



# Nutrition Can Help Improve Surgical Outcomes

Did you know...

**29%**

of well nourished patients experience complications post surgery<sup>1</sup>

**43%**

of patients with malnutrition are not diagnosed<sup>1</sup>

**72%**

of malnourished patients experience complications post surgery<sup>1</sup>

# Types of Surgical Nutrition

**Immunonutrition** — A blend of protein, arginine and fish oil to support immune health and recovery from surgery

Surgical stress results in prolonged inflammation and depletion of essential nutrients.

Meta-analyses report that perioperative immunonutrition is associated with:



Reduced wound complications<sup>2</sup>

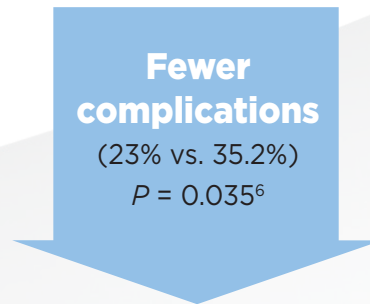
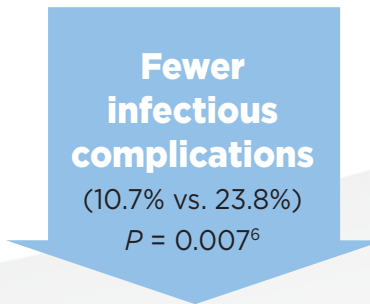
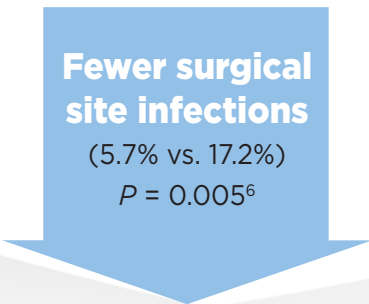


Reduced infectious complications<sup>3,4</sup>



Reduced hospital length of stay<sup>2-5</sup>

A randomized clinical trial compared the effects of a high protein formula or an immunonutrition formula on patient outcomes. Compared with the high protein formula, patients receiving immunonutrition experienced:



**Preoperative Carbohydrate Loading** — Complex carbohydrates help to provide energy to the body prior to surgery versus fasting

Benefits of preoperative carbohydrate loading:



Reduced preoperative hunger, thirst and anxiousness<sup>7,8</sup>



Reduced postoperative insulin resistance<sup>9</sup>



Reduced postoperative nausea and vomiting<sup>10,11</sup>

## The Impact of Surgical Nutrition

Intervention	Length of Stay Reduction Associated with Intervention	Cost Savings Associated with Length of Stay Reduction
Preoperative Carbohydrate Loading	0.7 Days <sup>12*</sup>	\$2,179 <sup>13†</sup>
Immunonutrition	2.4 Days <sup>3‡</sup>	\$7,417 <sup>13†</sup>

Immunonutrition and preoperative carbohydrate loading are supported by guidelines from both the **Enhanced Recovery After Surgery Society**<sup>14,§</sup> and the **American Society for Enhanced Recovery**.<sup>15</sup>

<sup>\*</sup>When compared to fasting  
<sup>†</sup>Based on average cost of stay per day for a patient undergoing elective colorectal surgery  
<sup>‡</sup>When compared to standard nutrition  
<sup>§</sup> These guidelines are for elective colorectal surgery

# The Ensure Surgical Nutrition Bundle

## ENSURE® SURGERY IMMUNONUTRITION SHAKE

### SURGICAL IMMUNONUTRITION



- Specially designed to support immune health and recovery from surgery
- High in protein to support protein synthesis, tissue repair, and wound healing<sup>16,17</sup>
  - 18 g protein
    - 4.2 g arginine
  - 1.1 g EPA & DHA (omega-3 fatty acids from fish oil)
  - 330 calories

**Drink 2-3  
shakes/day**

*for 5-7 days  
before and after surgery*

**If patient is at risk of  
malnutrition consider  
immunonutrition for  
a minimum of 7 days  
perioperatively**

## ENSURE® PRE-SURGERY CLEAR CARBOHYDRATE DRINK

### PREOPERATIVE CARBOHYDRATE LOADING



- Specially designed to help reduce insulin resistance after surgery and improve patient outcomes
- Contains complex carbohydrates and is low in osmolality, unlike sports drinks
  - 50 g carbohydrates
  - Antioxidants: zinc, selenium
  - 200 calories

**Drink 2  
bottles the night before  
surgery**

**Drink 1  
bottle up to 2 hours  
before surgery**

These products have not been reviewed or endorsed by the Enhanced Recovery After Surgery and American Society for Advanced Recovery.

**References:** 1. Awad S, et al. *Curr Opin Anesthesiol.* 2011;24(3):339-348. 2. Marik PE, et al. *JPEN J Parenter Enteral Nutr.* 2010;34(3):378-386. 3. Drovier JW, et al. *J Am Coll Surg.* 2011;212(3):385-399.e1. 4. Marimuthu K, et al. *Ann Surg.* 2012;255(6):1060-1068. 5. Cerantola Y, et al. *Br J Surg.* 2011;98(1):37-48. 6. Moya P, et al. *Medicine (Baltimore).* 2016;95(21):e3704-e3714. 7. Rizvanović N, et al. *Int J Colorectal Dis.* 2019;34(9):1551-1561. 8. Canbay Ö, et al. *Int Urol Nephrol.* 2014;46(7):1329-1333. 9. Wang ZG, et al. *Br J Surg.* 2010;97(3):317-327. 10. Hausel J, et al. *Br J Surg.* 2005;92(4):415-421. 11. Singh BN, et al. *Surg Endosc.* 2015;29(11):3267-3272. 12. Amer MA, et al. *Br J Surg.* 2017;104(3):187-97. 13. 2014 Healthcare Utilization Project National Inpatient Database (HCUP NIS). 14. Gustafsson UO, et al. *World J Surg.* 2019;43(3):659-695. 15. Wischmeyer PE, et al. *Anesth Analg.* 2018;126(6):1883-1895. 16. Demling RH. *Eplasty.* 2009;9:65-94. 17. Weitzel LR, et al. *Curr Opin Anaesthesiol.* 2009;22(2):177-183.