from the pilot project should generate enthusiasm and attract interest from other specialties (gynaecology, urology, orthopaedics, cardiothoracic surgery, etc.) to allow extension of the program to other surgical areas within the institution.

If the results from the pilot project are adopted by the hospital, the fast-track group should eventually have its own cost centre and data from the project can be compared to results achieved by other surgeons performing similar operations outside of the fast track programme.

The future

Change in clinical practice and surgery has been slow [9–13,17]. Typically, a new procedure or method of care is taught to residents. This is then incorporated into the individual's practice and their subsequent residents are then taught the approach and the method gradually

spreads. Such an approach may take a generation to implement major changes in practice.

Unlike the administration of antibiotics and some other aspects of care, which can be placed on a perioperative checklist to insure their delivery, fast-tack surgery requires organizational change within the hospital with an emphasis on nontraditional (although evidence-based) approaches to care. The cost advantage of reducing hospital stay is well-documented [2,3] but it is reduced operative morbidity which ranks higher in the concerns of patients and purchasers. The latter has been an elusive goal but newer evidence-based data, evolving anaesthetic and analgesic agents and other drugs, and technological improvements in this field (minimal invasive surgery) will undoubtedly evolve further with time. Based, however, on our present knowledge of perioperative care coupled with a revised organizational structure, it is now possible move more rapidly toward more risk-free and pain-free surgical procedures [2,3].

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