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)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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</table>
| Fat      | <35% of total calories  
• 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

<table>
<thead>
<tr>
<th></th>
<th>Olive oil, whole grains, fruits, vegetables, herbs/spices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td></td>
</tr>
<tr>
<td>Weekly</td>
<td>Fish, poultry, dairy</td>
</tr>
<tr>
<td>Rarely</td>
<td>Red meats</td>
</tr>
</tbody>
</table>
Dietary Approaches for Reducing Hypertension (DASH)

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


Contact Information

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Questions?