Perioperative Nutrition in IBD

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Screen Patients for Nutrition Risk

• Ask 2 simple questions (MST)\(^1\):

  *Recent unintentional weight loss?*
  *Eating less because of a poor appetite?*

  Yes to either \(\rightarrow\) **Refer to RD**

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<table>
<thead>
<tr>
<th></th>
<th>Moderate Malnutrition (ICD 10 E44.0)</th>
<th>Severe Malnutrition (ICD 10 E43)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight loss</strong></td>
<td>1-2% in 1 week</td>
<td>&gt;2% in 1 week</td>
</tr>
<tr>
<td></td>
<td>5% in 1 month</td>
<td>&gt;5% in 1 month</td>
</tr>
<tr>
<td></td>
<td>7.5% in 3 months</td>
<td>&gt;7.5% in 3 months</td>
</tr>
<tr>
<td></td>
<td>10% in 6 months</td>
<td>&gt;10% in 6 months</td>
</tr>
<tr>
<td></td>
<td>20% in 12 months</td>
<td>&gt;20% in 12 months</td>
</tr>
<tr>
<td><strong>Energy Intake</strong></td>
<td>&lt;75% intake in &gt;7 days</td>
<td>≤50% intake in ≥5 days</td>
</tr>
<tr>
<td></td>
<td>&lt;75% intake in ≥1 month</td>
<td>≤50% intake in ≥1 month</td>
</tr>
<tr>
<td></td>
<td>&lt;75% intake in ≥3 months</td>
<td>≤50% intake in ≥1 month</td>
</tr>
<tr>
<td><strong>Subcutaneous Fat Loss</strong></td>
<td>Mild</td>
<td>Moderate to Severe</td>
</tr>
<tr>
<td><strong>Subcutaneous Muscle Loss</strong></td>
<td>Mild</td>
<td>Moderate to Severe</td>
</tr>
<tr>
<td><strong>General or Local Fluid Accumulation</strong></td>
<td>Mild to Severe</td>
<td>Moderate to Severe</td>
</tr>
<tr>
<td><strong>Hand Grip Strength (Dynamometer)</strong></td>
<td>Not Applicable</td>
<td>Measurably reduced</td>
</tr>
</tbody>
</table>
Malnutrition More Common in IBD

Nationwide study\(^1\)

- Patients with IBD were 5.5x more likely to have malnutrition than non-IBD (fistulizing CD and those with bowel resections at greatest risk)

Malnutrition associated with increased:
- mortality (3.49)
- length of stay (11.9 vs 5.8 days, \(p < 0.00001\))
- charges ($45k vs $20k, \(p < 0.0001\))

1. Inflamm Bowel Dis (2008) 14:8
Predictors of Surgical Complications

- Malnutrition
- Weight loss of >5-10%.\(^1\)
- Sarcopenia is an independent predictor
  - *surgical complications in those aged <40 years*\(^2\)
  - *need for surgery, post-op complications*\(^3\)

1. ERAS Society Guidelines 2018
3. Eros et al. Surgery Today. 2019,
ERAS – Enhanced Recovery After Surgery

Key elements include

optimizing preoperative and postoperative nutrition

ERAS associated with lower morbidity, shorter hospital stay after elective colorectal surgery

ERAS Improves Outcomes in IBD

- Andersen et al (2005)\(^1\). Open ileo-colic resections for Crohn’s disease. **Early feeding significantly reduced LOS** (low morbidity and readmission rates)

- Retrospective study (2019) in Crohn’s disease\(^2\)
  Enhanced recovery protocol (n=98) vs Standard care (n=53)
  Enhanced recovery protocol had **shorter median LOS** (4 days vs 5 days; \(P<0.01\)), **faster return of bowel function** (2 vs 3 days; \(P<0.01\)), **shorter time to tolerating low fiber diet** (2 vs 4 days; \(P<0.01\)), **faster transition to postop pain medications** (2 vs 4 days; \(P<0.01\))
  No difference in **30 day readmission, rate of serious complications or reoperation**

Anemia and Fluid management

ONS (oral nutrition supplement) in those who are malnourished 7-10 days pre-op; associated with reduced infections, anastomotic leaks

ESPEN 2017: surgical intervention in IBD should ideally be delayed for 7–14 days whenever possible if malnutrition is identified, during which artificial feeding (EN preferably) should be initiated

Patients who receive pre-operative nutrition support have been shown to have better outcomes post-operatively\(^1,\)\(^2\).

3. ERAS Society Guidelines 2018
Pre-Op Nutrition Support Reduces Post-Op Complications

- Meta-analysis of 5 studies, n=1111 with CD
  Rate of post-op complications in those on nutrition support (EN/PN) was 20% compared to 60%
  In those on EN, post-op complications were 21% vs 73%

EN in CD patients before undergoing surgery is superior to standard of care without nutrition support with a NNT of 2

Don’t Be Afraid To Use TPN!

If unable to meet 60% needs PO, consider EN if gut functional TPN criteria⁠¹,²,³,⁴:
- Malnourished with non-functional gut/severe IBD
- If unable to meet >60% nutrition needs via PO/EN after 7-10 days
- **Severe malnutrition in perioperative setting (1-2 weeks pre-OR)**
- If expected NPO for 7 days perioperatively

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1. ASPEN Core Curriculum, 3rd Ed
4. ERAS Society Guidelines 2018
PN in CD Does Not Worsen Surgical Outcomes

Pre-Op TPN in Malnourished IBD Reduces Non-Infectious Complications

Fuel Up Pre-Op!

- Carb loading improves well-being, reduces post-op insulin resistance, decreases protein breakdown, maintains LBM and muscle strength, as well as has beneficial cardiac effects.

- RCTs: clear liquids can be given up to 2 hrs pre-op, light meal up to 6 hrs pre-op.

Avoid in gastroparesis, motility disorders, emergency surgery.

How To Carb Load:

- **100 g CHO night before surgery** via clear liquid beverage.
- **50 g CHO 2 hrs pre-op** via clear liquid beverage.

1. ERAS Society Guidelines 2018
# Examples of Carb Loading Beverages Commonly Used

<table>
<thead>
<tr>
<th>Name</th>
<th>Manufacturer</th>
<th>Total CHO (g)</th>
<th>Kcals</th>
<th>Volume (mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure Pre-Surgery®</td>
<td>Abbott</td>
<td>50</td>
<td>200</td>
<td>296</td>
</tr>
<tr>
<td>Boost Breeze®</td>
<td>Nestle</td>
<td>54</td>
<td>250</td>
<td>237</td>
</tr>
<tr>
<td>Ensure Clear®</td>
<td>Abbott</td>
<td>52</td>
<td>240</td>
<td>237</td>
</tr>
<tr>
<td>Gatorade®</td>
<td>PepsiCo</td>
<td>36</td>
<td>140</td>
<td>591</td>
</tr>
<tr>
<td>Apple Juice</td>
<td>Generic</td>
<td>29</td>
<td>120</td>
<td>240</td>
</tr>
</tbody>
</table>

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Early Post-Op Diet: Don’t Wait For Bowel Sounds

• **Feed within 4 hrs** in patients with new non-diverted colorectal anastomosis
• Intake ~1200-1500 kcals/d; **ONS may be needed**
• ESPEN guidelines include peri-operative use of immunonutrition (arginine, omega 3 FA, nucleotides) should be used in malnourished patients undergoing colorectal cancer surgery

1. ERAS Society Guidelines 2018
Proposed Nutrition Timeline For Elective IBD Surgery

30-60 Days Pre-Op:
Nutrition Screen & RD Referral; Anemia Screen

5 Days Pre-Op:
Immunonutrition

12 hrs Pre-op:
100 g CHO
2-3 hrs Pre-op:
50 g CHO

Post-Op: Diet + ONS; diet ed; immunonutrition

Key:
EEN = exclusive enteral nutrition
CHO = carbohydrate
ONS = oral nutrition supplement

#CCCongress20
Nutrition Risk factors:
- Chronic bloody diarrhea
- Poor appetite, recent weight loss 15 lb, BMI 16
- Severe malnutrition

RD recs:
- Nutrition support (PN); arrange ONS, carb load if possible
- Check micronutrients: Mg/Phos (refeeding syndrome), zinc (chronic diarrhea), iron panel.
- Rx vitamin D and calcium (40 mg prednisone for 3 weeks)
- Early post-op diet, ostomy ed. Bone scan.