

Enhanced Recovery after Surgery (ERAS)

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INTRODUCTION

It is worthwhile to cut the prolonged hospital stay to reduce morbidity. Outcome after major surgery is said to be good when the hospital stay of the patient is reduced with faster recovery. But it is still a difficult task. Researchers have come out with a new concept of faster recovery after major surgical procedures using protocols that are evidence-based in nature. It is followed in all phases of surgery and anesthesia including rehabilitation. These protocols are to be implemented by the dedicated staff to achieve the goals.

Prof. Kehlet and Wilmore described enhanced recovery after surgery (ERAS) in the last decade of the 20th century.¹ He followed ERAS in colorectal surgeries. A great amount of research was carried out in colorectal, vascular, thoracic, urosurgery, spine, neurosurgery, orthopedic, liver, pancreatic, and cardiac surgery¹ to develop ERAS protocols. ERAS society was registered in 2010, with a mission to develop perioperative care and to improve recovery through research, education, audit, and implementation of evidence-based practice.

Enhanced recovery after surgery (ERAS) reduces the patient's stress response to injury caused by the surgery^{1,2} (Flowchart 1). It optimizes their physiologic function and facilitates faster recovery.

The evidence-based guiding principles of ERAS include patient education, optimization of the patient before admission, and minimizing fasting that includes a carbohydrate drink 2 hours before anesthesia. Multimodal analgesia reduces the need for opioids when indicated. The patients are made to return to a normal diet early. They are encouraged to ambulate early after surgery so that they return home faster.

Evidence-based Guiding Principles of ERAS

- Preoperative optimization
- It is vital to educate patient and relative
- Cessation of smoking for 1-month
- Alcohol abstinence for 1-month
- Preoperative fasting:
 - Liquids for 2 hours
 - Solids for 6 hours
- Institute carbohydrate loading
- Appropriate premedication
- Must avoid long-acting sedative agents
- Use prophylaxis for thromboembolism
- Mechanical bowel preparation (abdominal surgery)
- Intra- and postoperative elements
- Antibiotic prophylaxis and skin preparation.

Evidence-based Anesthetic Protocol

- Multimodal analgesia
- Regional blocks like epidurals, TAP block, etc.
- PONV prophylaxis

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- Minimally invasive approach
- Prevention of intraoperative hypothermia
- Tight perioperative fluid management
- Adhere to zero fluid balance
- Employ goal-directed therapy
- Use of balanced crystalloids
- Minimal use of drainage all types of catheters or avoid
- Adopt perioperative nutritional care
- Screening of patients depending on their comorbidities
- Active nutritional support in high-risk patients
- Try and curtailed fasting duration
- Institute early feeding in the postoperative period (for feeding)
- Perioperative glycemic control
- Early mobilization
- Early bowel movement
- Use of chewing gum
- Use of postoperative laxatives and prokinetics.

Surgeons and anesthesiologists have started using enhanced recovery protocols in their practice that are summarized in Figure 1 and Table 1.

ADVANTAGES OF IMPLEMENTATION OF ERAS

As per the current literature,³ enhanced recovery after surgery (ERAS) leads to:

- Good outcomes
- Better patient satisfaction
- Reduction in cost of healthcare
- Faster recovery
- Shortened hospital stay and
- Fewer complications.

Integration of ERAS into practice by multimodal approach along with patient education and awareness may be valuable.⁴

We must recognize the challenges of ERAS program and act accordingly which will lead to the significant success of an ERAS program.

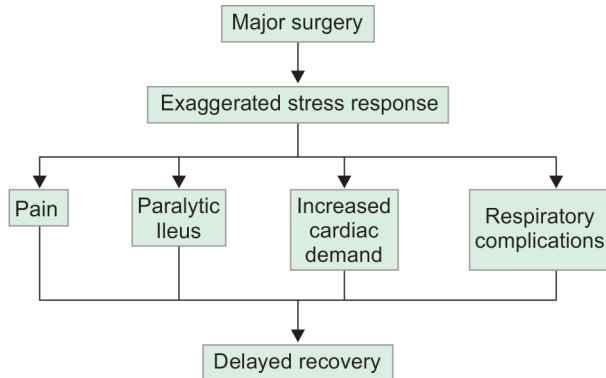
CHALLENGES IN IMPLEMENTATION OF ERAS

ERAS program has faced implementation challenges that are multidimensional in nature.

They are patient-related:

- Patient needs and expectations
- Health literacy
- Attitudes and behavior
- Health history

Flowchart 1: Ill effects of surgery and possible multimodal interventions to control stress response



Staff-related:

- Staff attitudes and behavior
- Engagement, communication, and collaboration
- Skills and competencies.

Specialty and practice-related factors:

- Leadership and necessary support
- Continuing education and training
- Availability of resources, medications, and equipment
- Use of policy and procedures
- Monitoring, data collection, and transforming into practice.

This ERAS program is being created in various hospitals with the help and involvement of various departments of surgical specialties and anesthesiology. This will help in improving the care of patients from the preoperative stage to recovery after undergoing major surgical procedures and also reduce the cost. However, it is critical that the ERAS protocols are updated regularly when there is new evidence and implemented efficiently.

The basic components of a successful ERAS program include the use of a minimally invasive surgical approach and avoidance of drains, nasogastric tube, and urinary catheter, patient/family education, avoidance of fluid overload/underload, procedure- and patient-specific nonopioid multimodal pain management to

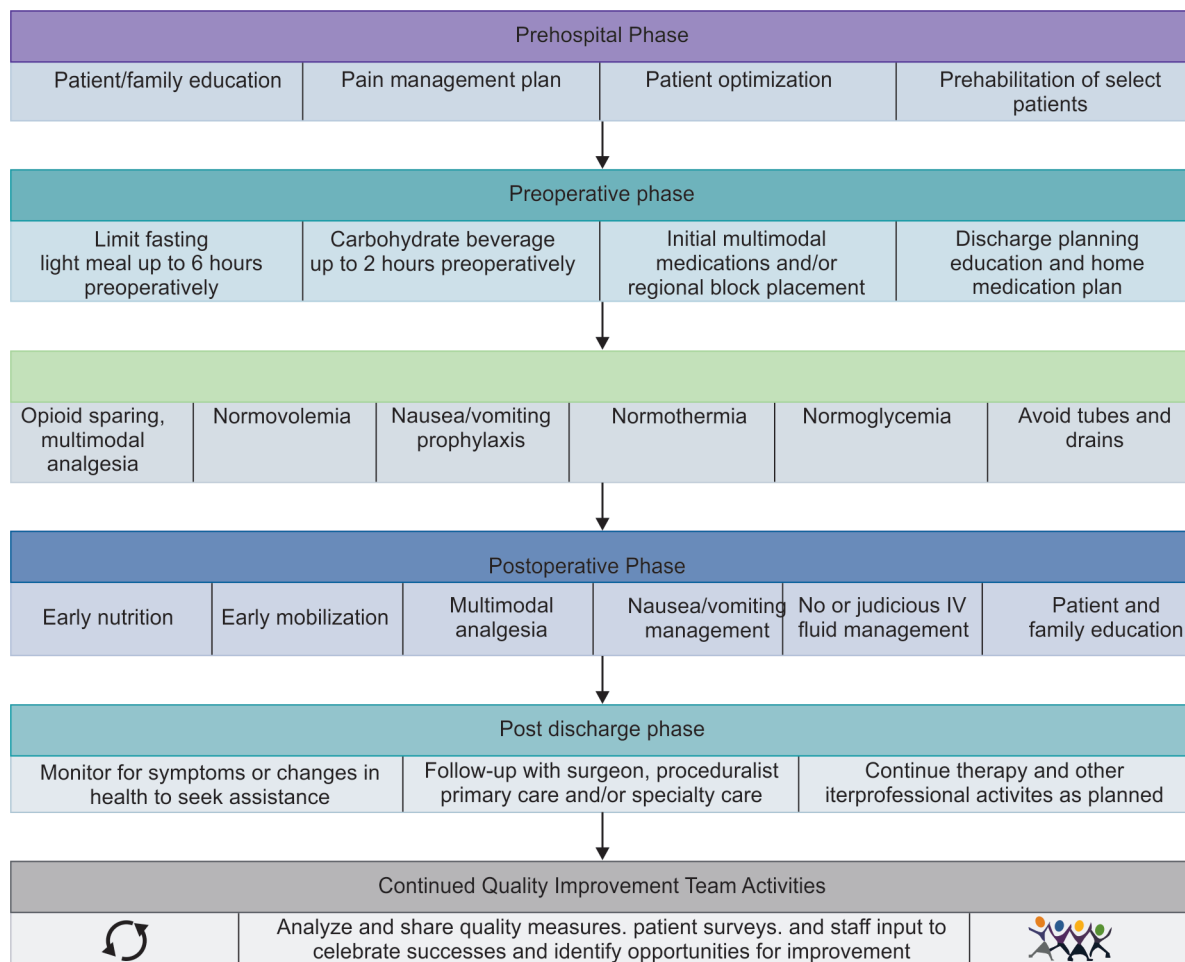


Fig. 1: Sample enhanced recovery elements (ERAS) protocol. Adopted from: American Association of Nurse Anesthesiology | 222 South Prospect Ave | Park Ridge, Illinois 60068-4001 | AANA.com Professional Practice Division | 847-655-8870 |

Table 1: Examples of ERAS in different surgical specialties (basic elements)

Type of surgery	Important ERAS elements
Neurosurgical procedures	Goal-directed fluid therapy
Cardiothoracic procedures	Postoperative multimodal analgesia
Abdominal surgery (open and minimally invasive)	Selective bowel preparation, early feeding use of chewing gum, postoperative multimodal analgesia, minimal or avoiding usage of drains
Pediatric surgery	Carbohydrate drink, goal-directed fluid therapy, prevention of hypothermia
Orthopedic procedures	Early mobilization, multimodal analgesia
Gynecological procedures	Early feeding, early mobilization, screen for malnutrition
Obstetrics	Early mobilization, early feeding

reduce interference with functional outcomes, early oral intake, and early mobilization.^{4,5}

The areas that remain for further research include:⁶

- Implementation of good anemia management
- Intra- and postoperative blood transfusion management
- Prevention and management of postoperative fatigue

- Prevention and management of delirium, and cognitive dysfunction
- Perioperative use of high dose steroids in preventing the surgical inflammatory responses need further research.

Finally, the role of the anesthesiologist in facilitating the development and implementation of ERAS program using a multidisciplinary approach is critical. We should embark on randomized well-designed, procedure-specific, and adequately powered studies. These should be outside the current standard of care and can influence postoperative outcome⁶ in a big way.

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