UNJURY®

MEDICAL QUALITY PROTEIN™

Clinical Indications for Protein Use by Common Medical Condition:

A Resource for Healthcare Professionals

Research Based

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UNJURY®

MEDICAL QUALITY PROTEIN™

Disease State / Conditions Researched

- Weight Loss Surgeries
- Weight Loss (Overweight and Obesity)
- Diabetes
- Pregnancy
- Lactation
- Aging
- Stroke
- Cardiovascular Disease
- Critical Care and Enteral Feedings
- Chyle Leaks
- COPD
- Cystic Fibrosis
- Malnutrition
- Wounds/decubitus ulcers/burns
- Vegetarians
- HIV
- PCOS
- Oncology
- Dysphagia and Difficulties Chewing
- Liver Disease
- Inflammatory Bowel Disease
- Eating Disorders
- Sports Nutrition

Weight Loss Surgeries

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Protein is a major priority following bariatric surgery. Protein deficiencies are common after bariatric surgery, as many patients struggle to get the amount of high quality protein they need through foods or beverages alone. Unjury contains 21 g of high-quality protein per serving to help patients meet their elevated needs. Protein is not only important immediately after surgery, but in the long-term as well. Many patients tend to regain weight when they stop using protein supplements. Information on protein needs after weight loss surgery remains somewhat limited and more research is still needed. Aiming for the higher end of current recommendations gives patients a good "insurance policy" and helps ensure that if guidelines eventually trend higher, their protein needs have been met.	Protein needs of bariatric surgery patients can range from 60 – 120 g per day. Studies suggest that higher protein intakes (at least 80-90 g/day) are associated with reduced loss of lean body mass.	Mechanick JI, Kushner RF, Sugerman HJ, Gonzalez-Campoy M, Collazo-Clavell ML, Guven S, Spitz AF, Apovian CM, Livingston EH, Brolin R, Sarwer DB, Anderson WA, Dixon J. American Association of Clinical Endocrinologists, The Obesity Soceity, and American Society for Metabolic & Bariatric Surgery medical guidelines for clinical practice for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric patient. Surg Obes Relat Dis. 2008; 4: S109-S184. Mechanick JI, Youdim A, Jones DB, Garvey WT, Hurley DL, McMahon M, Heinberg LJ, Kushner R, Adams TD, Shikora S, Dixon JB, Brethauer S. Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient – 2013 update: cosponsored by American Association of Clinical Endocrinologist, The Obesity Society, and American Society for Metabolic & Bariatric Surgery. Surg Obes Relat Dis. 2013; 9: 159-191. Raftopoulos I, Bernstein B, O'Hara K, Ruby JA, Chhatrala R, Carty J. Protein intake compliance of morbidly obese patients undergoing bariatric surgery and its effect on weight loss and biochemical parameters. Surg Obes Relat Dis. 2011; 7: 733-742. Faria SL, Faria OP, Buffington C, de Almeida Cardeal M, Ito MK. Dietary protein intake and bariatric surgery patients: a review. Obes Surg. 2011; 21: 1798 – 1805.

Weight Loss Surgeries (CONTINUED)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Unjury is a whey protein isolate that can be successfully used throughout diet advancement post-bariatric surgery. Unjury can be mixed with clear liquids (Strawberry Sorbet, Chicken Soup, and Unflavored), full liquids (any flavor), and incorporated into a solid food diet as well. Unjury is well-tolerated postoperatively, easily absorbed, and helps patients feel fuller, longer, leading to better overall diet compliance and improved body composition.	For bariatric patients, supplemental, liquid protein supplements may be critical for achieving postoperative satiety, and preventing loss of lean body mass during rapid weight loss without adding unnecessary fat or carbohydrate to the diet. "The highest quality protein products are made of whey protein, which provides high levels of branched-chain amino acids (important to prevent lean tissue break down), remain soluble in the stomach, and are rapidly digested."	Mechanick JI, Kushner RF, Sugerman HJ, Gonzalez-Campoy M, Collazo-Clavell ML, Guven S, Spitz AF, Apovian CM, Livingston EH, Brolin R, Sarwer DB, Anderson WA, Dixon J. American Association of Clinical Endocrinologists, The Obesity Soceity, and American Society for Metabolic & Bariatric Surgery medical guidelines for clinical practice for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric patient. Surg Obes Relat Dis. 2008; 4: S109-S184. Faria SL, Faria OP, Buffington C, de Almeida Cardeal M, Ito MK. Dietary protein intake and bariatric surgery patients: a review. Obes Surg. 2011; 21: 1798 – 1805.

Weight Loss (Overweight and Obesity)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Whey protein helps promote healthy weight loss. Unjury is a whey protein isolate supplement that helps people achieve healthy weight loss by reducing unhealthy fat mass and preserving important lean body mass. Lean body mass is not only the muscles that we can see on our bodies, like our biceps or triceps, but also important organs like our heart and lungs.	Whey protein supplementation appears to play an important role in dieting by promoting fat loss and preserving lean body mass.	Baer DJ, Stote KS, Paul DR, Harris K, Rumpler WV, Clevidence BA. Whey protein but not soy protein supplementation alters body weight and composition in free-living overweight and obese adults. J Nutr. 2011; 141: 1489 - 1494. Arciero PJ, Baur D, Connelly S, Ormsbee MJ. Timed-daily ingestion of whey protein and exercise training reduces visceral adipose tissue mass and improves insulin resistance: the PRISE study. J Appl Physiol. 2014; 117: 1-10. Pal S, Radavelli-Bagatini S. The effects of whey protein on cardiometabolic risk factors. Obes Rev. 2013; 14: 324 – 343.
One of the leading reasons diets fail is hunger. Unjury is a high-quality, whey protein isolate that helps curb appetite, which may lead to a reduction in overall energy intake. Unjury also tastes great… Another factor that helps people stick to their diets!	Relative to casein, egg albumin, soy protein, and carbohydrate, whey protein consumption was found to have greater subjective reports of satiety, delays in the return of hunger, and can lead to greater suppression of food intake.	Anderson GH, Tecimer SN, Shah D, Zafar TA. Protein source, quantity, and time of consumption determine the effect of proteins on short-term food intake in young men. J Nutr. 2004; 134: 3011 – 3015. Pal S, Radavelli-Bagatini, Hagger M, Ellis V. Comparative effects of whey and casein proteins on satiety in overweight and obese individuals: a randomized controlled trial. Eur J Clin Nutr. 2014; 68: 980 – 986. Faria SL, Faria OP, Buffington C, de Almeida Cardeal M, Ito MK. Dietary protein intake and bariatric surgery patients: a review. Obes Surg. 2011; 21: 1798 – 1805.

Diabetes

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Whey protein may improve diabetes management. Unjury's protein source is 100% whey protein isolate and can be incorporated into healthy meals or used as a snack to help regulate blood sugars. Unjury is low in sugar (≤ 3 grams per serving) and won't complicate blood glucose control.	Whey protein reduces spikes in blood glucose following a meal and improves glucose regulation by slowing gastric emptying and stimulating insulin response.	Jing M, Stevens JE, Cukier K, Maddox AF, Wishart JM, Jones KL, Clifton PM, Horowitz M, Rayner, CK. Effects of a protein preload on gastric empting, glycemia, and gut hormones after a carbohydrate meal in diet-controlled type 2 diabetes. Diabetes Care. 2009; 32: 1600-1602. Pal S, Ellis, V. The acute effects of four protein meals on insulin, glucose, appetite, and energy intake in lean men. Br J Nutr. 2010; 104: 1241-1248. Mortensen LS, Holmer-Jensen J, Hartvigsen ML, Jensen VK, Astrup A, de Vrese M, Holst JJ, Thomsen C, Hermansen K. Effects of different fractions of whey protein on postprandial lipid and hormone responses in type 2 diabetes. Eur J Clin Nutr. 2012; 66: 799-805.
Using Unjury Protein regularly as part of a healthy diet may help with long-term management of diabetes.	Whey protein may decrease long-term blood insulin levels and improve insulin sensitivity.	Pal S, Ellis V, Dhaliwal S. Effects of whey protein isolate on body composition, lipids, insulin, and glucose in overweight and obese individuals. Br J Nutr. 2010; 104: 716 – 723.
Unjury Protein helps you feel full and satisfied which helps "crowd out" sugary, unhealthy food choices and may lead to reductions in caloric intake, which promotes healthy weight loss and may also lead to improved diabetes management.	Whey protein consumption was found to have greater subjective reports of satiety, delays the return of hunger, and can lead to greater suppression of food intake.	Anderson GH, Tecimer SN, Shah D, Zafar TA. Protein source, quantity, and time of consumption determine the effect of proteins on short-term food intake in young men. J Nutr. 2004; 134: 3011 – 3015.

Pregnancy

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Pregnant women need protein. Unjury is a safe and effective way to get the protein needed for healthy growth, development, and support of the fetus, and maintaining the health of important tissues and organs of the mother, like her heart, blood, breasts, and uterus. Protein intake may suffer during the first trimester due to nausea and related symptoms. Unjury is an easy and well-tolerated way to meet essential protein needs while also potentially improving nausea. Protein needs during the second half of pregnancy are ~25 g/day higher than that of non-pregnant adults, based on the current RDAs. An easy way to get that extra protein: Unjury mixed with 8 oz of unsweetened almond milk for a total of 24 g of protein.	Consuming adequate protein during pregnancy is critical for positive pregnancy outcomes. Current RDAs for protein during pregnancy • First half of pregnancy = 0.8 g/kg/day • Second half of pregnancy = 1.1 g/kg/day	Institute of Medicine of the National Archives. Dietary Reference Intake: The Essential Guide to Nutrient Requirements. Washington, D.C.: The National Academies Press; 2006. Picciano MF. Pregnancy and lactation: physiological adjustments, nutritional requirements and the role of dietary supplements. J Nutr. 2003; 133: 1997S – 2002S.

Pregnancy (CONTINUED)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Many maternal adaptations involving protein occur early in pregnancy, followed by a steady increase in demand as pregnancy progresses. Unjury can be used as a high-quality protein source early in pregnancy to help meet protein needs while also reducing morning sickness, and can continue to be used throughout gestation to promote the health of mother and baby.	Results of a new study suggest that "dietary protein needs are increased compared with non-pregnant adults from early gestation (~16 weeks) and onwards." "The estimated average protein requirements for healthy pregnant women during early and late gestation were determined to be 1.22 g/kg/day and 1.52 g/kg/day, respectively."	Stephens TV, Payne M, Ball RO, Pencharz PB, Elango R. Protein requirements of healthy pregnant women during early and late gestation are higher than current recommendations. J Nutr. 2015; 145: 73 – 78.
Unjury can help moms of multiples meet their high protein needs without adding significant amounts of sugars/carbohydrates and fat that could contribute to excessive weight gain.	Women carrying twins should increase their protein intake by an additional 50 g/day beginning in the second trimester.	Institute of Medicine of the National Archives. Dietary Reference Intake: The Essential Guide to Nutrient Requirements. Washington, D.C.: The National Academies Press; 2006.
First-trimester nausea affects 50-80% of pregnant women,however the reasons behind its occurrence remains poorly understood. It is possible that slow gastric wave dysrhythmias may be the cause. Protein seems to stabilize these gastric dysrhythmias and improve nausea. Unjury provides 21 g of protein per serving that may help reduce nausea in pregnancy while also helping women meet their elevated protein needs for fetal development. Women who have used Unjury during pregnancy tell us that our Chicken Soup flavor is particularly well-tolerated and delicious. Recommendations to consume solid carbohydrate meals (ie crackers) are actually based largely on anecdotal reports, not scientific evidence.	Protein-dense meals improve symptoms of women with first-trimester nausea to a significantly greater degree than carbohydrates, fats, or noncaloric meals.	Jednak MA, Shadigian EM, Kim MS, Woods ML, Hooper FG, Owyang C, Hasler WL. Protein meals reduce nausea and gastric slow wave dysrhythmic activity in first trimester pregnancy. Am J Physiol. 1999; 277: G855 – G861.

Lactation

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
The importance of protein doesn't end after pregnancy. Nutritional demands during lactation are considerably greater than those of pregnancy. Unjury is a safe way for lactating mothers to get the protein they need to support healthy milk production without excess sugars or fats that may hinder post-partum weight loss.	Current RDAs for protein for lactating women: • 1.3 g/kg/day (~71 g/day)	Institute of Medicine of the National Archives. Dietary Reference Intake: The Essential Guide to Nutrient Requirements. Washington, D.C.: The National Academies Press; 2006.

Aging

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Seniors need more protein. Unjury is a safe and easy way for older adults to help meet their protein needs, especially those who have difficulties getting their protein from food sources due to taste changes, food aversions, and changes in appetite. Unjury is also very low in lactose, making it extremely well-tolerated in older adults who experience lactose intolerance.	New evidence shows that optimal protein intake for older adults is higher than the level currently recommended for adults of all ages. Studies suggest protein needs for older adults may range from 1.0 – 1.2 g/kg/day and up to 1.5 g/kg/day for older adults who exercise or are regularly active. Protein needs are also increased for older adults with chronic or acute illnesses, ranging from 1.2-1.5 g/kg/day.	Bauer J, Biolo G, Cederholm T, Cesari M, Cruz-Jentoft AJ, Morley JE, Phillips S, Sieber C, Stehle P, Teta D, Visvanathan R, Volpi E, Boirie Y. Evidence-based recommendations for optimal dietary protein intake in older people: a position paper form the PROT-AGE study group. J Am Med Dir Assoc. 2013; 14:542-559. Morley JE, Argiles JM, Evans WJ, Bhasin S, Cella D, Deutz NEP, Doehner W, Fearon KCH, Ferrucci L, Hellerstein MK, Kalantar-Zadeh K, Lochs H, MacDonald N, Mulligan K, Muscaritoli M, Ponikowski P, Posthauer ME, Fanelli FR, Schambelan M, Schols AMWJ, Schuster MW, Anker SD. Nutritional recommendations for the management of sarcopenia. J Am Med Dir Assoc. 2010; 11:391-396. Beasley JM, Shikany JM, Thomson CA. The role of dietary protein intake in the prevention of sarcopenia of aging. Nutr Clin Pract. 2013; 28: 684-690.
Unjury is a high-quality, whey protein isolate that contains 21 g of protein per serving that is easy for older adults to incorporate into their diets as fortification to low-protein meals or as snacks between meals.	Ingestion of 15 g of whey protein stimulates muscle protein synthesis in elderly, possibly because of its significant leucine content, which plays an important role in muscle synthesis. "Consider protein supplementation in patients with sarcopenia who are unsuccessful meeting protein needs through diet modification alone and there are no medical contraindications."	Paddon-Jones D, Sheffield-Moore M, Katsanos CS, Zhang XJ, Wolfe RR. Differential stimulation of muscle protein synthesis in elderly humans following isocaloric ingestions of amino acids or whey protein. Exp Gerontol. 2006; 41:215-219. Beasley JM, Shikany JM, Thomson CA. The role of dietary protein intake in the prevention of sarcopenia of aging. Nutr Clin Pract. 2013; 28: 684-690. Paddon-Jones D, Rasmussen BB. Dietary protein recommendations and the prevention of sarcopenia. Curr Opin Clin Nutr Metab Care. 2009; 12: 86-90.

Stroke

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Protein may aid recovery after a stroke. Brain protein synthesis is important for the survival of neurons, which are the basic building blocks of the nervous system. Unjury Protein can be used to supplement the diets of post-stroke patients, can be mixed successfully with food thickeners (if necessary), and can be used along with enteral formulas via feeding tubes.	Protein supplementation may enhance neurological recovery in subacute patients with ischemic stroke through amino acid reactivation of brain protein synthesis.	Aquilani R, Scocchi M, Iadarola P, Franciscone P, Verri M, Boschi F, Pasini E, Viglio S. Protein supplementation may enhance the spontaneous recovery of neurological alterations in patients with ischemic stroke. Clin Rehabil. 2008; 22: 1042 - 1050.
Poor nutrition is common among patients after a stroke. Unjury can be used in efforts to prevent or reverse malnutrition and hopefully reduce nutrition-related complications.	Protein and energy supplements may benefit patients with malnutrition following stroke, for example, reducing pressure sores.	Geeganage C, Beavan J, Ellender S, Bath PM. Interventions for dysphagia and nutritional support in acute and subacute stroke. Cochran Database Syst Rev. 2012; 10.
This study may suggest that whey, which is Unjury's only protein source, could provide additional benefits to patients after stroke.	Enteral formulas containing whey protein may decrease inflammation and increase antioxidant defenses in elderly patients with ischemic stroke, compared to casein-containing formula.	Eduardo de Aguilar-Nascimento J, Prado Silveira BR, Dock-Nascimento DB. Early enteral nutrition with whey protein or casein in elderly patients with acute stroke: a double-blind randomized trial. Nutrition. 2011; 27: 440-444.
More research is likely needed on this topic, but is an interesting suggestion	Findings suggest that moderate dietary protein intake may lower the risk of stroke. (some evidence suggestions that animal protein, with the exception of red meat was slightly more effective than vegetable protein, although there was not enough data on vegetable consumption to reach a definitive conclusion)	Zhang Z, et al. Quantitative analysis of dietary protein intake and stroke risk. Neurology. 2014.

Cardiovascular Disease

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Consuming more protein may be linked to better cardiovascular health. **Hypertension** - It is thought that whey reduces blood pressure through lactokinins that inhibit ACE (angiotensin-converting enzyme), the enzyme that controls vasoconstriction.	Reductions in blood pressure and thus a reduced risk of developing hypertension may be promoted by consuming whey protein isolate.	Pal S, Radavelli-Bagatini S. The effects of whey protein on cardiometabolic risk factors. Obes Rev. 2013; 14: 324 – 343.
Lipid Metabolism - Whey may improve lipid metabolism by inhibiting cholesterol synthesis in the liver. - Further studies are needed to strengthen these relationships, but it appears that incorporating Unjury into a healthy diet may provide additional health benefits, such as cardiovascular improvements.	Whey protein seems to improve lipid profiles of both animals and humans. In a study conducted with overweight and obese individuals, supplementation with whey protein reduced plasma total cholesterol and LDL cholesterol after 12 weeks in comparison to a group supplemented with casein (and a control group).	Pal S, Ellis V, Dhaliwal S. Effects of whey protein isolate on body composition, lipids, insulin, and glucose in overweight and obese individuals. Br J Nutr. 2010; 104: 716 – 723.

Critical Care and Enteral Feedings

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Protein is a top priority in critical care. Protein appears to be the most important macronutrient for wound healing, supporting immune function, and maintaining lean body mass in the critical care setting. For most critically ill patients, protein requirements are proportionately higher than energy requirements. Unjury Protein is safe to use in the critical care setting for patients able to consume an oral diet or for those receiving enteral nutrition support to help them meet their proportionately higher protein needs for proper nitrogen balance and recovery.	Protein needs can be significantly elevated in the critical care setting. Protein requirements are typically in the range of 1.2-2.0 g/kg of body weight per day, and may likely be even higher in burn or multi-trauma patients. Protein should be provided in a range ≥ 2.0 g/kg ideal body weight per day for patients with BMIs of 30-40, and ≥ 2.5 g/kg ideal body weight for patients with BMIs >40.	McClave SA, Martindale RG, Vanek VW, McCarthy M, Roberts P, Taylor B, Ochoa JB, Napolitano L, Cresci G. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). J Parenter Enteral Nutr. 2009; 33: 277 – 326.

Critical Care and Enteral Feedings (CONTINUED)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Unjury Protein can be used as a modular supplement with enteral feeding regimens. It is easily administered, has a low rate of tube feeding clogs when administered properly, boosts protein by 21 g (for only 90- 100 total calories), and has negligible amounts of lactose for improved tolerance. Stir one packet of Unjury into 90ml of tepid/warm tap water until dissolved. Administer immediately via syringe through the feeding tube (not directly mixed into the feeding bag). Then flush tube with 30 ml of water.	Use of additional modular protein supplements is a common practice, as standard enteral formulations tend to have a high non-protein calorie to nitrogen ratios.	McClave SA, Martindale RG, Vanek VW, McCarthy M, Roberts P, Taylor B, Ochoa JB, Napolitano L, Cresci G. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). J Parenter Enteral Nutr. 2009; 33: 277 – 326.

Chyle Leaks

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Fat-free, protein-rich supplements can be a valuable tool in chyle leak management. Unjury Protein is fat-free and provides much needed protein and calories to prevent malnutrition. Unjury can be mixed with a variety of fat-free liquids including skim milk, juice, lemonade, and tea. Chicken Soup and Strawberry Sorbet, can be successfully mixed with water.	For patients who are well-nourished and able to take food by mouth, a fat-free oral diet may be an option for chyle leak management with the goal of also trying to prevent malnutrition.	McCray S, Rees Parrish C. Nutritional management of chyle leaks: an update. Nutritional Issues in Gastroenterology, Series #94. Pract Gastroenterol. 2001: 12 – 32.

COPD

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Many people with COPD fail to meet their protein needs. Malnutrition is common in COPD and is associated with increased disability, diminished respiratory and muscle strength and endurance, alteration in ventilator capacity, increased susceptibility to infections and impaired quality of life. Unjury can be used by patients with COPD to supplement meals or between meals to help meet their protein and energy demands.	Intake of energy and protein below their demand is common in patients with COPD. The prevalence of malnutrition is reported to vary between 20% and 70% for different patient groups with COPD and appears to be the highest in combination with emphysema.	Yazdanpanah L, Shidfar F, Javad Moosavi A, Heidarnazhad H, Haghani H. Energy and protein intake and its relationship with pulmonary function in chronic obstructive pulmonary disease (COPD) patients. Acta Med Iran. 2010; 48: 374 – 379. Akner G, Cederholm T. Treatment of protein-energy malnutrition in chronic nonmalignant disorders. Am J Clin Nutr. 2001; 74: 6-4.
The anti-inflammatory properties of whey along with its ability to promote muscle synthesis during exercise/ strength training, may be the reason for the improvements seen in COPD patients. Unjury's protein source is 100% high-quality whey protein isolate.	The combination of anti-inflammatory nutritional supplementation with whey peptide and low-intensity exercise was successful in increasing weight and energy intake as well as exercise capacity in patients with COPD.	Sugawara K, Takahashi H, Kashiwagura T, Yamada K, Yanagida S, Homma M, Dairiki K, Sasaki H, Kawagoshi A, Satake M, Shioya T. Effect of anti-inflammatory supplementation with whey peptide and exercise therapy in patients with COPD. Respir Med. 2012; 106: 1526 – 1534.

Cystic Fibrosis

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Nutritional needs for people with Cystic Fibrosis are elevated, including protein requirements. Unjury Protein is a concentrated source of high-quality whey protein that can be added to high-calorie, high-fat beverages or foods (whole milk, milkshakes, etc.) that can help adults with cystic fibrosis meet their elevated energy, protein, and fat needs.	Nutritional guidelines for individuals with CF recommend meeting 200% of the reference nutrient intake (RNI) for protein. < 40% of adult cystic fibrosis patients achieve the recommended intake for protein and only 28% achieve their needs for both energy and protein. The introduction of oral supplements results in increased energy and protein intake.	White H, Morton AM, Peckham DG, Conway SP. Dietary intakes in adult patients with cystic fibrosis – do they achieve guidelines? J Cyst Fibros. 2004; 3: 1-7.

Cystic Fibrosis (CONTINUED)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Glutathione is an anti-oxidant that functions as a major front-line defense against oxidants in the lungs. Inflammation, as present in CF, increases the demand for glutathione and may also be limited if nutritional status is compromised. Whey supplements, like Unjury Protein, are rich in cysteine, an important precursor of glutathione.	Dietary supplementation with a whey-based product can increase glutathione levels in cystic fibrosis which may be useful in counteracting the deleterious effects of oxidative stress in the lungs of these patients.	Grey V, Mohammed SR, Smountas AA, Bahlool R, Lands LC. Improved glutathione status in young adult patients with cystic fibrosis supplemented with whey protein. J Cyst Fibros. 2003; 2: 195 – 198.

Malnutrition

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Inadequate protein intake plays a large role in the development of malnutrition. Unjury can be mixed into a variety of energy-rich foods and beverages to help supply patients with the protein and energy they need for prevention or reversal of malnutrition. The versatility and great taste of Unjury makes it a product that yields great patient compliance, which leads to better nutrition results.	Available data indicates that nutritional supplements can have positive effects when given to chronically ill, nonmalignant patients with Protein-Energy Malnutrition or at risk for PEM. Protein-energy supplementation in elderly patients at risk for malnutrition appears to result in small, but consistent weight gain, benefit mortality in patients who are undernourished, and may also reduce the risk of complications.	Akner G, Cederholm T. Treatment of protein-energy malnutrition in chronic nonmalignant disorders. Am J Clin Nutr. 2001; 74: 6-4. Milne AC, Potter J, Vivanti A, Avenell A. Protein and energy supplementation in elderly people at risk for malnutrition. Cochran Database Syst Rev. 2009; 2.

Wounds/Decubitus Ulcers/Burns

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
The role protein plays in the repair and rebuilding of tissue is well established. Adequate protein intake is crucial for patients with wounds or burns as it ensures cell multiplication and collagen and connective tissue formation. Unjury can be used as a high quality protein supplement for patients with elevated protein requirements to aid wound healing.	Increased protein levels have been associated with improved healing rates. Protein deficits tend to correlate with higher wound complication rates, increased incidents of infection, and increased wound failure. Recommended guidelines for protein provisions are between 1.25 – 1.5 g/kg body weight/day (Agency for Healthcare Research and Quality). Clinical judgement should be used as protein needs may be higher for patients with multiple wounds, exuding wounds with significant nitrogen losses, and other comorbidities.	Dorner B. Posthauer ME, Thomas D. The role of nutrition in pressure ulcer prevention and treatment: National Pressure Ulcer Advisory Panel white paper. 2009. Arnold M, Barbul A. Nutrition and Wound Healing. Plast Reconstr Surg. 2006; 117: 42S-58S.

Wounds/Decubitus Ulcers/Burns (CONTINUED)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Adequate protein intake is crucial for patients with wounds or burns as it ensures cell multiplication and collagen and connective tissue formation. Unjury is a protein-dense, whey protein isolate supplement that can be consumed orally by burn/would patients in addition to their diet. Or it can be administered via a feeding tube to increase total protein delivery to meet elevated requirements of these metabolically stressed patients without significantly altering the delivery of other nutrients (≤ 4 grams of CHO and 0 g fat/serving).	"Intact protein, particularly of whey source, has been proved superior to free amino acids in maintaining body weight and nitrogen retention." "High-protein regimens in stable burn patients have shown achievement of nitrogen balance, increased rates of restored body weight and muscle function, and better immune function. High protein regimens (>1.5 g/kg/day) are recommended for burn patients until significant wound healing is achieved." "Patients with burn injuries affecting greater than 25% TBSA benefit from approximately 23% of total calories as protein. Given the hypermetabolic state of the burn patient, this may translate to 3 to 5 g/kg/d."	Cresci G. Nutrition Support for the Critically Ill Patient: A Guide to Practice. Boca Raton, FL: Taylor & Francis Group; 2005. Chan MM, Chan GM. Nutritional therapy for burns in children and adults. J Nutr. 2009; 25: 261 – 269

Renal Disease

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
The importance of protein intake in people with renal disease is often overlooked. Unjury is a high biological value protein (PDCAAs score of 100%) that is safe for renal/dialysis patients to use to help meet their protein needs. High-protein foods tend to be major sources of nutrients that renal patients typically need to avoid (phosphorus, cholesterol, and fat). Unjury is fat and cholesterol-free, contains 80 mg or less of phosphorus per serving, and 150 mg or less of potassium per serving. All flavors, except chicken soup, are also low in sodium and contain 90 mg or less per serving.	The prevalence of malnutrition is high and dietary protein intake is typically low in patients with chronic renal failure. Malnutrition is an indicator of poor outcomes in renal failure. 1.2 g of protein/kgBW/day is recommended for clinically stable hemodialysis patients to maintain neutral or positive nitrogen balance. At least 50% of that protein should be of high biological value. 1.2-1.3 g of protein/kgBW/day is recommended for clinically stable patients receiving peritoneal dialysis. At least 50% of that protein should be of high biological value. For patients who are unable to meet their protein needs, oral diet may be fortified with protein supplements. Although protein restriction may be necessary for some patients with chronic renal failure not receiving dialysis, close nutritional monitoring is advised, as PEM is common in these patients and often predates the onset of renal replacement therapy initiation.	Akner G, Cederholm T. Treatment of protein-energy malnutrition in chronic nonmalignant disorders. Am J Clin Nutr. 2001; 74: 6-4. National Kidney Foundation Guidelines. Nutrition in Chronic Renal Failure. Am J Kidney Dis. 2000; 35.

Renal Disease (CONTINUED)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Critically ill renal patients may have difficulties meeting their elevated protein needs via oral diet or may be unable to consume an oral diet at all. Enteral formula designed for renal patients typically only provide 1.0 to 1.1 g protein/ kgBW when delivered at approximately 30kcal/kgBW. Adding Unjury to a renal supplement or enteral feeding regimen can boost protein intake without significantly increasing sodium, phosphorus, potassium, carbohydrate, or fat intakes.	Acutely ill, catabolic patients receiving more intensive dialysis treatments may tolerate and benefit from protein intakes greater than 1.2-1.3 g/kgBW/day. Protein delivery of 1.5-1.8 g/kgBW/ day may be needed to achieve nitrogen balance in patients with acute renal failure receiving continuous renal replacement therapy. Patients with severe ARF may have significant protein losses and require even greater protein delivery.	National Kidney Foundation Guidelines. Nutrition in Chronic Renal Failure. Am J Kidney Dis. 2000; 35. Cresci G. Nutrition Support for the Critically Ill Patient: A Guide to Practice. Boca Raton, FL: Taylor & Francis Group; 2005.

Vegetarians

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Protein quality may be lacking in the diets of some vegetarians. Unjury is a complete protein that provides all essential amino acids, is especially high is lysine, and is acceptable for lacto-ovo vegetarians.	Protein needs might be higher for some vegetarians whose dietary protein sources are mainly those that are from plant proteins that are not as easily digested, such as some cereals and legumes. The essential amino acid, lysine, is low in many non-animal sources of protein.	Mangels AR, Messina V, Vesanto M. Position of the American Dietetic Association and Dietitians of Canada: Vegetarian Diets. J Am Diet Assoc. 2003; 103: 748 – 765.

HIV

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Protein may help people living with HIV/AID minimize lean body mass wasting that is often associated with the disease. Unjury is a protein-rich supplement that can be used to meet the often elevated protein and energy needs of patients with HIV/AIDS.	The protein needs of people infected with HIV are highly individualized and can be influenced by the presence of opportunistic infections and other disease-related complications. High-protein diets do appear to be beneficial for people living with HIV/AIDS to help preserve lean body mass. Protein is also involved in many of the reactions that are involved in immunity.	American Dietetic Association. HIV/AIDS evidence-based nutrition practice guideline. Chicago (IL): American Dietetic Association; 2010. Various p. Fields-Gardner C, Campa A. Position of the American Dietetic Association: Nutrition Intervention and Human Immunodeficiency Virus Infection. J Am Diet Assoc. 2010; 110: 1105-1119.

HIV (CONTINUED)

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Whey supplements, like Unjury Protein, are rich in the amino acid cysteine, an important precursor of glutathione and may provide additional benefits to patients infected with HIV.	Whey protein formulas are an effective and well tolerated way to increase glutathione levels in HIV-infected individuals. The role glutathione plays in disease progression is somewhat unclear, but HIV infection is characterized by a deficiency in glutathione related to an enhanced oxidant burden. Studies looking at glutathione supplementation are hopeful that it is a potential target for adjuvant therapy in HIV patients	Micke P, Beeh KM, Schlaak JF, Buhl R. Oral supplementation with whey proteins increases plasma glutathione levels of HIV-infected patients. Eur J Clin Invest. 2001; 31: 171-178.

PCOS

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
High-protein diets appear to benefit women with PCOS in many ways. Many women with PCOS are overweight or obese. A weight loss of 5% can help improve insulin resistance, lower levels of male hormones, improve menstrual function and reduce cholesterol abnormalities. Weight loss can also increase fertility. Research shows that women with PCOS may benefit from a diet low in saturated fat, high in fiber and high in quality protein. A high-protein diet with 40% of total calories coming from protein would equal 150 g of protein per day on a 1500 calorie diet; women who are more active and consume more energy each day would require higher amounts of proteins. Eating frequent meals (every 3-4 hours) and including protein with each meal and at snacks also helps to manage blood sugar levels and prevents hypoglycemia. High-fiber diets low in saturated fats and simple sugars are also beneficial. Including supplements such as UNJURY, helps meet elevated protein needs, can aid in weight loss, maintains blood glucose control, and keeps dietary saturated fat and cholesterol low.	Obesity appears to be associated with PCOS, but the exact link remains somewhat unclear. Studies looking at rates of obesity in women diagnosed with PCOS vary, with numbers ranging from around 30% to over 80%. Diet can play an important role in the management of PCOS. Studies have shown that diets higher in protein (40% of total calories) and lower in carbohydrates tend to result in more successful weight loss and improvements in blood glucose. A weight loss of only 5 percent can improve insulin resistance, leading to lower levels of male hormones (and less facial hair), improved menstrual function, and a reduction in cholesterol abnormalities.	Sirmans SM, Pate KA. Epidemiology, diagnosis, and management of polycystic ovary syndrome. Clin Epidemiol. 2013; 6: 1-13. Azziz R, Woods KS, Reyna R, Key TJ, Knochenhauer ES, Yidiz BO. The prevalence and features of the polycystic ovary syndrome in an unselected population. J Clin Endocrinol Metab. 2004; 89: 2745 – 2749. Clark AM, Thornley B, Tomlinson L, Galletley C, Norman J. Weight loss in obese infertile women results in improvement in reproductive outcome for all forms of fertility treatment. Hum Reprod 1998; 13: 1502-1505 Lipea GU, Sengupta A, Karsies D. Polycystic Ovary Syndrome (PCOS) and other androgen excess-related conditions: can changes in dietary intake make a difference? Nutr Clin Pract. 2008; 23: 63-71. Grassi A. Recognition and treatment approaches for polycystic ovary syndrome. Women's Health Report. Summer 2008. Sorenson LB, Soe M, Halkier HH, Stigsby B, and Astrup A. Effects of increased dietary protein-to-carbohydrate ratios in women with polycystic ovary syndrome. Am J Clin Nutr. 2012; 95: 39-48.

Oncology

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Protein may help people with cancer avoid complications associated with malnutrition. Unjury Protein can be mixed with a variety of high-calorie and low-calorie foods and beverages to supplement the diets of oncology patients with elevated protein or protein and energy requirements. Unjury is well-tolerated because of its high quality and minimal lactose content and can be used with foods/beverages already tolerated or acceptable to the patient. Protein needs tend to be harder to meet when overall oral intake is poor. Unjury helps patients meet their protein goals and meet energy requirements when added to calorically-dense foods and beverages. Unjury can be added to meals or used between meals as snacks. Although Unjury Protein is satisfying, patients will still be able to consume a variety of other foods and beverages that make up a well-balanced diet. Unjury's Chicken Soup Flavor and Unflavored also provide a great savory alternative to patients with treatment-related aversions to sweet flavors.	Malnutrition is highly prevalent in oncology patients and is typically associated with a poorer prognosis and reduced tolerance to treatments. Causes of malnutrition in cancer include reduced food intake, nausea/vomiting, anorexia, taste changes, early satiety, and elevated nutritional requirements. Nutrient-dense diets, including adequate protein, are recommended by most experts for patients at risk for or who have developed malnutrition. Adequate protein intake is crucial during all phases of cancer progression/ treatment. Oral supplements are a valuable tool in increasing protein and energy intake in patients who are unable to meet their nutritional needs via foods alone. In a study of untreated pancreatic cancer patients, those who complied with a nutrition prescription of 1.5 cans/day of a liquid oral supplement improved nutrition-related outcomes and the supplement did not hinder spontaneous food intake.	Rock CL, Doyle C, Demark-Wahnefried W, Meyerhardt J, Courneya KS, Schwartz AL, Bandera EV, Hamilton KK, Grant B, McCullough M, Byers T, Gansler T. Nutrition and physical activity guidelines for cancer survivors. CA Cancer J Clin. 2012; 62: 242-274. Mercadante, S. Nutrition in cancer patients. Support Care Cancer. 1996; 4: 10 – 20. Hopkinson J, Okamoto I, Addington-Hall JM. What to eat when off treatment and living with involuntary weight loss and cancer: a systematic search and narrative review. Support Care Cancer. 2011; 19: 1-17. Bauer J, Capra S, Battistutta D, Davidson W, Ash S. Compliance with nutrition prescription improves outcomes in patients with unresectable pancreatic cancer. Clin Nutr. 2005; 24: 998-1004.
Unjury provides 21 gm of high-quality protein per serving and can be easily incorporated into foods and meal patterns already tolerated by oncology patients undergoing chemotherapy, boosting their protein intake significantly.	Low, recent protein intake (<1 g/kg body wt) was seen in 66% of study participants and was the leading contributor seen among patients with cancer-related fatigue and was also a strong predictor of increased six-month mortality.	Stobaus N, Muller MJ, Kupferling, Schulzke JD, Norman K. Low recent protein intake predicts cancer-related fatigue and increased mortality in patients with advanced tumor disease undergoing chemotherapy. Nutr Cancer. 2015; 67(5): 818-824.
More studies on these effects are needed, however using the basis that protein can reduce nausea in 1st trimester pregnancy and motion sickness (possibly by reducing gastric dysrhythmias), it is possible that this combination may provide an additional route for treatment of nausea in oncology.	High protein (primarily whey protein), liquid meals along with ginger helped reduce delayed nausea of chemotherapy and reduced antiemetic use.	Levine M, Gillis MG, Koch SY, Voss AC, Stern RM, Koch KL. Protein and ginger for the treatment of chemotherapy-induced delayed nausea. J Altern Complement Med. 2008; 14: 545-551.

Dysphagia and Difficulties Chewing

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Adequate protein intake can be especially difficult in the presence of dysphagia. Unjury can be used in thickened liquids of any consistency and as a modular protein source for enteral feedings to help patients with dysphagia meet their protein needs in hopes of avoiding/ reversing malnutrition.	The risk of being malnourished is significantly higher in the presence of dysphagia following stroke, head and neck cancer, and in aging.	Sura L, Madhavan A, Carnaby G, Crary, M. Dysphagia in the elderly: management and nutritional considerations. Clin Interv Aging. 2012; 7: 287-298. Foley NC, Martin RE, Salter KL, Teasell RW. A review of the relationship between dysphagia and malnutrition following stroke. J Rehabil Med. 2009; 41: 707-713. Garcia-Peris, Paron L, Velasco C, de la Cuerda C, Camblor M, Breton I, Herencia H, Verdaguer J, Navarro C, Clave P. Long-term prevalence of oropharyngeal dysphagia in head and neck cancer patients: impact on quality of life. Clin Nutr. 2007; 26: 710-717.

Liver Disease

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Protein-energy malnutrition is common among patients with liver disease and can lead to poorer outcomes and higher morbidity. Unjury may help patients with liver disease meet their elevated protein needs. Unjury is also a good source of all the BCAAs (branched chain amino acids). Our Chocolate Splendor and Classic, Vanilla, Strawbery Sorbet, and Unflavored proteins are all low in sodium (90 mg or less per serving).	Daily protein intake should be at least 1 g/kg (unless severe hepatic encephalopathy limits intake); 1.2 g/kg/day can be safely administered to patients with cirrhosis, even those that exhibit episodes of encephalopathy, as even transient protein restriction does not appear to benefit these patients. Positive nitrogen balance can promote hepatic regeneration; a minimum protein intake of 1.2 g/ kg/day has been recommended to maintain this balance in cirrhotic patients. Critically ill patients with major acute stress, such as those with gastrointestinal bleeding or infection, will have higher protein needs and may require 1.5 g/kg/day.	Bianchi G, Marzocchi R, Lorusso C, Ridolfi V, Marchesini G. Nutritional treatment of chronic liver failure. Hepatology Research. 2008; 38: S93-S101. Cresci G. Nutrition Support for the Critically Ill Patient: A Guide to Practice. Boca Raton, FL: Taylor & Francis Group; 2005.
Unjury is a whey protein isolate that can be consumed by patients with NASH for possible treatment benefits, assistance in meeting their elevated protein needs, and may also aid weight loss for patients who may need it. NASH is now thought to be a common manifestation or even a predictor of metabolic syndrome, making the additional benefit of weight loss due to whey protein isolate use even more important.	In patients with untreated NASH (Nonalcoholic steatohepatitis), the degree of hepatic steatosis decreased significantly after 12 weeks of whey protein isolate supplementation. Modest, but statistically significant, weight loss and reduction in BMI was also seen in this population receiving 12 weeks of whey protein isolate supplementation.	Chitapanarux T, Tienboon P, Pojchamarnwiputh S, and Leelarungrayub D. Open-labeled pilot study of cysteine-rich whey protein isolate supplementation for nonalcoholic steatohepatitis patients. J Gastroenterol Hepatol. 2009; 24: 1045-1050.

Inflammatory Bowel Disease

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Nutritional intake is frequently compromised in patients with IBD. When oral intake is poor, protein tends to be the first macronutrient that suffers. Unjury is a safe and well-tolerated way to improve protein intake for those patients with IBD who may be struggling with meeting their nutritional needs.	IBD is commonly associated with protein-calorie malnutrition, seen in approximately 23% of outpatients and up to 85% of patients hospitalized for an acute flare. Self-imposed food restriction and anorexia are the most common causes of malnutrition in this population, but increased bowel movements, malabsorption, nausea, protein losses from areas of inflammation and mucosal ulceration, and certain drugs can also impact nutrition status. Protein needs are typically higher in IBD patients and are estimated to be around 1.0-1.5 g/kg body wt/ day for adults and up to 2.0 gm/kg body wt/day for malnourished or septic patients.	Campos FG, Waitzberg DL, Teixeira MG, Mucerino DR, Habr-Gama A, Kiss DR. Inflammatory bowel diseases. Principles of nutritional therapy. Rev Hosp Clin. 2002; 57: 187 – 198. Lucendo AJ, De Rezende LC. Importance of Nutrition in inflammatory bowel disease. World J Gastroenterol. 2009; 15: 2081-2088.

Eating Disorders

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Unjury, or any protein, should not be viewed as a treatment for eating disorders, as these conditions are far more complex than simple diet alterations can address. However, this study may suggest that protein supplements could be a valuable tool to use along with conventional treatment methods to help alter undesirable behaviors in this population. More research is needed.	Adding protein (a liquid, whey protein supplement) to the diets of women with bulimia and binge eating disorder reduced food intake and binge episodes over a two week time frame.	Latner JD, Wilson GT. Binge eating and satiety in bulimia nervosa and binge eating disorders: effects of macronutrient intake. Int J Eat Disord. 2004; 36: 402-415.

Sports Nutrition

ADVICE TO PATIENTS	CLINICAL INDICATIONS	RESEARCH
Athletes and active individuals benefit from higher protein intake. Athletes of all types benefit from higher protein intake than what is recommended for the average person. Higher protein intake improves performance and enhances training efforts.	Scientific evidence supports that athletes do benefit from increased protein intake. In strength-trained athletes, higher protein intakes have generally been shown to have positive effects on muscle protein synthesis and size gains. 1.4-1.8 g/kg/day is recommended for strength/power athletes. Endurance athletes also benefit from higher protein intakes to prevent the loss of lean muscle mass during training. 1.2 – 1.4 g/kg/day is needed to ensure nitrogen balance in endurance athletes.	Hoffman JR, Falvo MJ. Protein – which is best? J Sports Sci and Med. 2004; 3: 118-130.
Unjury is a high-quality, whey protein isolate that contains high levels of BCAAs which can help maintain the strength and performance gains achieved during exercise/training sessions.	Whey protein contains a high concentration of branched chain amino acids that are important for their role in the maintenance of tissue and prevention of catabolic actions during exercise.	Hoffman JR, Falvo MJ. Protein – which is best? J Sports Sci and Med. 2004; 3: 118-130.
Unjury Protein is convenient and easy to use before or after exercise. Unjury contains 21 g of whey protein isolate that appears to be more effective than other proteins in promoting muscle repair and growth.	The timing of protein consumption may be more important that the amount of protein actually consumed. 20 gm of protein consumed just before or shortly after training (exercise) may help promote muscle remodeling and adaptations; higher amounts of protein may have little impact. Milk protein, especially whey, may be more effective than some other proteins in promoting net muscle protein synthesis after resistance training. Whey protein has a greater initial benefit for protein synthesis related to its rate of absorption in the body. Smaller, more frequent ingestion of whey protein could prove to be of more value.	Maughan RJ, Shirreffs SM. Nutrition for sport performance: issues and opportunities. Proceedings of the Nutrition Society. 2012; 71: 112-119. Hoffman JR, Falvo MJ. Protein – which is best? J Sports Sci and Med. 2004; 3: 118-130.