

3. Maria E. Tudor, Ahmad M. Al Aboud, Stephen W. Leslie, William Gossman 2025, StatPearls, StatPearls Publishing
4. Rochelle P Walensky, Debra Houry, Daniel B. Jernigan, Rebecca Bunnell, Jennifer Layden, Michael F. Iademarco. 2021. Sexually Transmitted Infections Treatment Guidelines. Centers for Disease Control and Prevention, No. 4, 39-56
5. Justin D. Radolf, Ranjit K. Deka, Arvind Anand, David Šmajš, Michael V. Norgard & X. Frank Yang. 2016. Treponema pallidum, the syphilis spirochete: making a living as a stealth pathogen. Nature Reviews Microbiology. No.14, 744–759
6. Susan Tuddenham, Khalil G Ghanem. 2018. Neurosyphilis: Knowledge Gaps and Controversies. Sexually Transmitted Diseases. No. 3, 147-151

DOI 10.70286/EOSS-29.12.2025.004

ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOLS IN MAJOR ABDOMINAL SURGERY: A MULTIMODAL STRATEGY TO REDUCE POSTOPERATIVE MORBIDITY

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1. Introduction

Patients undergoing major abdominal surgical procedures, such as colorectal resections, pancreaticoduodenectomy, and gastrectomy, are at high risk of postoperative complications. Surgical trauma induces a systemic stress response characterized by neuroendocrine activation, inflammation, insulin resistance, and catabolism. These changes contribute to postoperative pain, ileus, pulmonary complications, infectious morbidity, and prolonged hospitalization. Traditional perioperative care models, relying heavily on opioid-based analgesia, prolonged fasting, and delayed mobilization, are associated with increased morbidity and delayed

functional recovery. Consequently, the development of structured, evidence-based perioperative strategies aimed at minimizing surgical stress and accelerating recovery has become a priority in modern abdominal surgery.

2. Multimodal Mechanisms of Enhanced Recovery After Surgery (ERAS)

Enhanced Recovery After Surgery (ERAS) protocols are based on a multimodal and multidisciplinary approach targeting key pathophysiological mechanisms of postoperative stress.

Multimodal, Opioid-Sparing Analgesia:

The use of regional anesthesia techniques (epidural analgesia, transversus abdominis plane blocks), combined with non-opioid analgesics such as nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen, and $\alpha 2$ -adrenergic agonists, significantly reduces opioid consumption. This approach minimizes opioid-related adverse effects, including respiratory depression, postoperative nausea and vomiting, ileus, and delirium.

Reduction of Metabolic Stress:

Shortened preoperative fasting, carbohydrate loading, early postoperative enteral nutrition, and strict perioperative glycemic control reduce insulin resistance and protein catabolism, thereby preserving lean body mass and improving immune function.

Optimized Fluid Therapy and Early Mobilization:

Goal-directed fluid therapy prevents both hypovolemia and fluid overload, reducing the risk of tissue edema and cardiopulmonary complications. Early postoperative mobilization improves pulmonary function, decreases thromboembolic risk, and accelerates functional recovery.

3. Prophylactic Strategy and Improved Clinical Outcomes

ERAS represents a paradigm shift from reactive postoperative management to a proactive, prophylactic strategy implemented throughout the perioperative period. Multiple randomized controlled trials and meta-analyses have demonstrated that adherence to ERAS protocols results in:

- A significant reduction in postoperative complications, including surgical site infections and ileus.
- Decreased opioid requirements and improved pain control.
- Shorter length of hospital stay without an increase in readmission rates.
- Faster return of gastrointestinal function and overall physical activity.

Reported reductions in overall postoperative morbidity range from 30% to 40% compared with conventional care.

4. Organ-Specific and Physiological Benefits

The benefits of ERAS protocols extend across multiple organ systems:

Gastrointestinal System:

Early oral intake and reduced opioid exposure facilitate faster recovery of bowel motility and decrease the incidence of postoperative ileus.

Respiratory System:

Effective pain control combined with early ambulation reduces atelectasis and lowers the risk of postoperative pneumonia.

Cardiovascular System:

Attenuation of the surgical stress response and optimized fluid management reduce sympathetic overactivation and myocardial workload, contributing to cardiovascular stability in high-risk patients.

5. Organizational and Economic Advantages

Beyond clinical benefits, ERAS protocols provide significant organizational and economic advantages. Standardization of perioperative care improves interdisciplinary collaboration between surgeons, anesthesiologists, nurses, and physiotherapists. Shorter hospital stays and reduced complication rates lead to lower healthcare costs and more efficient utilization of hospital resources, without compromising patient safety.

6. Conclusion and Clinical Implications

Enhanced Recovery After Surgery protocols have become an integral component of contemporary abdominal surgery. By combining multimodal analgesia, metabolic optimization, early mobilization, and evidence-based perioperative care, ERAS significantly reduces postoperative morbidity and accelerates patient recovery. The implementation of ERAS should be considered a standard of care in major abdominal surgical procedures, offering both clinical and economic benefits and aligning with principles of modern evidence-based surgery.

References

1. Kehlet H. Multimodal approach to control postoperative pathophysiology and rehabilitation. *Br J Anaesth.* 1997;78(5):606–617.
2. Ljungqvist O, Scott M, Fearon KC. Enhanced Recovery After Surgery: A Review. *JAMA Surg.* 2017;152(3):292–298.
3. Gustafsson UO, Scott MJ, Hubner M, et al. Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations. *World J Surg.* 2019;43(3):659–695.
4. Thiele RH, Raghunathan K, Brudney CS, et al. American Society for Enhanced Recovery (ASER) and Perioperative Quality Initiative (POQI) Joint Consensus Statement on perioperative fluid management. *Anesth Analg.* 2016;122(2):543–556.
5. Lassen K, Coolsen MM, Slim K, et al. Guidelines for perioperative care for pancreaticoduodenectomy: Enhanced Recovery After Surgery (ERAS®) Society recommendations. *Clin Nutr.* 2012;31(6):817–830.
6. Fearon KC, Ljungqvist O, Von Meyenfeldt M, et al. Enhanced recovery after surgery: A consensus review of clinical care for patients undergoing colonic resection. *Clin Nutr.* 2005;24(3):466–477.

7. Feldheiser A, Aziz O, Baldini G, et al. Enhanced Recovery After Surgery (ERAS) for gastrointestinal surgery, part 2: consensus statement for anaesthesia practice. *Acta Anaesthesiol Scand*. 2016;60(3):289–334.
8. Varadhan KK, Neal KR, Dejong CH, et al. The enhanced recovery after surgery (ERAS) pathway for patients undergoing major elective open colorectal surgery: a meta-analysis of randomized controlled trials. *Clin Nutr*. 2010;29(4):434–440.