

Executive Summary

Proven Surgical Nutrition Protocol with IMPACT Advanced Recovery® Drink



Concept	<ul style="list-style-type: none"> A surgical nutrition protocol incorporating IMPACT Advanced Recovery® Drink provides evidence-based immune support to major elective surgery patients, reducing the risk of costly postoperative infectious complications, length of stay (LOS) and readmissions.¹⁻⁴
Challenges Addressed by IMPACT® Surgical Nutrition	<ul style="list-style-type: none"> The Hospital-Acquired Condition Reduction Program (HACRP) incentivizes hospitals to reduce hospital-acquired conditions (HACs) and improve quality based on rates of 6 key measures:⁵ <ol style="list-style-type: none"> 1- Patient safety indicator (PSI) 90 composite measure (includes post-operative sepsis, wound dehiscence and pressure injury)⁶ 2- Central line associated bloodstream infections (CLABSI) 3- Catheter-associated urinary tract infections (CAUTIs) 4- Surgical site infections (SSIs) specifically in colonic surgeries and abdominal hysterectomies 5- Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) bacteremia 6- <i>Clostridium difficile</i> infection (CDI) A large retrospective analysis of major elective surgery patients showed that a preoperative kit including IMPACT Advanced Recovery® Drink helped reduce SSI ($p < 0.044$), CAUTI ($p < 0.007$), CDI ($p < 0.016$), and PSI ($p < 0.001$) in the intervention vs. pre-intervention group.⁷ A single SSI can cost more than \$20,000,⁸ therefore, a decrease in SSIs can have a significant effect on helping health systems achieve the Quadruple Aim (Better Health, Better Care, Lower Costs, Less Burnout).⁹
Evidence Supporting IMPACT® Surgical Nutrition	<ul style="list-style-type: none"> The blend of immunonutrients in IMPACT Advanced Recovery® Drink is supported by 40+ randomized controlled trials and multiple quality improvement initiatives across multiple surgery types: GI, cardiac, head and neck cancer, bladder cancer, gyn-oncology, orthopedic, bariatric, thoracic cancer and ventral hernia repair.^{7, 10-20} IMPACT Advanced Recovery® Drink contains immunonutrients recommended perioperatively by the Society of Critical Care Medicine (SCCM) and the American Society of Parenteral And Enteral Nutrition (A.S.P.E.N), the A.S.P.E.N. Guidelines on Nutritional Support Therapy During Adult Anti-Cancer Treatment, the Guidelines on Enteral Nutrition: Surgery (ESPEN), the American Society of Enhanced Recovery (ASER) Implementation Guide, and the Perioperative Quality Initiative (POQI) Joint Consensus Statement.^{21-25*} A 50-58% reduction in hospital readmission of colorectal surgery patients was found with use of the Strong for Surgery** (S4S) Nutrition Checklist and incorporation of preoperative IMPACT Advanced Recovery®.^{3, 26} <ul style="list-style-type: none"> – Mean total costs were \$2,500 less at discharge for colorectal surgery patients who were S4S checklist and supplemented with IMPACT Advanced Recovery® Drink.³
What Makes IMPACT® Surgical Nutrition Unique	<ul style="list-style-type: none"> The proven blend of arginine, omega-3 fatty acids from fish oil, and dietary nucleotides supports the unique nutritional needs of the major elective surgery patient.²⁷⁻²⁹ A meta-analysis of 6 RCTs including 479 GI cancer surgery patients showed use of preoperative IMPACT® formulas associated with a 51% reduction in risk of infectious complications [OR 0.49 (95% CI 0.28, 0.85, $p = 0.01$)] when compared to isocaloric, isonitrogenous controls.¹ Reduce the risk of postoperative infectious complications by 51% ($p < 0.00001$) and hospital length of stay by 15% (avg. 2-3 days) ($p < 0.00001$) after major elective surgery.²
Benefits of Using IMPACT® Surgical Nutrition as part of an Enhanced Recovery Protocol (ERP)	<ul style="list-style-type: none"> ERPs including IMPACT Advanced Recovery® Drink have shown reductions in LOS, readmissions, hospital charges and infection rates.^{14, 15, 18, 19, 30} GI surgery patients provided with IMPACT Advanced Recovery® Drink preoperatively as part of an ERP, and at no charge, had a significantly reduced LOS when compared to ERP patients purchasing the product out-of-pocket.³¹
Implementation	<ul style="list-style-type: none"> Perioperative use of IMPACT Advanced Recovery® Drink is recommended for patients undergoing major elective surgery: two cartons per day or one UltraPak® per day*** for five days prior to surgery, and for at least five days following surgery.^{11, 30, 32} A Nestlé representative will support implementation of the perioperative protocol by raising program awareness and by providing staff education and compliance support.

* This statement does not constitute an endorsement of IMPACT Advanced Recovery® Drink or any other Nestlé Health Science product by SCCM, A.S.P.E.N., ESPEN or ASER.

** The American College of Surgeons and Strong for Surgery do not endorse IMPACT® formulas or any other product.

Strong for Surgery is a Quality Program of the American College of Surgeons.

*** Initiate IMPACT® Peptide 1.5 or IMPACT® tube feeding formula and advance to $\geq 1,000$ calories/day to meet nutritional needs. Also available in open system.

These are suggested guidelines for nutrition for major elective surgery patients based on various clinical references.

They are not intended as a substitute for medical advice or existing facility protocols.

References

1. Adiamah A et al. The impact of preoperative immune modulating nutrition on outcomes in patients undergoing surgery for gastrointestinal cancer. *Ann Surg* 2019; 270(2): 247-256.
2. Drover JW et al. Perioperative use of arginine-supplemented diets: a systematic review of the evidence. *J Am Coll Surg* 2011; 212(3): 385-399.
3. Banerjee S et al. Arginine-based immunonutrition on inpatient total costs and hospitalization outcomes for patients undergoing colorectal surgery. *Nutr* 2017;42:106-13.
4. Mauskopf JA et al. Immunonutrition for patients undergoing elective surgery for gastrointestinal cancer: impact on hospital costs. *WJSO* 2012;10:136.
5. <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Downloads/HAC-Reduction-Program-Fact-Sheet.pdf>
6. AHRQ Quality Indicators. Quality Indicator User Guide: PSI Composite Measures. Version 2020. https://qualityindicators.ahrq.gov/Downloads/Modules/PSI/V2020/PSI_Composite_Development.pdf
7. Kelley KE et al. Impact of a novel preoperative patient-centered surgical wellness program. *Ann Surg* 2018;268(4): 650-56.
8. de Lissovoy G et al. Surgical site infection: incidence and impact on hospital utilization and treatment costs. *Am J Infect Control* 2009; 37:387-397.
9. Menzin AW et al. *Mayo Clin Proc Inn Qual Out* 2020; 4(5): 499-505.
10. Tepaske R et al. Glycine does not add to the beneficial effects of perioperative oral immune-enhancing nutrition supplements in high-risk cardiac surgery patients. *JPEN* 2007;31(3):173-180.
11. Rowan NR et al. Utility of a perioperative nutritional intervention on postoperative outcomes in high-risk head and neck cancer patients. *Oral Onc* 2016; 54:42-46.
12. Bertrand BJ et al. Impact of preoperative immunonutrition on morbidity following cystectomy for bladder cancer: a case-control pilot study. *World J Urol* 2014; 32:233-237.
13. Chapman JS et al. Post-operative enteral immunonutrition for gynecologic oncology patients undergoing laparotomy decreases wound complications. *Gynecologic Oncology* 2015;137:523-528.
14. Goncalves TJM et al. Perioperative immunonutrition in elderly patients undergoing total hip and knee arthroplasty: impact on postoperative outcomes *JPEN* 2020; on-line first.
15. Alioto Aprelino M and de Aguilar-Nascimento JE. Multimodal perioperative care plus immunonutrition versus traditional care in total hip arthroplasty: a randomized pilot study. *Nutrition Journal* 2016;15:1-7.
16. Heynen K. Pre-op Nutrition: making an "IMPACT". Presented at the American Society of Enhanced Recovery (ASER), May 15, 2018.
17. Kaya SO et al. Is preoperative protein-rich nutrition effective on postoperative outcome in non-small cell lung cancer surgery? A prospective randomized study. *J Cardiothor Surg* 2016;11:14.
18. Majumder A et al. Benefits of multimodal enhanced recovery pathway in patients undergoing open ventral hernia repair. *J Am Coll Surg* 2016;222:1106-1115.
19. Robinson LA et al. Preoperative nutrition-enhanced recovery after surgery protocol for thoracic neoplasms. *J Thorac Cardiovasc Surg* 2020; on-line ahead of print.
20. Ochoa JB et al. Preoperative immunonutrition in elective orthopedic and bariatric surgery: clinical outcomes with patient compliance. Presented at ASER 2021: A40.
21. McClave SA et al. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: SCCM and A.S.P.E.N. *JPEN* 2009; 33(3): 277-316.
22. August DA and Huhmann MB. A.S.P.E.N. Clinical guidelines: nutrition support therapy during adult anticancer treatment and in hematopoietic cell transplantation. *JPEN* 2016;40(2):159-211.
23. Weimann A et al. ESPEN guideline: Clinical nutrition in surgery. *ESPEN* 2017;36:623-650.
24. ASER. Enhanced Recovery Implementation Guide. Sept 2016. <http://aserhq.org/membership-education/non-member-items/implementation-guide-preview/>
25. Wischmeyer PE et al. American Society for Enhanced Recovery and Perioperative Quality Initiative Joint Consensus Statement on nutrition screening and therapy with a surgical enhanced recovery pathway. *Anesth Analg* 2018;126(6):1883-95.
26. Strong for Surgery. American College of Surgeons. June 2021. <https://www.facs.org/quality-programs/strong-for-surgery/clinicians/nutrition>
27. Zhu X et al. The central role of arginine catabolism on T-cell dysfunction and increased susceptibility to infection after physical injury. *Ann Surg* 2014;259:171-178.
28. Santora R and Kozar RA. Molecular mechanisms of pharmaconutrients. *J Surg Res* 2010;161:288-294.
29. Bansal V et al. Interactions between fatty acids and arginine metabolism: implications for the design of immune-enhancing diets. *JPEN* 2005; 29:S75.
30. Hamilton-Reeves JM et al. Effects of immunonutrition for cystectomy on immune response and infection rates: a pilot randomized controlled clinical trial. *Euro Urol* 2016;69(3):389-392.
31. Kavanaugh E et al. Enhanced recovery after surgery: does the provision of an immune-modulating protein supplement improve post-operative outcomes? Presented at ERAS-USA Nov 2018.
32. Waitzberg DL, Saito H et al. Postsurgical infections are reduced with specialized nutrition support. *World J Surg* 2006; 30:1592-1604.

USE UNDER MEDICAL SUPERVISION

IMPACT ADVANCED RECOVERY® is a registered trademark of Société des produits Nestlé S.A., Vevey Switzerland. ©2021 Nestlé. All rights reserved.

IPCT-13203-0721