Enhanced recovery after surgery and implications for nurse education


Summary
This article examines three key aspects of the enhanced recovery after surgery (ERAS) initiative: improving pre-operative care, reducing the physical stress of surgery and increasing comfort after surgery. It also discusses changes in the role of the nurse and some of the implications for nurse education.

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Nurses in the UK are facing a period of great change, including the move towards an all graduate profession and extensive revision of the structure and operation of the NHS (Ham 2010). Change is also taking place at the level of practice in approaches to care such as enhanced recovery after surgery (ERAS).

ERAS is an initiative aimed at achieving faster recovery times and improvements in patients’ outcomes after surgery. The initiative was originally developed in colorectal surgery, but attempts are being made to widen its application (Kehlet and Søballe 2010). Early discharge of patients is partly driven by economic and performance-related factors, and the term ‘fast-track surgery’ is sometimes used (Kehlet 2008). The economic imperative is reflected in the NHS Institute for Innovation and Improvement’s (2008) outcomes for enhanced recovery that include an increased number of patients being treated and a reduced requirement for resources. However, the primary objectives are improved outcomes for patients and reduced length of hospital stay, and these are achieved through the increased use of minimally invasive (keyhole) surgery, improved pre-operative care, techniques that reduce peri-operative stress and improved pain control (Kehlet and Wilmore 2002, Fearon et al 2005).

Experienced nurses familiar with longer hospital stays may have reservations about practices such as the early resumption of eating after bowel resection. However, many accepted practices have an inadequate evidence base, in contrast to the components of ERAS that are well supported (Fearon et al 2005, Lassen et al 2009). Whatever the initial reaction to ERAS, it is clearly here to stay.

In a letter to chief executives of special health authorities, primary care trusts and hospital trusts, the National Director for Improvement and Efficiency wrote of the challenge of spreading the benefits of enhanced recovery across the NHS as rapidly as possible (Department of Health 2010). This article examines three key elements of ERAS: improving pre-operative care, reducing the physical stress of surgery and increasing comfort after surgery. The article also discusses their implications for nurse education.

Improving pre-operative care
The NHS Institute for Innovation and Improvement (2008) contrasts pre-operative assessment undertaken as a part of ERAS with the traditional approach of admission to the ward.
without preparation. Pre-operative assessment is widespread, even in the absence of ERAS, so in what ways is pre-operative assessment in ERAS different? Typically, as its name implies, pre-operative assessment prepares patients for admission and surgery. Discharge planning has traditionally been delayed until after surgery or begun at the point of admission, and this may prove inadequate. In a study of the effect of discharge information on surgical patients, those who received information were less likely to access healthcare services than those who did not (Henderson and Zernike 2001). Patients who leave hospital without the confidence to manage their condition may access healthcare services simply for reassurance. ERAS improves on the traditional model in that pre-operative assessment is perceived as preparation for discharge as well as for surgery itself. For example, patients who are to have colorectal surgery are informed about what they can do to reduce post-operative complications and are given advice about what nutritional drinks to take before admission, as well as information about early mobilisation and eating after the operation.

Educational intervention before admission has been shown to reduce post-operative pain levels after laparoscopic cholecystectomy and to increase significantly patients’ knowledge of self-care and management of complications (Blay and Donoghue 2005). In older patients having major intra-abdominal surgery, the anaerobic threshold (the point at which lactate generated by the anaerobic pathway is greater than its removal, determined by cardiopulmonary exercise testing) can be used to predict post-operative mortality from cardiopulmonary causes (Older et al 1999). This test may be used at pre-admission triage to determine the best place of first night recovery: a ward, a high dependency unit or an intensive care unit.

No matter how thorough pre-operative assessment is, what can be achieved on a single occasion before admission is limited. Providing information that patients can use at their own pace is clearly important, and several trusts provide specific online advice about ERAS, for example Newcastle upon Tyne Hospitals NHS Foundation Trust (www.newcastle-hospitals.org.uk), and Yeovil District Hospital and NHS Foundation Trust (www.ydh.nhs.uk).

**Reducing the physical stress of surgery**

Many traditional peri-operative interventions are now recognised as being unnecessary or even counterproductive (Fearon et al 2005). Even when a conventional surgical approach is taken, pre-operative medication is not usually given and patients remain active until the point of surgery, usually walking to the operating department. A systematic review of pre-emptive analgesia (starting analgesics before the operation) showed no benefit over starting analgesics post-incision (Moiniche et al 2002). Nor is a strict regimen of fasting adhered to, because drinking clear fluids up until two hours before anaesthesia is safe, although the fasting time after eating solid food is generally six hours (Søreide et al 2005). Fasting before surgery means that patients are operated on in a catabolic state, but taking a clear carbohydrate-rich drink (carbohydrate loading) before midnight and two to three hours before the operation is an attempt to avoid this (Hausel et al 2001, Brady et al 2003). This intervention has been found to reduce pre-operative thirst, hunger and, perhaps surprisingly, anxiety (Hausel et al 2001, Brady et al 2003). In addition, patients who receive carbohydrate loading before colorectal surgery seem to recover more quickly and have a shorter hospital stay than those who do not (Noblett et al 2006).

Similarly, in a meta-analysis – a statistical process for combining the results of many related research studies – of randomised clinical trials of bowel preparation, Slim et al (2004) concluded that no trial favoured bowel preparation before colorectal surgery. The main finding was that it increased the risk of anastomotic leakage. More recently, two randomised controlled trials (Contant et al 2007, Jung et al 2007) have shown no benefit of bowel preparation. After such colorectal surgery, a nasogastric tube is traditionally inserted and patients may develop distension or vomiting. However, a meta-analysis showed that this is not associated with increased complications or length of stay (Cheatham et al 1995). In contrast, pyrexia, atelectasis and pneumonia were less common in patients without a nasogastric tube. A meta-analysis of controlled trials of early enteral or oral feeding versus fasting found no advantage of fasting against gastrointestinal resection (Lewis et al 2001), and a review of clinical care for patients having colonic resection recommended that patients should start eating four hours after surgery (Fearon et al 2005).

Maintaining a body temperature within the normal range can also be important. Conventional surgery involves several factors that lead to cooling. These include being semi-clad in an operating theatre that, at 20-25°C, is below a thermoneutral temperature, the temperature at which the body neither cools down nor heats up (Kehlet and Wilmore 2002). In addition, general anaesthesia may affect the...
body’s set point for temperature regulation (rather like turning down the body’s thermostat), while both spinal and epidural anaesthesia affect thermoregulatory responses such as vasoconstriction (Kehlet and Wilmore 2002). Large incisions also contribute to cooling. Mild hypothermia in total hip arthroplasty is associated with increased blood loss (Schmied et al 1996), and peri-operative normothermia reduces the incidence of cardiac complications (Frank et al 1997) and even surgical wound infection (Kurz et al 1996). Normothermia may be maintained by warming intravenous fluids and by forced heating of the upper body (Burger and Fitzpatrick 2009).

Increasing comfort after surgery

Comfort is a wider concept than freedom from pain and includes freedom from nausea and vomiting, as well as having questions answered and not feeling anxious. Enhancing post-operative comfort is a laudable aim in itself, but in ERAS the focus is for patients to mobilise and resume eating normally as soon as possible, and nausea and vomiting clearly threaten this. Drugs that may cause nausea (including opioids and some gaseous anaesthetics) are avoided if possible and anti-emetics are used selectively (Fearon et al 2005). People with risk factors such as a history of motion sickness or post-operative nausea should receive anti-emetics (Lassen et al 2009).

In a systematic review of randomised controlled trials, the administration of epidural local anaesthetics to patients having laparotomy reduced gastrointestinal paralysis compared with systemic or epidural opioids, but produced comparable post-operative pain relief (Jørgensen et al 2001). Fearon et al (2005) described the continuous epidural infusion of local anaesthetics (alone or with opioids) as providing optimal analgesia. Patient-controlled analgesia using intravenous opioids may produce similar pain scores, but patients may be sedated as a result of the medication and so remain in bed. Paracetamol is recommended as the ‘baseline’ analgesic, with the addition of non-steroidal anti-inflammatory drugs for breakthrough pain (Fearon et al 2005).

Changes in the role of the nurse and implications for nurse education

The three key features of ERAS reviewed above clearly have an effect on the role of the nurse. Some anticipated problems with early discharge, such as an increase in the workload of district nurses, should not occur (Burch 2009), but nurse education will need to take account of changing care in hospital. Nasogastric tubes and urinary catheters are passed in fewer patients, wound drains are less commonly used, and resumption of eating and drinking soon after surgery means that intravenous infusions are usually discontinued on the first morning after the operation (Fearon et al 2005). ‘Technical’ aspects of care still need to be taught, but once common interventions such as these will be confined to the most seriously ill patients and those who need traditional surgical management.

As more experience is gained and ERAS is introduced in a wider range of specialties, it will become the ‘conventional’ approach to surgery. As this happens, the care that patients need will change, with many patients requiring physical care only in the immediate peri-operative period. This does not mean that physical aspects of care or the biological science basis for them can be neglected. For example, as a key element of ERAS is a reduction in peri-operative stress, the physiological meaning of stress as a threat to homeostasis is important. Understanding the significance of the anaerobic threshold as the basis for triage (Older et al 1999) is another example of the importance of biological science, as is the metabolic basis for current insights into patients’ nutrition (Noblett et al 2006).

However, the education and communication aspects of the role of the nurse could be argued to be more important where ERAS is implemented because of a reduced opportunity to ask questions (Wagner et al 2005). Patients and their relatives may be unprepared for the speed at which activity and function is to resume after surgery and may be anxious about ‘not being ready’ or ‘who to get help from’. The increased importance of education and communication does not, however, mean that more time is available for these activities – quite the reverse. Many patients are discharged after hospital stays of only one or two nights, even after major surgery. Nurses have to give careful consideration to how to prepare patients psychologically for discharge when little time is available to give explanations and answer questions.

Widespread inconsistencies exist in the approach to teaching communication skills in pre-registration nursing programmes (Randle et al 2003). Williams and Stickley (2010) suggested that nurse education has focused too much on behavioural techniques to show empathy. In contrast, they suggested that an emphasis on the human encounter could be made by reference to literature on counselling. Whatever approach is taken to teaching communication skills, an assumption is made of a degree of continuity in a period of contact with patients. This is no longer a valid assumption. In addition, any interaction with patients will be determined by the pressing...
demand of preparation for a short period of hospital admission and a recovery that takes place largely at home. Fragmentation of services and lack of co-ordination between out-of-hospital agencies is acknowledged in publications such as *Setting the Direction* (Welsh Assembly Government 2010), a document that sets out a framework aimed at the delivery of improved primary care and community-based services. In many cases, particularly with frail or older people, the communication aspects of the nurse’s role are seen in the context of co-ordinating discharge with a variety of agencies, some of which are managed by the private sector, as well as with patients and families themselves. As a lecturer in nursing at a UK university, the author believes that little attempt is made to teach nursing students these specific skills in practice. However, the author suggests that higher level academic assessments, such as the completion of an empirical research dissertation, involve similar skills. The approval of external agencies such as ethics committees have to be gained, the consent of participants has to be sought and, where these are patients or staff, honorary contracts with trusts have to be negotiated. Students are certainly working within time constraints, and the process demands good written and verbal communication as well as organisational skills. Activities that were previously regarded as ‘academic’ may come to have a wider application in the implementation of ERAS, but perhaps we need to explore improved ways of teaching and testing these skills in practice. 

An examination of the literature on ERAS shows that implementation of the findings is slow (Kehlet 2008). Such lack of momentum may reflect caution about getting things right or a reluctance to abandon accepted practices even where they have a questionable evidence base. A reading of the literature on ERAS shows a common priority for both nurses and medical staff to develop an adequate evidence base for what they do. That nurse education continues to develop programmes that focus on evidence-based practice is therefore entirely appropriate, and this is made possible by the move to an all graduate pre-registration 

References


education. However, although positive results from large randomised controlled trials are incorporated into best practice guidelines, they are only slowly adopted in practice (Kehlet and Wilmore 2010), and evidence-based practice ‘stalls’ at the implementation stage. In medicine, this may in part be a result of the ‘guild’ system of surgical training and lack of resources to implement change (Kehlet and Wilmore 2010). It is interesting to note these impediments at this time, as nursing has been successful in abandoning an apprenticeship model of training and the management of change is taught during many courses. Furthermore, as the development and implementation of an evidence base is a priority shared by nurses and medical staff, exploring ways of developing interprofessional learning may be advantageous.

Finally, as ERAS is applied more widely, the number of unanswered questions increases. For example, a decline in cognitive function occurs in older people after surgery (Maze et al 2008), but whether this could be ameliorated by ERAS in the case of hip and knee replacement is not yet known (Kehlet and Soballe 2010). Reviewing some of the literature on ERAS shows that little attempt has been made to investigate patients’ experiences of it, and nurses and doctors may have scope to undertake collaborative research in this area.

Conclusion

ERAS is an initiative aimed at faster recovery times and improvements in patients’ outcomes after surgery. The initiative was originally developed largely in colorectal surgery, but attempts are being made to widen its application as, in addition to improving patients’ recovery, it has the potential to reduce requirements for resources. An expanding evidence base has shown that many once widespread peri-operative interventions are ineffective or counterproductive and that patients can be safely discharged home much earlier after surgery than was previously thought possible. Nurse education needs to take account of these changes, but as the findings of research are often only slowly implemented in practice, nurse education should focus on evidence-based practice and the skills needed to implement change. This may be made possible by the move to an all graduate pre-registration education.


