Blenderized Tube Feeding: The How To’s

Arielle Gerstenhaber MS, RD, LDN
Pediatric Registered Dietitian
Objectives

• By the end of this presentation, participants will
  • Better understand the benefits and challenges to blenderized feeds
  • Be able to understand what can go into a blends
  • Be able to identify whether a blenderized diet will work for them, their patient, or their family
Disclaimer

Any use of product images or names is for educational purposes only. I am not affiliated with any nutritional product company part of this presentation today.
What are blenderized tube feeds?

• Blended or pureed foods made into a liquid consistency that can be used as a nutritional source via gastrostomy tube
Blenderized History

- Ancient Egypt – First recorded feeds were given with reeds via the rectum
- 1598 – Hollow tube with bladder attached to one end used to reach the esophagus
- 1617 – Silver type of NG (nasal gastric – nose to stomach) tube used that went as far as the pharynx for patients with tetanus
- 1646 – Leather used to create tube that patients would swallow to feed into esophagus
  - Syringe was used to deliver blended food
- 1710 – Leather tube swallowed to feed all the way into stomach
- 1837 – First gastronomy was suggested
- 1867 – Flexible orogastric tube first used
- 1878 – First jejunostomy was attempted
- 1910 – First experiments with NJ tubes
- 1916 – Continuous and controlled delivery of liquid nutrition was suggested when it became clear bolus feeding was not always tolerated.
- 1921 – The Levin tube was introduced
- 1930s – Feeding via a pump first used
- 1979 – PEG insertion technique was developed
What can I blend?

• Almost anything!
• You can blend a typical meal that you would want to prepare for yourself
• Take a look in your refrigerator and cabinets- what foods do you have to make a balanced meal?
• May also combine foods from home with a commercial formula that you are already using
Are blenderized feeds an option for me?

May help with:

- Diarrhea
- Constipation
- Reflux
- Reduced retching and gagging
- Feeding tolerance
- Transitioning from gtube feeds to solids by mouth
- May be used in combination with PO solids (Feeding therapy may be indicated)
- Increased sensory experience

What other factors need to be considered:

- Are bolus feeds well tolerated
- Weakened immune system
- Tube size- 14 French tube size recommended (smaller tubes, 12F, may work with thinner blends-)
- Placement of tube- post pyloric feeds not indicated
- Age- recommend blenderized feeds start no earlier than age 1
- Time
- Storage
- Travel
- Access with inpatient admission
How it helps those with oral feeding difficulty

• Provides a more sensory experience
  • Bright colors
  • New smells

• Have the child touch and smell the foods that are in the blends as they are being fed to add
  • Some will also lick or suck the food from the syringe before the blend goes in the tube

• Those that tolerate blenderized feeds better than commercial formulas:
  • May have reduced incidences of feeding refusal
  • May have a more positive association with foods
  • May transition to solids or tolerate small amounts of solids more easily
Why so popular?

• For some, this is a more cost-effective option than a commercial formula
  • Improved quality of nutrients
    • Fiber sources
    • Phytochemicals
    • Fresh fruits and vegetables
    • Antioxidants
    • Improved gut microbiota
Commercial blenderized tube feed products

• Compleat – nestlehealthscience.us
• Liquid Hope – functionalformularies.com
• Nourish – functionalformularies.com
• Nourish Peptide – functionalformularies.com
• Pediasure Harvest – abbottstore.com
• Real Food Blends- relfoodblends.com
• Kate Farms – katefarms.com [have extracts of food within formula; not classified as a commercial blend]
<table>
<thead>
<tr>
<th>Formula Name</th>
<th>Nutrient Information</th>
<th>Sole Source Nutrition</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Compleat Pediatric (age 1-13) 250 ml | 250 kcal  
  9.5 g protein  
  2 g fiber | ✓                         | Meat blend (contains dairy) Vegetable Blend |
| Compleat Organic Blends (age 1-13) 360 kcal each | 360 kcal each  
  13 g protein each  
  5 grams fiber | ✓                         | Chicken garden blend Plant based blend |
| Liquid Hope (age 13+) 360 ml | 450 kcal  
  23 g protein  
  9 g fiber | ✓                         | plant based, allergen friendly |
| Liquid Hope Peptide (age 13+) 360 ml | 500 kcal  
  25 g protein  
  11 g fiber | ✓                         | plant based, allergen friendly |
| Nourish (age 1-13) 360 ml | 400 kcal  
  14 g protein  
  7 g fiber | ✓                         | plant based, allergen friendly |
<table>
<thead>
<tr>
<th>Formula Name</th>
<th>Nutrient Information</th>
<th>Sole Source Nutrition</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nourish Peptide (age 1-13)</td>
<td>520 kcal</td>
<td></td>
<td>plant based, allergen friendly</td>
</tr>
<tr>
<td>360 ml</td>
<td>16 g protein</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 g fiber</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Nourish Keto Peptide (age 1-13)</td>
<td>610 kcal</td>
<td></td>
<td>plant based, allergen friendly</td>
</tr>
<tr>
<td>240 ml</td>
<td>56 g Fat</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 g Carbohydrates</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 g protein</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 g fiber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediasure Harvest (age 1-13)</td>
<td>240 kcal</td>
<td></td>
<td>Labeled as Vegetarian</td>
</tr>
<tr>
<td>240 ml</td>
<td>9 g Protein</td>
<td>✓</td>
<td>New formulation has removed</td>
</tr>
<tr>
<td></td>
<td>2 g fiber</td>
<td></td>
<td>broccoli and chicken broth</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Does contain Soy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vitamin D from Lanolin (sheep bi-product)</td>
</tr>
<tr>
<td>Real Food Blends (age 1-13)</td>
<td>330-340 kcal</td>
<td>X</td>
<td>Blends may contain meat, fish, poultry, eggs</td>
</tr>
<tr>
<td></td>
<td>10-14 g protein</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5-4 g fiber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kate Farms Standard 1.0 (Age 1+)</td>
<td>325 kcal</td>
<td></td>
<td>*Also has Pediatric Peptide 1.0,</td>
</tr>
<tr>
<td>325 ml</td>
<td>16 g protein</td>
<td>✓</td>
<td>Pediatric Standard 1.2,</td>
</tr>
<tr>
<td></td>
<td>5 g Fiber</td>
<td></td>
<td>Pediatric Peptide 1.5,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Peptide 1.5 (usually 13+), and Standard 1.4</td>
</tr>
</tbody>
</table>
What do I need to make my own blend?

1. Ways to create recipes:
   1. Compleat Recipe Builder
   2. Cronometer - for calorie count, macronutrient and micronutrient information
   3. USDA Calorie Counter
   4. And more!

2. Consider any allergies that the patient/client may have
3. Choose a protein source
4. Determine Carbohydrate source
5. Choose Fat Source
6. Fluids
### Sample 1400 calorie blend

<table>
<thead>
<tr>
<th>Dairy/Dairy Alternative (whole milk, soy milk, almond milk, hemp milk, whole milk yogurt, kefir, coconut yogurt, soy yogurt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 servings Dairy/Dairy Alternative (whole milk, soy milk, almond milk, hemp milk, whole milk yogurt, kefir, coconut yogurt, soy yogurt)</td>
</tr>
<tr>
<td>½ cup whole milk</td>
</tr>
<tr>
<td>½ cup whole milk yogurt</td>
</tr>
<tr>
<td>½ cup kefir</td>
</tr>
<tr>
<td>2 Servings protein (beans, tofu, chicken, beef, fish, egg)</td>
</tr>
<tr>
<td>1.5 ounces tofu</td>
</tr>
<tr>
<td>1/3 cup canned beans</td>
</tr>
<tr>
<td>1-ounce cooked fish</td>
</tr>
<tr>
<td>2 servings Fruits and Vegetables (High in vitamin A) (carrots, apricots, orange squash, pumpkin, sweet potato)</td>
</tr>
<tr>
<td>1 cup diced carrots</td>
</tr>
<tr>
<td>¾ cup orange squash</td>
</tr>
<tr>
<td>2 servings Fruits and Vegetables (High in Vitamin C) (strawberries, orange juice, mango, peas, green beans, spinach, kale, pineapple)</td>
</tr>
<tr>
<td>1/3 cup mango</td>
</tr>
<tr>
<td>1 cup spinach</td>
</tr>
<tr>
<td>2 servings nutrient rich fruit and vegetables (applesauce, blueberries, raspberries, broccoli, plums, pear, watermelon, cantaloupe, zucchini, peach)</td>
</tr>
<tr>
<td>1 cup applesauce</td>
</tr>
<tr>
<td>3/4 cup cooked broccoli</td>
</tr>
<tr>
<td>1 serving potassium rich food (banana, baked potato blackstrap molasses)</td>
</tr>
<tr>
<td>½ banana</td>
</tr>
<tr>
<td>¼ medium baked potato</td>
</tr>
<tr>
<td>Grains (cooked pasts, cooked rice, cooked quinoa, cooked oatmeal, bread)</td>
</tr>
<tr>
<td>¾ cup pasta</td>
</tr>
<tr>
<td>¾ cup quinoa</td>
</tr>
<tr>
<td>1 slice bread</td>
</tr>
<tr>
<td>2.5 servings Fats (oil, avocado, almond, peanut butter, almond butter)</td>
</tr>
<tr>
<td>1 tbsp oil, 1/3 cup mashed avocado</td>
</tr>
<tr>
<td>2 tbsp almond butter or peanut butter</td>
</tr>
<tr>
<td>Supplementation:</td>
</tr>
<tr>
<td>Vitamin D 400 IU</td>
</tr>
<tr>
<td>Iodized Table Salt ½ tsp</td>
</tr>
<tr>
<td>Elemental Calcium 400 mg</td>
</tr>
</tbody>
</table>
Supplementation

• Calcium, iron, and sodium.

• Many of the nutrient needs can be corrected with a commercial multivitamin
  • This multivitamin may be crushed with a pill crusher and added to one of the bolus feeds during the day.
Equipment and safety

- Blender- VitaMix or Blendtec are common ones that we know get foods to the consistency needed
- Measuring cups and spoons
- Containers to store the foods- airtight glass containers work well
- Dish rack to air dry utensils and blender – don’t want towel fuzz in your blends!
- May want meat thermometers to make sure meat is cooked to a safe temperature (165 F for poultry)
- Avoid danger zone (40-140 F)
- Wash your hands
Storage of unused blends

- Some families may blend for each meal, some for a full day, and some may blend in bulk and freeze.
- Keep blends in airtight container for about 72 hours and then discard.
- Do not leave blends out of refrigerator for more than 2 hours.
- Do not freeze a commercial formula or milk or yogurt with blend of other foods.
- You may freeze blenderized foods for about 3 months.

- See USDA Food Safety Guidelines
Citations


- Seattle Children’s Homemade Blenderized Tube Feeding Handout/ Patient and Family Education 2013

