



Brain Injuries and Nutrition

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Goals and Objectives

- § Goal 1: Identify common nutrition related problems in post brain injury patients
 - § Objective 1: Recognize the importance of assessing malnutrition in post brain injury patients
 - § Objective 2: Identify issues with modified textured diets as related to nutritional status
 - § Objective 3: Recognize the importance of controlling other comorbidities while maintaining nutritional status

- § Goal 2: Explain the role of nutrition in long-term outcomes for post brain injury patients
 - § Objective 1: Evaluate the latest research on the importance of nutrition in post brain injury patients
 - § Objective 2: Identify the key components of the optimal diet for the best long-term outcomes
 - § Objective 3: Recognize the role of the Registered Dietitian on the interdisciplinary medical team

Malnutrition: What Is It?

§ Micronutrient and macronutrient imbalances

§ Micronutrients: vitamins and minerals

§ Vitamins and minerals play important roles in brain functions

§ Deficiencies can increase risk of complications

§ Macronutrients: protein, carbohydrates, and fats = calories

§ Prevalence

§ General acute care: 1 in 3 patients are likely to be malnourished

§ Stroke patients: 15% on admission, approximately 30% after 1 week, 35% after 2 weeks

Malnutrition: How Is It Identified?

§ Divided into starvation related, acute disease/injury related, chronic disease related

§ Labs

§ Albumin, Prealbumin and others

§ Issues: half life, micronutrients deficiencies can effect, general inflammation can effect

§ Nutrition Focused Physical Exam (NFPE)

§ Meal intake

§ Weight loss

§ Muscle wasting

§ Fat wasting

§ Edema

§ Diminished Functional Capacity

§ Labs with NFPE can increase likelihood of malnutrition

Malnutrition: Why Is It Important to Identify



- § Increased length of stays in hospitals and rehab facilities
- § Increased risk for minor and major complications
- § Increased risk for pressure injuries, UTIs, and other infections

Malnutrition: Relationship With Brain Injuries



- § Dysphagia and altered diets
- § Poor appetite and intake
- § Increased needs after injury
- § Enteral and Parenteral Feeding
- § Older adults

Malnutrition: Who can help Identify

§ The medical team

- § On admission

- § Reassess throughout stay to prevent or improve

§ The patient and family members/friends

- § Keep track of changes in weight and diet habits

- § Alert doctor of changes

Nutrition and Dysphagia

- § Enteral Nutrition and Parenteral Nutrition

- § Start early

- § NG or PEG

 - § How long will the patient need tube feeding

- § Schedule

 - § Continuous vs. Bolus vs. Nocturnal

- § Formula type

- § Tolerance of tube feeding

Transitioning From Tube Feeding

- § SLP determines consistency
- § Slow process
- § Observe intake for 3 days before discontinuing tube feeding
 - § PO intake should be >75% of estimated needs
- § Consider schedule of tube feeding
- § Small meals at first
- § Altered textures
 - § Finding foods they do like
 - § Supplementing if necessary
- § Thickened Liquids
 - § Avoiding dehydration
- § Ultimate goal is to get back to least restrictive diet (with comorbidities)

Brain Injuries With Other Comorbidities

§ Diabetes

- § Tight control of blood sugars on admission and for the first few days post stroke
- § Diet and medication controlled
- § Not a lot of research about preventing secondary strokes
- § Conflicting answers on BP goal

§ Hypertension

- § Diet and medication

§ Cardiovascular Disease

- § Diet and medication

§ Congestive Heart Failure

- § Diet and medication

Key Nutrients and Sources

§ Sodium

- § Naturally-occurring
- § Processed foods
- § Self-added

§ Fat

- § Saturated fat- dairy and meat
- § Trans fat- hydrogenated oils, packaged cookies and cakes, stick margarine
- § Monounsaturated- nuts, avocado, olive oil canola oil
- § Polyunsaturated- fish, seeds, safflower oil, soybeans

§ Cholesterol

- § Eggs, shellfish, organ meats, whole milk

§ Fiber

- § Fruits, vegetables, whole grains

Therapeutic Lifestyle Changes (TLC)



Fat	<35% of total calories <ul style="list-style-type: none">• Saturated (SFA) and trans fat <7% of total calories• Polyunsaturated (PUFAs) fat make up >10% of total calories• Monounsaturated (MUFAs) make up 20% of total calories
Cholesterol	<200 mg per day
Omega-3 fatty acids	.6-1.2% of intake as ALA, 500 mg EPA+ DHA/day
Carbohydrates	45-60% of total calories a day
Fiber	25-30g/day
Protein	~15% of total calories a day
Plant stanol/Sterols	2 g/day

Mediterranean Diet



Daily	Olive oil, whole grains, fruits, vegetables, herbs/spices
Weekly	Fish, poultry, dairy
Rarely	Red meats

Dietary Approaches for Reducing Hypertension (DASH)



Food group	Daily serving
Grains	6-8
Vegetables	4-5
Fruits	4-5
Dairy (low-fat)	2-3
Meat, poultry, and fish	≤ 6
Nuts, seeds, and dry beans	4-5/ week
Fats and oils	2-3
Sweets	5/ week

The Perfect Diet?

- § Does not exist
- § Meet the patient where they are at
- § Quality of life
- § Most patients need basic nutrition knowledge first
 - § i.e. Food label reading, cooking healthy meals
- § Goal setting
- § Small changes = Big victories
- § Brain Foods?



Other Brain Injuries and Nutrition

Nutrition Goals

- § Weight maintenance and muscle mass preservation
- § Address nutritional deficiencies
- § Reduce side effects that could cause nutritional issues

Treatment and Nutrition

§ Surgery

- § Pain, nausea, fatigue □ poor intake

§ Chemo

- § Taste changes, diarrhea, nausea/vomiting, constipation, mouth sores

§ Radiation

- § Nausea/vomiting, fatigue, malabsorption related to tissue damage

§ Immunotherapy

- § High blood pressure, poor appetite, diarrhea, mouth sores

§ Medications

- § Mouth sores, nausea, poor appetite, diarrhea,

- § Increased appetite, high blood sugars, high cholesterol

- § Fluid retention

- § Poor micronutrient absorption

Going Home: What's Next?

§ DIET EDUCATION!

- § Covenant employees have access to materials on intranet

- § Inpatient RD consultation

- § Finding an outpatient RD

§ Be proactive!

- § Observe for changes in:

- § Eating habits

- § Weight

- § Physical changes

Sources

- § American Society for Parental and Enteral Nutrition. Feed Your Patient: ASPEN's Malnutrition Solution Center. American Society for Parental and Enteral Nutrition. https://www.nutritioncare.org/Continuing_Education/Programs/Malnutrition_Awareness/Malnutrition/. Updated 2017. Accessed October 30, 2017.
- § Stella D Bouziana and Konstantinos Tziomalos. Malnutrition in patients with acute strokes. *J Nutr Metab*. 2011;2011(Article ID 167898):1-7. doi:10.1155/2011/167898.
- § Bharadwaj S, Ginoya S, Tandon P, et al. Malnutrition: laboratory markers vs nutritional assessment. *Gastroenterol Rep*. 2016;4(4):272-280. doi:10.1093/gastro/gow013.
- § Chen R, Ovbiagele B, Feng W. Diabetes and Stroke: Epidemiology, Pathophysiology, Pharmaceuticals and Outcomes. *Am J Med Sci*. 2016;351(4):380-386. doi:10.1016/j.amjms.2016.01.011.
- § Foroughi M, Akhavanzanjani M, Maghsoudi Z, Ghiasvand R, Khorvash F, Askari G. Stroke and Nutrition: A Review of Studies. *Int J Prev Med*. 2013;4(Suppl 2):S165-S179.
- § American heart Association. Nutrition Basic. American Heart Association. http://www.heart.org/HEARTORG/HealthyLiving/HealthyEating/Nutrition/Nutrition-Basics_UCM_461228_Article.jsp#.Wfp_LLaZNE4. Updated May 19, 2017. Accessed October 30, 2017.
- § U.S. Department of Health and Human Services. Description of the DASH eating plan. National Heart, Lung, and Blood Institute. <https://www.nhlbi.nih.gov/health/health-topics/topics/dash>. Updated September 16, 2015. Accessed October 30, 2017.
- § Mayo Clinic. Mediterranean diet: A heart-healthy eating plan. Mayo Clinic. <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/mediterranean-diet/art-20047801>. Updated March 30, 2017. Accessed October 30, 2017.
- § Morrison Healthcare. Diet Manual. MyDiet Manual. <http://www.mydietmanual.com/EDM/DietManualIndex/1523?topicId=216>. Updated September 14, 2017. Accessed October 30, 2017.
- § Academy of Nutrition and Dietetics. 4 Types of Food to Help Boost Your Memory. Eat Right. <http://www.eatright.org/resource/health/wellness/healthy-aging/memory-boosting-foods>. Published November 18, 2016. Accessed November 2, 2017.
- § Vanderwall C. Healthy eating when you have a brain tumor: nutrition during treatment. Presented at: 2012 American Brain Tumor Association Patient and Family Conference; July 2012. <http://www.abta.org/resources/2012-patient-and-family-conference-presentations/nutrition-1.pdf>. Accessed October 30, 2017.



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Questions?