

# Blenderized Tube Feedings: ASPEN Practice Recommendations, Sections 2 and 3

The increasing use of blenderized tube feeding (BTF) in various patient care settings highlights a need for practice recommendations that can provide guidance for nutrition professionals and patients. This practice tool will highlight the practice recommendations for sections 2 (Prepared BTF recipes and BTF additives and consistency) and 3 (BTF in the hospital environment) of *Blenderized Tube Feedings: Practice Recommendations From the American Society for Parenteral and Enteral Nutrition*. *Nutr Clin Pract.* 2023;38:1190-1219.

## Executive Summary of BTF Practice Recommendations (Sections 2 and 3)

| Common BTF-Related Practice Questions  | Practice Recommendations   |
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| <b>Section 2: Practice recommendations for prepared BTF recipe and BTF additives and consistency</b>   |  |
| <b>2.1</b> What resources are available to assist in creating a recipe for prepared BTF?   | <ol style="list-style-type: none"> <li>Respected resources should be used when creating prepared BTF recipes to identify how much of each food group is needed. Specifically:               <ol style="list-style-type: none"> <li><a href="https://www.choosemyplate.gov/resources/MyPlatePlan">https://www.choosemyplate.gov/resources/MyPlatePlan</a></li> <li>Other available resources (Figure 4 and supporting information Appendix 1)</li> </ol> </li> </ol>  |
| <b>2.2</b> What is the necessity for nutritional analysis of the prepared BTF recipe in the hospital and home environments?                    | <ol style="list-style-type: none"> <li>In hospital and home environments, a nutritional analysis is recommended. Analyses should occur following the initial recipe development and routinely thereafter to assess nutritional adequacy based on prepared BTF recipe adjustments and possible changes to the patient's nutritional status and needs.</li> <li>A comparison of the recipe's nutrient profile to the patient's age-appropriate nutrition requirements is necessary. This ensures that macronutrient and micronutrient needs and goals are met.</li> <li>Recipes should be continually adjusted, including the addition of vitamin/mineral, electrolyte supplementation, and/or modular products to meet nutrition requirements.</li> </ol> |
| <b>2.3</b> Which foods are appropriate to be included in prepared BTF?   | <ol style="list-style-type: none"> <li>In collaboration with the patient/caregiver and RD, most foods may be included in recipes for prepared BTF following careful consideration of nutrient composition.</li> <li>The nutrient composition of the recipes should be developed based upon the patient's nutrition needs and lifestyle preferences.</li> </ol>   |
| <b>2.4</b> What are the recommendations regarding maintaining the same prepared BTF recipe daily vs the appropriateness of recipe variability? | <ol style="list-style-type: none"> <li>If the recipe is nutritionally adequate to meet the patient's macronutrient and micronutrient needs, the decision to vary the daily recipes is based on patient and caregiver preference.</li> </ol>  |
| <b>2.5</b> What is the necessity to provide additional vitamin and mineral supplementation when using BTF?                                     | <ol style="list-style-type: none"> <li>Additional supplementation of vitamins and minerals may be indicated if assessment/analysis of the recipe demonstrates inadequate provision in comparison with the recommended age-specific dietary reference intakes and the patient's nutrition needs.</li> </ol>   |
| <b>2.6</b> What is the necessity to provide additional sodium when using BTF?  | <ol style="list-style-type: none"> <li>Assess BTF recipes and composition for sodium content with individualized recommendations to add sodium based on recipe content and patient's nutrition and hydration needs.</li> </ol>   |
| <b>2.7</b> What is the necessity to add modular products to BTF?   | <ol style="list-style-type: none"> <li>Individualized recommendations to add modular products should be based on the recipe and the patient's nutrition needs to ensure needs are met. Assess BTF recipes and compositions upon initiation and when there are changes in recipe or the patient's clinical and nutrition status for macronutrient and micronutrient content.</li> </ol>   |
| <b>2.8</b> What is the recommended way to ensure that the BTF contains adequate fluid?   | <ol style="list-style-type: none"> <li>The patient's fluid needs should be calculated using standard clinical methods.</li> <li>Account for the fluid added to BTF when determining fluid requirements and the need to provide additional fluid.</li> <li>While adequate fluid is essential, the addition of water to BTF can dilute nutrient content, affect hang time, and adversely impact the medical effects of specific viscosity recommendations. These factors must be considered when determining appropriateness of adding fluid.</li> </ol>   |

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| Common BTF-Related Practice Questions   | Practice Recommendations   |
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| <p><b>2.9</b> Which tool should be used to evaluate the consistency of BTF to ensure appropriateness for administration via EADs?</p>                           | <p>1. The IDDSI should be used to evaluate consistency of BTF to ensure appropriateness for administration via EADs.</p>   |
| <p><b>2.10</b> What is the optimal consistency of BTF delivered by syringe, gravity bag, or pump?</p>   | <p>1. Recommendations regarding the optimal consistency of BTF for delivery via syringe, gravity bag, or pump cannot be made, given the individualized nature of BTF in terms of recipe as well as patient-specific factors.</p>   |
| <p><b>Section 3: Practice recommendations for BTF in the hospital environment</b></p>   |  |
| <p><b>3.1</b> What is the safety of use of BTF in pediatric and adult hospitalized patients (e.g., ward, ICU, immunocompromised/transplant)?</p>                | <ol style="list-style-type: none"> <li>1. BTF is considered a safe option in stable ward patients who have previously demonstrated tolerance to BTF and who can tolerate a method of feeding that is offered in the hospital.</li> <li>2. Prepared BTF and commercial BTF are considered safe in hemodynamically stable patients in the ICU. However, due to a lack of evidence, concerns about composition and the ability to deliver these formulas to complex patients exist.</li> <li>3. Use of prepared BTF in immunocompromised patients is considered safe, provided that attention to proper food safety practices and proper hang times is given.</li> </ol>  |
| <p><b>3.2</b> Which BTF delivery methods are feasible for hospitalized patients?</p>  | <ol style="list-style-type: none"> <li>1. The specific delivery method for BTF should be based on resources in the hospital's kitchen (e.g., staff and equipment) and on the ward (e.g., nursing demands, education of dietitian staff). However:             <ol style="list-style-type: none"> <li>a. Bolus feeding is the preferred delivery method for BTF (syringe push or gravity).</li> <li>b. A feeding pump may be used if delivery adheres to recommended hang time (Table 3). The feasibility of prepared BTF with continuous feeds is limited by the 2-h hang time and the demand this places on nursing time. If continuous BTF is desired, consider a commercial BTF with a longer hang time.</li> </ol> </li> </ol>   |
| <p><b>3.3</b> What are the unique considerations for the preparation of prepared BTF in the hospital kitchen, and how do they differ from the home kitchen?</p> | <p><b>Hospital kitchen</b></p> <ol style="list-style-type: none"> <li>1. Specific, trained personnel responsible for making prepared BTF must be identified within the hospital kitchen.</li> <li>2. Adhering to appropriate temperature for cooked foods and abiding by expiration dating are required.</li> <li>3. The presence of safe food handling procedures must be confirmed.</li> <li>4. A commercial-grade blender must be utilized.</li> <li>5. All equipment used to prepare prepared BTF must be sanitized after each use per manufacturer guidelines. In the absence of the manufacturer guidelines, follow CDC guidance.</li> <li>6. Commercial BTF availability should be assured as a backup plan.</li> </ol> <p><b>Home kitchen</b></p> <ol style="list-style-type: none"> <li>1. A home kitchen should be clean and have access to safe water, electricity, and refrigeration.</li> <li>2. Utilize a blender for formula preparation.</li> <li>3. Review and confirm understanding of safe food cooking, handling, and storage procedures.</li> </ol> |

Abbreviations: BTF, blenderized tube feeding; CDC, Centers for Disease Control and Prevention; CEF, commercial enteral formula; EAD, enteral access device; ESBC, enteral small-bore connector; FDA, US Food and Drug Administration; ICU, intensive care unit; IDDSI, International Dysphagia Diet Standardization Initiative; RD, registered dietitian.

Additional ASPEN tools and resources on BTF can be found on the ASPEN Enteral Resources page at [nutritioncare.org/ENresources](https://nutritioncare.org/ENresources).

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