

ERAS
 THE ROLE OF NUTRITION IN "ENHANCED
 RECOVERY AFTER SURGERY"
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PRESENTATION CONTENTS:

- I. The History and Focus of ERAS
- II. The (changing) Role of Nutrition in Hospitals
- III. ERAS in your Facility

OUTCOMES

- 1. Describe the core nutrition guidelines for ERAS
- 2. Explain the importance of nutrition support in surgical patients
- 3. Develop possible interventions to be implemented in your facility



**WHAT IS
 ENHANCED
 RECOVERY AFTER
 SURGERY?**
 A HISTORY

ERAS STUDY GROUP¹ (2001)

Core Concepts:

- Quality of perioperative care dictates surgical outcomes
- Quality of recovery > speed of recovery
- Multidisciplinary
- Multimodal
- Evidenced based
- Continuous and active audit

Results:

- 24 core elements
- Address metabolic and stress response
- Modifying metabolic response to surgical stress effects –
 - LOS
 - Surgical complications
 - Risk of mortality

Table 2. ERAS Society Guideline Elements for Colonic Resections*

Element	Target Effect and/or Comment
Preadmission	
Cessation of smoking and excessive alcohol	Reduce complications
Preoperative nutritional screening and, as needed, assessment and nutritional support	Reduce complications
Medical optimization of chronic disease	Reduce complications
Preoperative	
Structured preoperative information and engagement of the patient and family or caregiver	Reduce anxiety, involve the patient to improve compliance with protocol
Preoperative carbohydrate treatment	Reduce insulin resistance, improve well-being, possibly faster recovery
Preoperative prophylaxis against thrombosis	Reduce thromboembolic complications
Preoperative prophylaxis against infection	Reduce infection rates
Prophylaxis against nausea and vomiting	Minimize postoperative nausea and vomiting

Lianghe, O. Siro, M. Fearon, K.C. Enhanced Recovery After Surgery: A Review. J Am Med Assoc. 2017; March 13(2):292-98.

THE ROLE OF NUTRITION IN ERAS

Pre-operative Care

Postoperative	
Early mobilization (day of surgery)	Support return to normal movement
Early intake of oral fluids and solids (offered the day of surgery)	Support energy and protein supply, reduce starvation-induced insulin resistance
Early removal of urinary catheters and intravenous fluids (morning after surgery)	Support ambulation and mobilization
Use of chewing gums and laxatives and oral feeding	Support return of gut function
Intake of protein and energy-rich nutritional supplements	Increase energy and protein intake in addition to normal food
Minimally effective or opioid-sparing pain control	Pain control reduces insulin resistance, supports mobilization
Multimodal approach to control of nausea and vomiting	Minimize postoperative nausea and vomiting and support energy and protein intake
Prepare for early discharge	Avoid unnecessary delays in discharge
Audit of outcomes and process in a multiprofessional, multidisciplinary team on a regular basis	Control of practice (a key to improve outcomes)

Abbreviations: ERAS, Enhanced Recovery After Surgery.
* For details and references, see the guidelines at <http://www.erasociety.org>.

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THE ROLE OF NUTRITION IN ERAS

Post-Operative Care


PRE-OPERATIVE CARE

MALNUTRITION

Incidence: 1 in 3 to 1 in 5 patients are anticipated to be malnourished at the time of admission ²

Results in -


- Increased care/LOS/critical care³
- Increased risk of surgical complications^{3,8,9}
- Increased risk of mortality³



MALNUTRITION AND ERAS

Core Element¹:
Pre-operative nutrition screening

Malnutrition Screening Tool (MST) ^{4,5}



As needed assessment and nutrition support

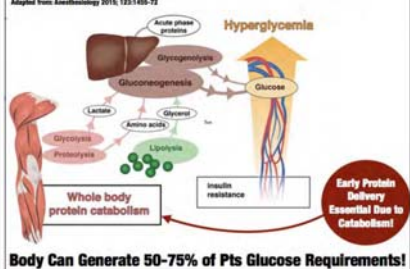
PRE-OPERATIVE MALNUTRITION

Interventions:

- Nutrition support initiated within 24-48 hours if PO intake will not meet estimated needs^{6,15}
 - EN over PN
 - Supplemental nutrition when estimated needs cannot be met (PO + EN; EN + PN)

Catabolic Response to Stress and Injury

Adapted from: *Anesthesiology* 2010; 123:430-52



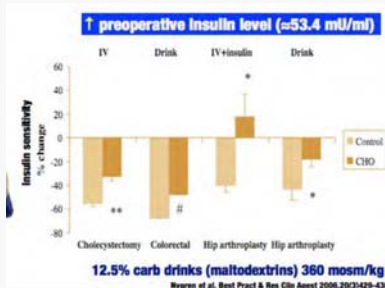
- Protein catabolism⁷
- Hyperglycemia⁷
- Insulin resistance⁷
- Decreased muscle glycogen⁷

CARBOHYDRATE LOADING

7

Core Element¹:
Preoperative carbohydrate treatment

- Increased muscle glycogen pre-op
- Decreased insulin resistance
- Decreased incidence of post-op hyperglycemia¹⁰
- Improved post-op nausea/vomiting and pain¹²



PRE-OPERATIVE FASTING

Core Element:

Clear liquids should be allowed 2hrs and solid foods 6hrs prior to anesthesia

Cochrane Review:

- No increased risk of aspiration¹¹
- Improved rate of gastric emptying compared to NPO status¹⁶

	Day (fed)	Night (fasted) ⁷
Hormones	↑ Insulin	↓ Insulin ↑ Glucagon ↑ Cortisol
Substrates	Storage	Breakdown
Utilization	CHO > fat	Fat > CHO

POST-OPERATIVE CARE

POST-OP FEEDING

Core Element¹:

Early intake of oral fluids and solids offered the day of surgery^{13,14}

Time to resume bowel function favors allowing normal PO intake ad libitum¹⁴

Recommendation grade:

- Post-operative early feeding and peri-operative ONS: Strong



POST-OP FEEDING

Nutrition Components:

- Protein recommendations are >1.2 g/kg (ASPEN)
- Protein > Energy⁶
- Immunonutrition (IN)¹⁵:
 - Arginine and Glutamine
 - HMB
 - Omega 3 FAs



PERI-OPERATIVE ONS

High protein immunonutrition supplement¹⁵

Pre-op: 5-7 days

Post-op: 7-14 days



Carbohydrate supplement¹⁰

100 g carbohydrate night prior to surgery

50 g carbohydrate 1-2 hrs prior to anesthesia

- Low osmolality (230 mOsm/kg H₂O)¹⁶



ERAS OUTCOMES

MEASURED OUTCOMES OF NUTRITION COMPONENTS IN ERAS

Financial Implications

- Decreased LOS³
 - Pre-op nutrition optimization
 - Pre-op IN and carbohydrate treatment
 - Early feeding post-op
 - High protein diet with ONS
- Decreased surgical complications³
 - Pre-op nutrition optimization
 - IN with arginine and glutamine
 - Carbohydrate loading and decreased insulin resistance
- Decreased readmission rates¹⁷
 - Early feeding post-op
 - ONS for 7-14 days post-op

IMPLEMENTING ERAS GUIDELINES IN YOUR FACILITY

PRE-OPERATIVE CARE

Nutrition Screening Prior to Surgery

- Admission screening implemented into EMR
- Nutrition screening as pre-surgical/pre-anesthesia checklist

Multidisciplinary TEAMWORK

- Open conversations with surgeons, hospitalists, anesthesiologists, clinic staff, nursing
- Use available resources (ONS, ERAS Guidelines)

PERI-OPERATIVE CARE

Automatic Interventions

- Power plans and nutrition screenings
 - RD consult
- Automatic ONS orders included in diet orders

INPATIENT AND POST-OPERATIVE CARE

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