ERAS and Preoperative Nutrition

ERAS Collaborative: Learning Session 2
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No disclosures
Objectives

- Nutrition and Surgery
- Preoperative Nutrition Optimization
  - Nutrition Assessment
  - Carbohydrate Loading
Surgical patients at risk of nutritional depletion related to inadequate intake both pre- and post-operatively
  - Disease impact
  - Surgical stress
Numerous studies have shown clear association between preoperative undernutrition and increased risk of post-operative complications
  - Delayed wound healing, infectious complications, increased LOS
**Disease Impact**

- Inflammation/Metabolic Derangements
- Altered nutrient utilization
- GI tract dysfunction
  - Diarrhea, nausea, vomiting, abdominal pain
- Decreased intake or restricted diets prior to surgery
Surgical Stress

- Release of hormones that stimulate catabolic state
- Hypermetabolism
  - increased energy expenditure, increased protein synthesis and breakdown, negative nitrogen balance, increased insulin resistance
Nutrition Implications of ERAS

- **Preoperative:**
  - **Preoperative Nutrition Assessment:**
    - Optimize calorie and protein intake
    - Optimize micronutrient intake
    - Immunonutrition
  - Reduced preoperative fasting time
  - **CHO Loading**

- **Postoperative:**
  - Early feeding and rapid diet advancement
  - Increased calorie and protein intake post operatively
  - Gum Chewing
Nutrition Assessment

- Often not part of preoperative assessment
- Provide nutrition goal-directed therapy to optimize outcomes

**Who to identify?**
- Malnourished
- Well-nourished patients at risk for surgical stress
Challenges

Build a protocol that:
- Is easy to use
- Will automate RD referral or nutrition intervention
- Uses validated screening tool
- Can be used at an appropriate time to provide benefit

Availability of RD for referral
- Written materials
- HealthLinkBC
Nutrition Screening Tools

- NRS 2002
- Other screening tools
  - SGA, Strong for Surgery
  - Suggestions?
### Table 1: Initial screening

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is BMI &lt; 20.5?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Has the patient lost weight within the last 3 months?</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Has the patient had a reduced dietary intake in the last week?</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Is the patient severely ill? (e.g. in intensive therapy)</td>
<td></td>
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</tbody>
</table>

**Yes:** If the answer is 'Yes' to any question, the screening in Table 2 is performed.  
**No:** If the answer is 'No' to all questions, the patient is re-screened at weekly intervals. If the patient e.g. is scheduled for a major operation, a preventive nutritional care plan is considered to avoid the associated risk status.

### Table 2: Final screening

<table>
<thead>
<tr>
<th>Absent Score 0</th>
<th>Severe nutritional status</th>
<th>Absent Score 0</th>
<th>Severe nutritional requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal nutritional status</td>
<td>Mild Score 1</td>
<td>Hip fracture* Chronic patients, in particular with acute complications: cirrhosis*, COPD*. Chronic hemodialysis, diabetes, oncology</td>
<td></td>
</tr>
<tr>
<td>Mild Score 1</td>
<td>Wt loss &gt;5% in 3 mths or Food intake below 50-75% of normal requirement in preceding week</td>
<td>Moderate Score 2</td>
<td>Major abdominal surgery* Stroke* Severe pneumonia, hematologic malignancy</td>
</tr>
<tr>
<td>Moderate Score 2</td>
<td>Wt loss &gt;5% in 2 mths or BMI 18.5 - 20.5 + impaired general condition or Food intake 25-60% of normal requirement in preceding week</td>
<td>Severe Score 3</td>
<td>Head injury* Bone marrow transplantation* Intensive care patients (APACHE &gt; 10)</td>
</tr>
<tr>
<td>Severe Score 3</td>
<td>Wt loss &gt;5% in 1 mth (&gt;15% in 3 mths) or BMI &lt; 18.5 + impaired general condition or Food intake 0-25% of normal requirement in preceding week</td>
<td>Score:</td>
<td>Score:</td>
</tr>
<tr>
<td>Age</td>
<td>if ≥ 70 years: add 1 to total score above</td>
<td>Total score</td>
<td>Total score</td>
</tr>
</tbody>
</table>

*age-adjusted total score
Assess the prevalence of preoperative nutrition risk and malnutrition in patients having colorectal surgery

Retrospective analysis

Raw data collected preoperatively by Patient Navigator:

- Height
- Weight
- Changes in weight over time
- Changes in intake over time

Post operative data analyzed using the NRS 2002
31% of study subjects deemed at nutritional risk as defined by NRS-2002

- 74% over the age of 70 - at nutrition risk with elective bowel surgery even without changes in weight or intake
- 11% unintentional weight loss – study limited to colon/rectal cancer
  - Predict higher % with more diverse GI surgeries
**Strong for Surgery**

http://www.becertain.org/strong_for_surgery

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**Nutrition Screening Checklist**

**Screening for Malnutrition**

Is BMI less than 19?
- [ ] Yes
- [ ] No

Has the patient had unintentional weight loss of over 8 pounds in the last 3 months?
- [ ] Yes
- [ ] No

Has the patient had a poor appetite – eating less than half of meals or fewer than two meals per day?
- [ ] Yes
- [ ] No

Is the patient unable to take food orally (ex. dysphagia, vomiting)?
- [ ] Yes
- [ ] No

**Lab Tests for Risk Stratification**

If YES then:
- Check albumin level to assess complication risk after surgery

**Supplementation**

Is the patient having complex surgery (example: GI anastomosis)?
- [ ] Yes
- [ ] No
Strong for Surgery

- Any YES refer to RD:
  - BMI less than 19?
  - Has patient had unintentional weight loss of >8lbs in 3 months?
  - Has the patient had poor appetite/eating less than ½ meals or fewer than 2 meals per day?
  - Is the patient unable to take food orally due to dysphagia or vomiting?
Carbohydrate Loading

- **Rationale:**
  - Avoid dehydration
  - Metabolically fed state
  - Allow safe general anesthesia

- **100g at HS, 50g morning of surgery (2-3 hours before) of iso-osmolar clear fluid drink**

- **Specialized oral supplements**
  - Preload (Vitaflo UK), Clearfast (BevMD), preOp (Nutricia)
  - ? Not available in Canada
Challenges

- Optimal CHO Beverage?
  - Cost
  - Palatability
  - Availability
  - Dispensing

- Optimal type of CHO?
- Concerns with diabetic patients?
- Benefits of added protein/immunonutrition?
Alternatives to specialized oral supplements

- **PHC:**
  - Current practice – 500 ml + 250 ml juice
  - Coming soon – 500 ml + 250 ml maltodextrin powder/sugar (compounding pharmacy to dispense) with H20
    - Maltodextrin powder - Polycal (Nutricia)

- **Others:**
  - Juice, Gatorade
  - SOS 25 (Vitaflo Canada) – dried glucose syrup
  - Glycosade (Vitaflo Canada) – high amylopectin maize starch
  - Suggestions?
CHO Loading with Diabetes

- Concerns with:
  - Delayed gastric emptying
    - ?same with liquids vs. solids
  - Impaired glycemic control
- Limited research
- **ERAS Recommendation**: “In diabetic patients carbohydrate treatment can be given along with the diabetic medication”
  - Evidence level: Very Low
  - Recommendation grade: Weak
- PHC: same protocol for diabetics with juice
We **SHOULD** be carbohydrate loading surgical patients
“You’ll have to eat that donut outdoors. Nobody wants to inhale secondhand carbs!”
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